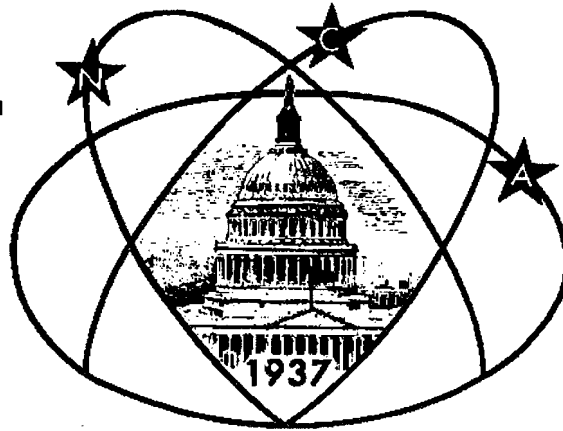


Star



Dust

National Capital Astronomers, Inc.

Phone: 301/565-3709

Volume 56, Number 7

March, 1998

ISSN 0898-7548

“Small Bodies in the Early Solar System: A Geologist’s Perspective.”

by Tim McCoy

The next meeting of the National Capital Astronomers will be held Saturday, March 7, at 7:30 PM, in the Lipsett Auditorium of the Clinical Center (Building 10) at the National Institutes of Health (NIH). Our speaker, Tim McCoy, will be talking about “Small Bodies in the Early Solar System: A Geologist’s Perspective.” The following abstract and biography was provided by the speaker.

Abstract

This talk will cover the formation and evolution of asteroids in the early history of the Solar System from presolar dust to layered cratered worlds. Photos, illustrations, and videos from the new Geology, Gems, and Minerals Hall at

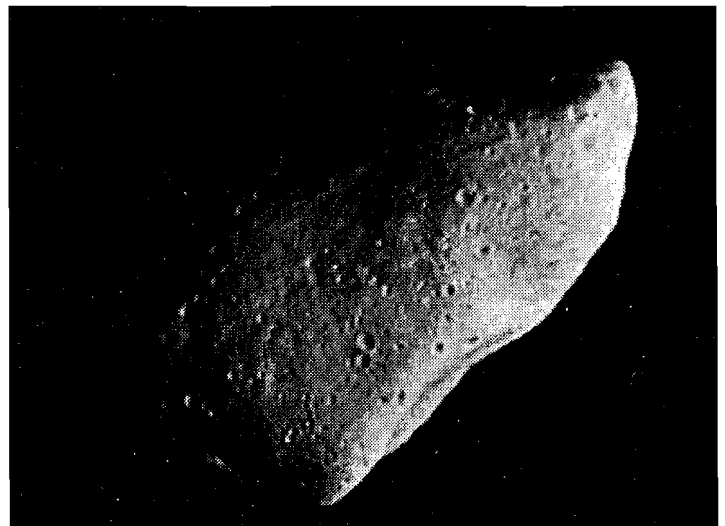
the National Museum of Natural History will be used.

Biography

Dr. Tim McCoy received a Bachelor of Science degree from Eastern Illinois University in 1986; a Masters of Science degree from the University of New Mexico; a Ph.D. from the University of Hawaii; and a postdoctoral fellowship at the Johnson Space Center 1994-1996. Dr. McCoy has been Assistant Curator of meteorites at the Smithsonian since 1996. His research interest is primarily understanding the melting of small bodies in the early history of the solar system using petrology and experimental petrology. ○

Def: petrology: scientific study of rocks that deals with their composition, texture, and structure; their occurrence and distribution; and their origin in relation to physicochemical conditions and geologic processes. Petrology includes the subdisciplines of experimental petrology, which is the laboratory study of silicate systems at elevated temperatures and pressures and petrography, which involves the examination of rocks in thin section by means of a petrographic microscope (i.e., an instrument which employs polarized light that vibrates in a single plane.) Ref. Encyclopedia Britannica. — ed.

