



## Sonneborn with New Supernova Data; Election in May



Dr. George Sonneborn, Telescope Operations Manager for the International Ultraviolet Explorer satellite (IUE), will present recently acquired data on the Magellanic-cloud supernova (1987A) in his May 2 National Capital Astronomers lecture.

The election will be the only business preceding the lecture.

Supernova 1987A is super in several ways. Discovered on 24 February 1987, it is the brightest supernova since Kepler's star in 1604 -- 383 years ago, and the closest for more than 100 years. The remnant of the latter, Cassiopeia A, was discovered much later by radio astronomy in its early days. The closeness, brightness, and early discovery of 1987A facilitate studies never before possible. Although its behavior is peculiar and interesting, it is quite evidently a class II supernova.

Observations of 1987A have confirmed some theories, dashed others. It continues to surprise astronomers with its unexpected behavior. Optical, ultraviolet, and radio observations, combined with the neutrino detections by two independent experiments, now present a reasonably coherent picture of the early stages of this spectacular event. Ultraviolet spectra taken by the IUE satellite have made possible the first identification of a supernova progenitor. George Sonneborn, an astronomer with Computer Sciences Corporation, is the Telescope Operations Manager for the IUE Satellite at Goddard Space Flight Center. He received his Ph.D. from Ohio State University in 1980, and until February 24 devoted most of his research interests to the study of atmospheres of hot stars and cataclysmic variables. He has been with the IUE program since 1982.

### FEBRUARY CALENDAR -- *The public is welcome.*

Monday, 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 1, 8, 15, 22, 29, 7:30 pm -- Telescope-making classes at American University, McKinley Hall basement. Information: Jerry Schnall, 362-8872.

Friday, May 1, 8, 15, 22, 29, 9:30 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 2, 6:00 pm -- Dinner with the speaker at the Smithsonian Restaurant, 6th and C Streets, SW., inside the Holiday Inn. Reservations unnecessary. Use the 7th Street and Maryland Avenue exit of the L'Enfant Plaza Metrorail station.

Saturday, May 2, 8:15 pm -- NCA monthly lecture in the Einstein Planetarium of the National Air and Space Museum, Seventh Street and Independence Avenue, SW. (Enter Independence Avenue side. Dr. Sonneborn will speak.

Saturday, May 9, 10:00 am to 4:00 pm -- Astronomy Day open house with NCA at the U.S. Naval Observatory. See page 35.

Saturday, May 15, 8:00 pm -- Discussion group on supernovae. 4250 Connecticut Avenue, NW, Suite 510, alongside the Red Line Metrorail UDC exit. NOTE: Enter 4250 from the shopping plaza to the right of the main entrance.

Saturday, May 23, 8:30 pm -- *Exploring the Sky*, presented jointly by NCA and the National Park Service. Glover Road south of Military Road, NW, near Rock Creek Nature Center. Information: 320-3621.

Saturday, May 30, pm -- NCA visits Hopewell Observatory. See page 35.

For other organizations' events of interest see elsewhere in this issue.

## APRIL MEETING

Instead of the usual monthly lecture, the April meeting of National Capital Astronomers heard a description of several specialized organizations to which anyone can contribute observations. In keeping with the NCA objective of serving astronomy at all levels, the program was intended to help those desiring an orientation in any of these several specialties. Jay Miller discussed the American Association of Variable Star Observers (AAVSO), the American Lunar and Planetary Society (ALPO), and International Amateur-Professional Photoelectric Photometry (IAPPP). Dr. Richard Taibe discussed the American Meteor Society (AMS), and Dr. Joan Dunham, the International Occultation Timing Association (IOTA).

The AAVSO, organized in 1911, comprises several divisions for solar, variable star, and nova and supernova surveys. A widespread network of solar observers monitors solar activity and develops the American Sunspot Number. Variable star observers measure the light curves of various types of variable stars both visually and photometrically. About four million variable-star observations have been collected by the AAVSO. Novae and supernovae are sought regularly in an effort to discover the onset and to identify the progenitor star. Such information would be particularly useful. Patrol areas of the sky are assigned to regular observers who patrol and report as frequently as possible, preferably nightly.

AAVSO publishes numerous aids, charts, and books. NCA Members may purchase many of them at a discount through the NCA treasurer, Ruth Freitag, (703) 521-7831.

The ALPO also has several subgroups, each with its reporter. There are sections for individual planets, solar and lunar sections, a comet section, and a meteor section. Observations are usually recorded either by photography or by drawings made with specialized techniques which the observers are taught. Ground-observable changes are thus documented.

Jay Miller, (301) 530-7942, has further ALPO information.