This picture of asteroid 951 Gaspra was obtained by the Galileo spacecraft during its approach to the asteroid on October 29, 1991. The Sun is shining from the right; phase angle is 50 degrees. Gaspra is an irregular body with dimensions about 19 x 12 x 11 kilometers (12 x 7.5 x 7 miles). The portion illuminated in this view is about 18 kilometers (11 miles) from lower left to upper right. The original image was a color composite using the highest resolution morphology and color information obtained by the Galileo spacecraft during its approach. The base-image was in black and white while the color variations were constructed from violet, green, and near-infrared (1000 nanometers) images taken earlier. — Public Information Office, Jet Propulsion Laboratory.



Calendar of Monthly Events

The Public is Welcome!

NCA Home Page: <http://myhouse.com/NCA/home.htm>

Mondays, March 2, 9, 16, 23 and 30, 7:30 PM - Public nights at U.S. Naval Observatory (USNO), in Northwest Washington, D.C. (off Massachusetts Avenue). Includes orientation on USNO's mission, viewing of operating atomic clocks, and glimpses through the finest optical telescopes in the Washington-Baltimore region. Held regardless of cloud cover. Information: USNO Public Affairs Office, 202/762-1438. Home page: <http://www.usno.navy.mil>.

Tuesdays, March 3, 10, 17, 24 and 31 7:30 PM - Telescope making classes at Chevy Chase Community Center, Connecticut Avenue and McKinley Street, NW. Information: Jerry Schnall, 202/362-8872.

Fridays, March 6, 13, 20 and 27, 7:30 PM - Telescope making classes at American University, McKinley Hall Basement. Information: Jerry Schnall, 202/362-8872.

Fridays, March 6, 20 and 27, 8:30 PM - Open nights with NCA's Celestron C-14 telescope at Ridgeview Observatory; near Alexandria, Virginia; 6007 Ridgeview Drive (off Franconia Road between Telegraph Road and Rose Hill Drive). Information: Bob Bolster, 703/960-9126. Call before 6:00 PM.

Saturday, March 7, 5:30 PM - Dinner with the speaker and other NCA members at O'Donnell's Seafood Restaurant, 8301 Wisconsin, Bethesda, MD. See map and directions on back page.

Saturday, March 7, 7:30 PM - NCA meeting, will feature Tim McCoy, Associate Curator of meteorites at the Smithsonian, speaking on "Small Bodies in the Early Solar System: A Geologist's Perspective." Also, members will present their slides of the February 28 eclipse.

See map and directions to the meeting on back page. During questionable weather, call the IOTA Hotline (Phone: 301/474-4945) for NCA meeting status. The absence of a cancellation notice on the Hotline means the meeting will take place.

See page 6 for more Washington area astronomical events. Other events too numerous to list in *Star Dust* are listed in the publications, *Sky & Telescope*, the *Astronomical Calendar 1998*, the *Observer's Handbook 1998*. NCA members can purchase all these (and much more) at a discount. Information can also be found in numerous software packages, and links available on the NCA Home Page (see above for address). To join NCA, use the membership application on page 7.

Volunteers Needed for the Astroscout Program

The National Park Service is looking for volunteers, willing to assist with an astronomy program called "Astroscout." The National Park Service at the Rock Creek Park Nature Center and Planetarium is offering to boy scouts a free, exciting new program to learn about astronomy. A multimedia introduction to the night sky, this program consists of a planetarium show, a video, instruction on astronomy, and a viewing of the night sky through telescopes. Interested boy scouts will be able to start the Astronomy merit badge at this event.

Volunteers with telescopes are needed from 6:00 PM to 7:30 PM, March 21, 1998 to bring their telescopes to Military Field for the scouts to view the stars and other interesting phenomena. The Rock Creek Nature Center and Planetarium is located in Rock Creek Park at 5200 Glover Road, NW, Washington, DC, 20015. If you have any questions or would like to volunteer, please call Ranger Blaine Eckberg at 202/426-6829.

Newsletter Deadline for April *Star Dust*, March 15, 1998

Send submissions to Alisa & Gary Joaquin, at 4910 Schuyler Dr., Annandale, VA, 22003-5144. Leave a message on voice mail 703/750-1636. Text files or graphic files in .GIF or .TIFF may be sent via E-Mail to ajglj@erols.com or fax submissions to 703/658-2233.

No submissions will be accepted after the 20th. We need ample time to layout, edit, and mail the newsletter. We would appreciate everyone's help in this matter. Thank you.

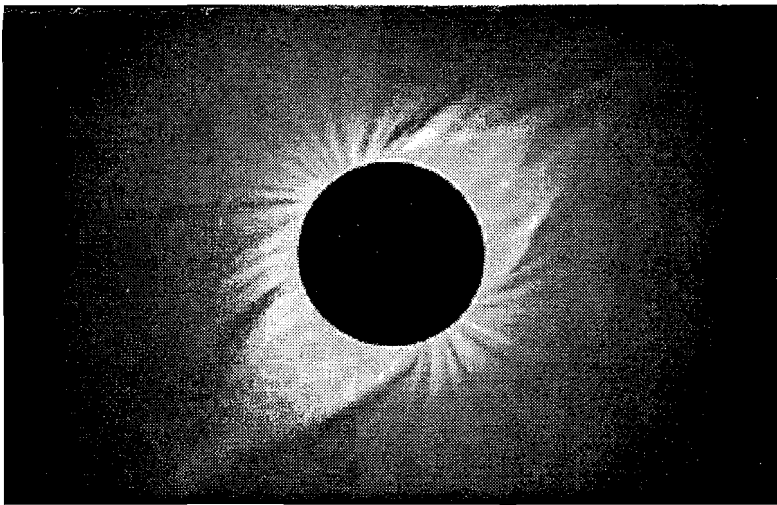
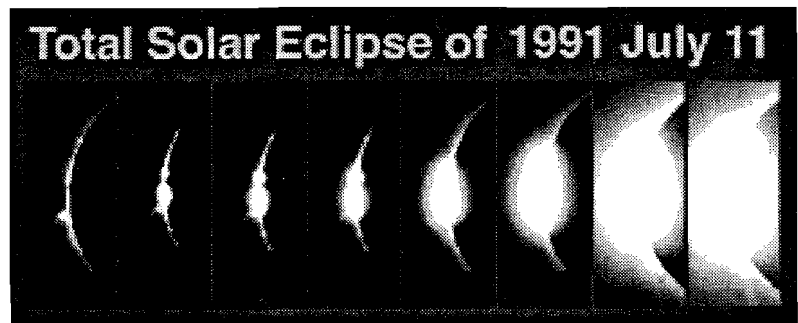
Predicting and Chasing Solar Eclipses

Review by Andrew Seacord, III

Dr. Fred Espenak gave an excellent lecture, "Predicting and Chasing Solar Eclipses" at the February 7th NCA meeting. His presentation included a slide show and three videos which he made during the eclipses of 1990, 1991, and March 9, 1997.

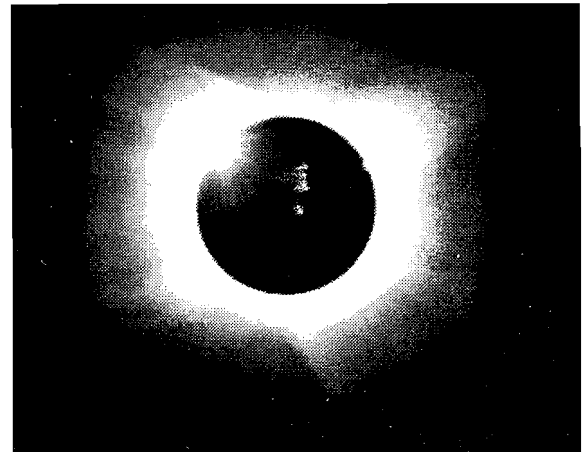
Dr. Espenak began his presentation with some planetary history that included the current theory of the Moon's origin. With the use of slides, he discussed the geometry of partial, total, and annular eclipses and provided an excellent explanation of how the Moon's non-circular orbit, results in a 50,000 km variation of the Earth-Moon distance which affects the maximum duration of totality.

By combining the videos made during the three eclipses with slides made at the eclipse sites, Dr. Espenak provided a good idea of what to expect on the February 26, 1998 eclipse. Since they included audio recordings, the videos captured the ambience — the tension and excitement — of the event.