IAPPP promotes photoelectric photometry in various astronomical applications by gathering or developing and disseminating information on observational data and techniques, instrumentation designs for construction, and listings of commercially available equipment. Publications include books and a quarterly newsletter.

Call Mark Trueblood, (301) 983-9442, for further information on IAPPP.

The AMS, established in 1911, accepts observations from all over the world. Meteors, an atmospheric phenomenon, are fairly local; a broad distribution of observers is necessary to obtain good statistical results. Observations consist of counts, determination of shower radiants, times of maxima, and magnitudes. Another organization, the Scientific Events Alert Network (SEAN), at the Natural History Museum of the Smithsonian Institution, is the worldwide center for transient phenomena such as occasional fireballs and bolides, exceedingly bright sporadic meteors. Such observations are relayed by the AMS to the SEAN.

Dr. Richard Taibi, (301) 449-7170, can provide further information on the AMS.

IOTA was founded by NCA's Dr. David Dunham, its president, to provide a worldwide pool of observers of occultations of stars by the Moon, stars by asteroids, asteroids by the moon, planets by the moon, and the Sun by the Moon (solar eclipses). These observations provide precision dynamical data on the solar system, result in discovery of extremely close multiple stars, discovery of apparent satellites of large asteroids, track the apparent changes in the solar radius, provide data used in the preparation of navigation tables and other positional information, and even yield corrections to the celestial coordinate system. Several years ago these occultation data were used to revise the figure for the mass of the galaxy!

On 29 May 1983 an occultation of the star 1 Vulpeculae by the asteroid Pallas was recorded by a team of 210 observers distributed across and along the path from southern Florida across Texas and Mexico to Baja California. From their combined observations a high-resolution profile of Pallas was obtained -- the first for any asteroid. The final, corrected data were first published in *Star Dust* in September 1983. Joan showed a slide adaptation of the article which was shown on National Television News in Japan, where David Dunham was lecturing.

For useful visual observations, only a modest amount of equipment is necessary: a very accurate timing method such as a short-wave receiver for WWV or CHU standard time signals, a tape recorder, and an adequate telescope. The observer's position on the Earth, however, must be known within a few feet for the data to be useful. More useful video observations require special low-light equipment.

Dr. David Dunham organizes and leads occultation expeditions, usually a few every month, often within a few hundred miles of Washington, frequently to the far reaches of the world.

The IOTA newsletter includes predictions and reductions of observations; planned expeditions are listed in NCA's *Star Dust* each month.

For IOTA information, call Dr. Dunham, (301) 585-0989.

All of these organizations offer opportunities for those interested in contributing useful work as volunteers.

R.H. McCracken

## OCCULTATION EXPEDITIONS PLANNED

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

### Asteroidal:

UT	Place	Star mag	Delta mag	Name	Min aper
Date Time					
05-03-87 08:39	DC	8.6	2.5	(54) Alexandra	15 cm
05-12-87 00:38	Delmarva Pen.	9.0	5.0	(241) Germania	10 cm
05-12-87 01:23	Prince Ed. Isl.*	11.3	1.8	(107) Camila	20 cm
05-12-87 09:45	Indiana	9.5	4.0	(200) Dynamene	13 cm
05-13-87 03:06	s.e. Canada	11.1	1.5	(704) Interamnia	20 cm

\* Appulse. Observe for possible satellites or for path change.

### NOMINATING COMMITTEE OFFERS SLATE

The Nominating Committee proposes the following slate for fiscal 1988 NCA officers to be elected at the annual corporate meeting May 2:

President	Walter I. Nissen	Treasurer	Ruth S. Freitag
Vice President	Jay H. Miller	Trustee	Stanley G. Cawelti
Secretary	Patricia B. Trueblood	Sergeant at Arms	Frank Dischel

Other nominations may be made by petition of ten full members in good standing, presented to the secretary prior to the election.

### NCA AGAIN INVITED TO HOPEWELL CORPORATION OBSERVATORY

The April 24 trip having been cancelled because of weather, NCA members, families, and guests are again invited to explore the spring night sky at Hopewell Observatory on Saturday evening, May 30. Come early (any time after 4:00 pm) and bring your prepared picnic dinner if you wish (...and stay as long as you like, of course!) Coffee, tea, cocoa, and soft drinks will be provided by the Hopewell Corporation. The nights may still be chilly so dress warmly; the observatory is not heated (the operations building is, however).

From the Beltway, go west on I-66, 25 miles to the Haymarket exit at U.S. 15. Left on 15, 0.25 mile to traffic light, right on Route 55, 0.75 mile to County Road 681. Right on 681, 3.2 miles to end, left on County Road 601 (gravel) 1.2 miles to County Road 629, Right on 629, 0.9 mile to narrow paved road on right (Directly across from easier-to-see entrance gate with stone facing on left). Turn right, go 0.3 mile to top of ridge, go around microwave station and continue on dirt road through woods a few hundred feet to the observatory.

Carpooling is recommended. Further information? Call NCA: 320-3621.

### ASTRONOMY DAY OPEN HOUSE AT NAVAL OBSERVATORY WITH NCA

The U.S. Naval Observatory open house will mark Astronomy Day on May 9 with National Capital Astronomers participation.

This event will afford an opportunity to visit the major installations at the Observatory, see special exhibits displays, and demonstrations by the Observatory and NCA, and, weather permitting, safe telescopic viewing of the Sun, in both white and hydrogen alpha light.

Volunteers are needed; call NCA: 320-3621.

### ASTRONOMY AND PERSONAL COMPUTERS

Public domain†, shareware†, and user-supported† astronomy programs can teach both astronomy and programming. STARFIND is a particularly nice example of an astronomical program that plots star fields on the PC screen. This MS-DOS software program is nicely done, very well documented, (four programs for documentation), with both compiled and BASIC source code versions provided. It contains all the stars to magnitude 3.5, and will plot constellations or the fields around given stars on command. Stars are identified if requested. Skat, for example, can be identified as Delta Aquarii. The sky is plotted using printed characters that all screens can display. The author, Melvin Duke of San Jose, California, should be proud of a job well done.

The cost of software bears little relation to its usefulness. Just recently, a major computer news magazine, *Infoworld*, rated a shareware word processor as equal to or better than some that sell for more than \$400! Public-domain software is available from users' groups, the AL, the ASP, bulletin boards, Source, Compuserve, and newsletters, although some, like STARFIND, are too long to want to enter manually. Joan B. Dunham

†Public-domain, shareware, and user-supported software are all distributed by users. Users are expected to pay a donation to authors for shareware and user-supported software. Melvin Duke, for example, asks for \$35. I got my copy of STARFIND from PC-SIG (disk #447), and would be happy to provide it in exchange for a blank disk. JBD

## EXCERPTS FROM THE IAU CIRCULARS

1. January 5 -- M. Hartley, Siding Spring Observatory, discovered a possible comet of 17th magnitude on a plate taken with the 1.2-m Schmidt telescope, but there were no confirming observations.

2. March 28 -- C. Torres, University of Chile, discovered a comet of 15th magnitude in Centaurus. Orbital elements of Comet 1987j by Green indicate that it passed perihelion on the next day, 3.6 AU from the Sun. 3. Supernova 1987A -- Images of the region around the star Sanduleak -69 202 obtained in 1982 with the 1.5-m Danish telescope at the European Southern Observatory showed at least one companion star, which might have been the SN precursor. The SN brightened slightly in late March and early April, reaching magnitude 3.5 at last estimate. It has also become redder and brighter at 10 micrometers in the infrared.

Robert N. Bolster

## AIR AND SPACE MUSEUM OFFERS PROGRAMS, TELESCOPIC SKY VIEWING, LONGER HOURS

The following free, public programs will be held in the Einstein Planetarium of the National Air and Space Museum.

Saturday, May 2, 9:30 am -- "New Eyes on the Universe: the Hubble Space Telescope," Dr. Richard Schmidt, U.S. Naval Observatory. Following the talk, weather permitting, NCA President and NASM Docent Stanley Cawelti will offer telescopic sky viewing on the east deck.

Wednesday, May 20, 7:30 pm -- "Born in the Milky Way," Dr. Alan Dressler, Carnegie Institute of Washington. Following the talk, weather permitting, Stanley Cawelti will provide safe telescopic viewing of the Sun in hydrogen alpha light.

From May 23 until Memorial Day, the Air and Space Museum will be open from 10:00 am to 9:00 pm.

## NASA GODDARD COLLOQUIA SCHEDULED

The NASA Goddard Space Flight Center scientific colloquia are held on Fridays at 3:30 pm in the Building 3 Auditorium. Coffee and tea are served from 3:00. Enter the main gate and obtain a visitors pass from the guard. Call Jaylee Mead, 286-8543, for further information

May 22 -- "Colliding and Merging Galaxies," Francois Schweizer, Carnegie Institute, Department of Terrestrial Magnetism (DTM).

May 29 -- "Tectonic Evolution of Venus and the Earth," Sean C. Soloman, Massachusetts Institute of Technology.

June 5 -- "Formation of the Terrestrial Planets," George Wetherill, Carnegie DTM.

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★ S T A R D U S T

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