A composite image by Fred Espenak, showing coronal detail of Total Eclipse of the Sun October 24, 1995 Dunleod India. Seven images were scanned into Photoshop and combined. See the Eclipse Home page - <http://planets.gsfc.nasa.gov/eclipse/SEcomp.html> for more details

Total Solar Eclipse of June 11 1983, Java, Indonesia. Taken with a Celestron 90 (f.l. = 1000 mm, f/11) by Fred Espenak



Stellar Imagery

Astronomical Reflections from an NCA Member

by Gary Joaquin

Walking up to Hopewell Observatory at Bull Run Mountain, I carefully choose my steps with light adapted eyes to avoid the tree roots and the protruding quartzite rocks in the darkness. A soft red glow from the lights of the observatory comes into view. The rolling metal roof and the concrete columns that support it are silhouetted by the glow of the lights of Manassas on the horizon, the same lights that threaten the view of the star light above. As the dim light shines on this utilitarian structure, I am trans-

ported to the Acropolis in Greece. I look forward to gazing into the telescope's eyepiece, where I will be transported to places much farther away in distance and time...

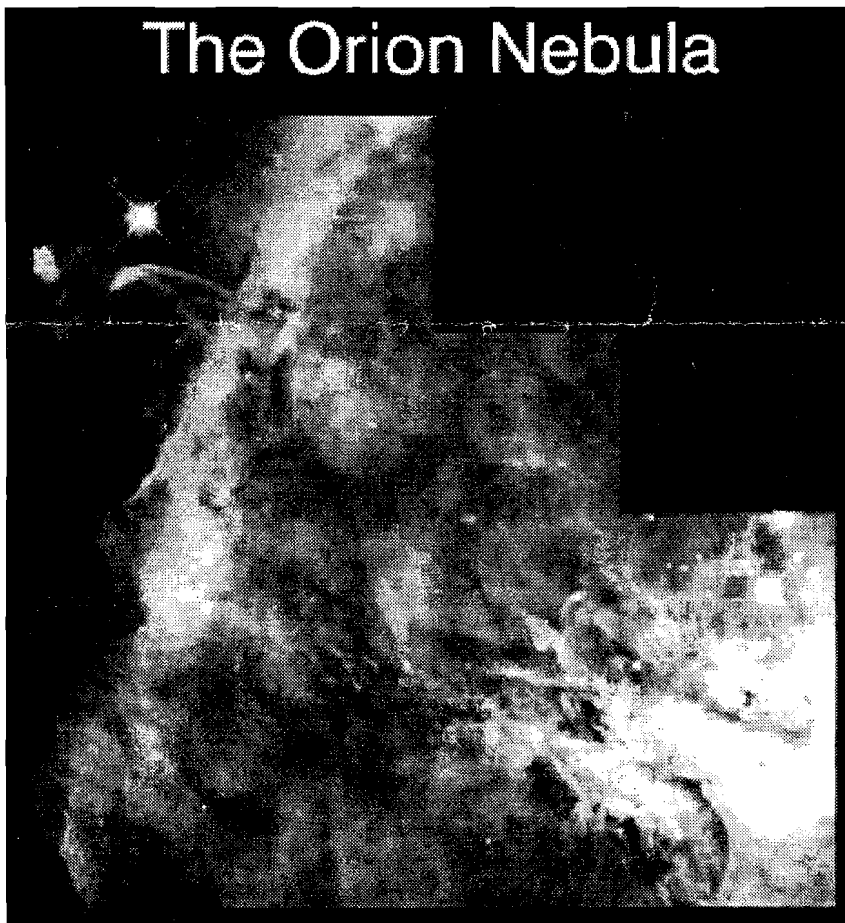
I look at the surface of the Moon through a large telescope at Hopewell. A friend hands me the controls. I pan across the lunar surface. The craters and lava plains have never felt so close. I get a sense of vertigo, as if I am actually in a spacecraft looking for a place to land.

With wonder and excitement I continue to zoom across the lunar surface. The experience lasts 30 seconds, until earthly clouds move in to block my view, but the memory of this moment will last forever...

Listening to a lecture at NCA by an astronomer, I hear a man possessed by weather systems on distant planets. He speaks with passion about discarding ideas that no longer explain phenomena. He is equally passionate about seeking and testing new ideas that do. His commitment to truth is so palpable. I hope that his passion can become mine...

Jogging in our neighborhood on a star filled night, I watch Jupiter in the summer months make its way through Scorpius, then Sagittarius - each year a new constellation. I wonder with regret when there will come a time when Jupiter will be out of view behind our Sun. I see Vega, a hot sun with a familiar face in the constellation Lyra. With a sense of glee I quicken my stride, as though I could cover the light years between us by running a little faster...

During the winter months, I drive home with the constellation Orion as my guide. I look forward to seeing this constellation rise each fall. I am awestruck by the immensity of this structure straddling the horizon at an intersection near our home. I remember seeing the nebula of Orion, for the first time, from Bob Bolster's home in Alexandria. The dust lanes are spectacular. The trapezium glowed with the light of newborn stars, the largest nursery that I've ever seen.



Meteor Shower Events

Shower	Duration	Maximum	R.A.	Dec.	ZHR
Virginids	March-April	April 12	14h 04m	-09	5

Naked Eye Occultation of Aldebaran, March 4

by David Dunham

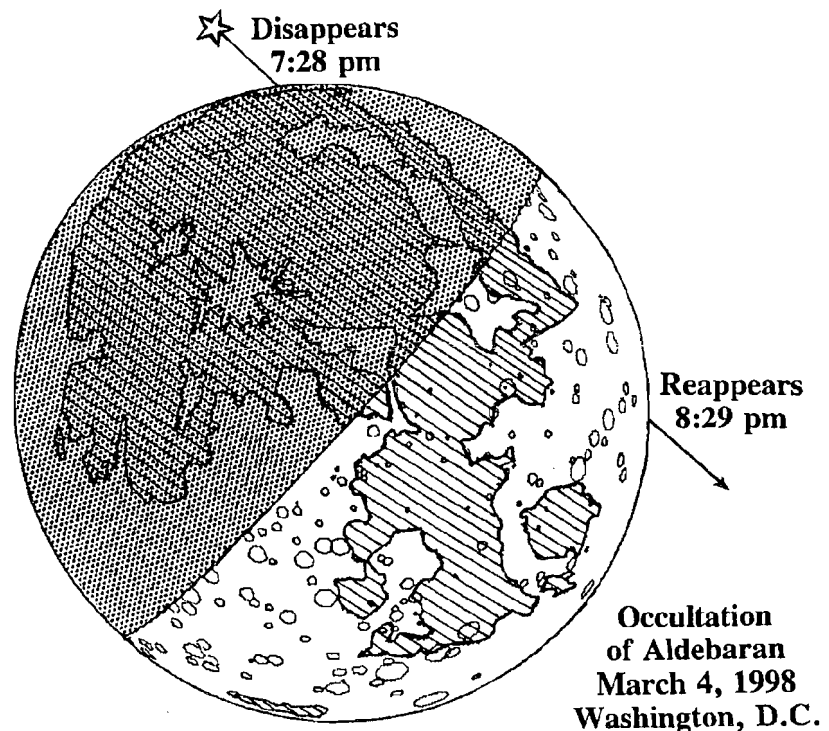
Early Wednesday evening, March 4th, 1st-magnitude Aldebaran will be covered by the Moon under excellent circumstances for the Washington area. If the sky is clear, the disappearance can be seen with the naked eye and it can be accurately timed by recording it directly with a camcorder. These observations are valuable for mapping the lunar profile in more detail than was possible even by the Clementine spacecraft. Such profile information is needed to properly analyze solar eclipse Bailey's bead timings. From those eclipse timings, small variations of the solar radius can be measured that can help studies of the Earth's climate. See the March issue of *Sky and Telescope*, pages 98-100, for more information about observing the occultation, including camcorder timing tips. That information is also available at Sky Publishing's occultation web site at <http://www.skypub.com/occults/occults.html>.

Camcorder records are sought by anyone who can make them (not just NCA members or amateur astronomers; anyone with a camcorder can contribute). Record either CNN Headline news or WETA (Channel 26) for half a minute before and after the occultation, and leave the camcorder recording throughout. We will record those stations along with WWV time signals so that accurate times can be recovered from your tape. If you succeed in recording the occultation, you can either send your tape to Tom Campbell at the address given near

the end of this article, give the tape to me or Wayne Warren at an NCA meeting, or keep the tape to record other occultations (many occultations can be recorded by aiming a camcorder into the eyepiece of a telescope) later in the year, giving it to us either when it is full or at the end of the year.

The diagram shows a telescopic view for local observers. It is a direct view, not inverted as is the case when seen with most telescopes. Since Aldebaran will disappear at the top of the

Moon, you can block most of the bright part of the Moon with a telephone pole or top of a house or building to make the event more visible against the Moon's dark side, which will be faintly illuminated by earthshine. But the event can still be seen rather easily if this is not done. Of course, binoculars or a telescope will give a more spectacular view. We also plan a distant expedition to observe the northern-limit graze of the star, as given in the table below. ○



Grazing Occultation Expeditions, March and April 1998

Date	Day	EST	Star	Mag	%	alt	CA	Location
Mar 4	Wed	20:05	Aldebaran	0.8	45+	46	1N	Newport, Maine
Apr 2	Thu	22:39	SAO 95484	8.1	42+	23	4N	Carmel Church, Virginia

"%" is the percent of the Moon's disk that is sunlit, with + indicating waxing phase.

"alt" is the altitude of the star above the horizon in degrees at the time of the graze.

"CA" is the cusp angle of the event, the angle measured around the Moon's circumference on the dark side from the northern (N) lunar cusp to the star at the time of the central graze.

Phone the IOTA occultation line, 301/474-4945, for updates and details; also, meeting places and maps for grazing occultations are often given on IOTA's web site at <http://www.sky.net/~robinson/iotandx.htm>. There are no reasonably good asteroidal occultation possibilities in the region during March and early April.

National Capital Area Astronomical Events

Free Lectures at the Einstein Planetarium and Other Daily Events
National Air & Space Museum

202/357-1550, 202/357-1686, or 202/357-1505 (TTY)

Home page: <http://www.nasm.edu>

Other Area Astronomical Events

Other Planetariums, Observatories, and Science Centers in the Area

Montgomery College Planetarium — “The Rites of Spring: The Vernal Equinox”, Takoma Park, MD, March 21, 7:00 PM. (See their web site at <http://myhouse.com/mc/planet.htm>.)

Scientific Colloquia, Goddard Space Flight Center — All colloquia will be held in the Building 3 Auditorium at 3:30 PM.

“Black Holes, Thermodynamics, and the Information Paradox,” speaker: Robert Wald, University of Chicago, March 6.

“COBE and the Diffuse Infrared Background,” speaker: Mike Hauser, Space Telescope Science Institute (STScI), March 20.

Campus Observatory Open House, University of Maryland — “Alien Worlds,” speaker: Dr. Doug Hamilton. March 5, 8:00 PM.

“Comets and You: Primordial Snowballs, Dinosaur Killers, and Bringers of Life,” speaker: Dr. Casey Lisse. March 20, 8:00 PM.

Arlington Schools Planetarium — “The Lighthearted Astronomer”. January 23 - March 8, Friday and Saturday evenings 7:30 and Sunday matinees 1:30 and 3:00 PM. Admission \$2.50 for adults and \$1.50 for

children. Call 703/228-6070 or 228-6019.

U.S. Naval Observatory Colloquia — All Colloquia will take place in Bldg. 52, Room 300 and will begin at 10:30 AM (Coffee at 10:00). Call 202/762-1513.

“Frequency Standards at NIST,” speaker: Dr. Don Sullivan, NIST, Boulder, CO, March 6

“Submillimeter Nutation Results,” speaker: Dr. Tom Herring, MIT, March 13.

NASA/Goddard Space Flight Center, Laboratory for Astronomy and Solar Physics (LASP) Seminar — All seminars will take place in Bldg. 52, Room 300 and will begin at 3:30 PM

“Post-Asymptotic Giant Branch Stars in Local Group Galaxy Halos,” speaker: Laura Fulton, STScI, March 26

Washington Area Astronomers — All scientific sessions will be held in Room 300 of Building 52 at the U.S. Naval Observatory. Except where indicated, all talks are 15 minutes, which includes up to 5 minutes allowed for discussion.

The Program is not available. Please check USNO's web site for updates at <http://aa.usno.navy.mil/waa/program.htm>. The meeting date is set for March 26. Registration fee will be approximately \$10.00.

Future Events

29th Meeting of the Division of Dynamical Astronomy of the American Astronomical Society (DDA) — To be held at the University of Virginia in Charlottesville, April 1-3, 1998. Currently, the following speakers (with topics) have been invited to participate.:

“Barred Galaxies and Dynamical Modeling,” speaker: P.J. Teuben

“Binary Star Research with the HST Fine Guidance Sensors,” speaker: O.G. Franz

“True Airspeed: Spacecraft Aerobraking Orbit Determination and Dynamics at Venus and Mars,” speaker: Georgini

“HIPPARCOS,” speaker: F. Mignard

“Brouwer Award: Resonant Relaxation,” speaker: S. Tremaine

“The Schwarzschild Method for Building Galaxy Models (lead for special session in honor of Martin Schwarzschild),” speaker: T. de Zeeuw

To register and review updates, please go to DDA's web site at http://proxima.astro.virginia.edu/~dda/Cville_meet./index.html.

Space Telescope Science Institute May 1998 Symposium — The topic will be “Unsolved Problems in Stellar Evolution”. All aspects of stellar evolution, from birth to death will be discussed. The deadline for registration is April 1, 1998.

People interested in participating can register electronically or contact Sheryl Schmidt at STScI by mail (STScI, 3700 San Martin Drive, Baltimore, MD 21218, U.S.), e-mail (schmidt@stsci.edu), or phone (410/338-4404). The registration fee is \$150 before April 1, \$170 thereafter.

The January Review is still unavailable. The review will appear in a later issue of *Star Dust*.

National Capital Astronomers, Inc.

SERVING SCIENCE & SOCIETY SINCE 1937

NCA is a non-profit, membership supported, volunteer run, public-service corporation dedicated to advancing space technology, astronomy, and related sciences through information, participation, and inspiration, via research, lectures, presentations, publications, expeditions, tours, public interpretation, and education. NCA is the astronomy affiliate of the Washington Academy of Sciences. All are welcome to join NCA.

SERVICES & ACTIVITIES:

Monthly Meetings feature presentations of current work by researchers at the horizons of their fields. All are welcome; there is no charge. See monthly *Star Dust* for time and location.

NCA Volunteers serve as skilled observers frequently deploying to many parts of the National Capital region, and beyond, on campaigns and expeditions collecting vital scientific data for astronomy and related sciences. They also serve locally by assisting with scientific conferences, judging science fairs, and interpreting astronomy and related subjects during public programs.

Discussion Groups exchange information, ideas, and questions on preselected topics, moderated by an NCA member or guest expert.

Publications received by members include the monthly newsletter of NCA, *Star Dust*, and an optional discount subscription to *Sky & Telescope* magazine.

NCA Information Service answers a wide variety of inquiries about space technology, astronomy, and related subjects from the public, the media, and other organizations.

Consumer Clinics on selection, use, and care of binoculars and telescopes, provide myth-breaking information, guidance, and demonstrations for those contemplating acquiring their first astronomical instrument.

Dark-Sky Protection Efforts educate society at large about the serious environmental threat of light pollution, plus seek ways and means of light pollution avoidance and abatement. NCA is an organizational member of the International Dark-Sky Association (IDA), and the National Capital region's IDA representative.

Classes teach about subjects ranging from basic astronomy to hand-making a fine astronomical telescope. NCA's instructors also train educators in how to better teach astronomy and related subjects.

Tours travel to dark-sky sites, observatories, laboratories, museums, and other points of interest around the National Capital region, the Nation, and the World.

Discounts are available to members on many publications, products, and services, including *Sky & Telescope* magazine.

Public Sky Viewing Programs are offered jointly with the National Park Service, the Smithsonian Institution, the U.S. Naval Observatory, and others.

NCA Juniors Program fosters children's and young adults' interest in space technology, astronomy, and related sciences through discounted memberships, mentorship from dedicated members, and NCA's annual Science Fair Awards.

Fine Quality Telescopes up to 36-cm (14-inch) aperture are available free for member's use. NCA also has access to several relatively dark-sky sites in Maryland, Virginia, and West Virginia.

YES! I'D LIKE TO JOIN THE NATIONAL CAPITAL ASTRONOMERS

Enclosed is my payment for the following membership category:

Regular

Sky & Telescope and *Star Dust*. (\$54 per year)

Star Dust only (\$27 per year)

Junior (Only open to those under age 18) Date of birth: _____

Junior members pay a reduced rate.

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First name Middle Last name (____) _____
Telephone

Street or Box Apartment City State Zip Code + 4

If family membership, list names of additional participating immediate family members in same household, with birthdates of all those under 18 years old: _____

Note: If you already subscribe to *Sky & Telescope*, please attach a recent mailing label. You may renew this subscription through NCA for \$27 when it expires.

Make check payable to: **National Capital Astronomers, Inc.**, and send with this form to:

NCA c/o Jeffrey B. Norman, 5410 Connecticut Avenue, NW, Apt. #717, Washington, D.C. 20015-2837.

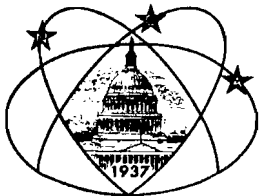
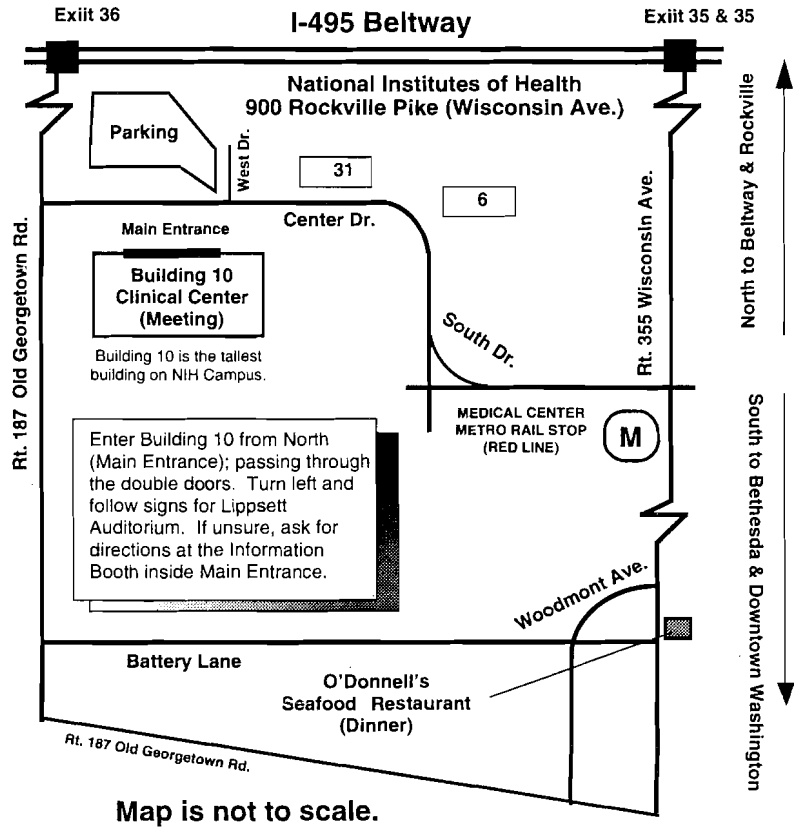
The following information is optional. Please indicate briefly any special interests, skills, education, experience, or other resources which you might contribute to NCA. **Thank you, and welcome to NCA!**

Getting to the NCA Monthly Meeting

Metrorail Riders - From Medical Center Metro Station: Walk down the hill, pass the bus stops and turn right at the anchor onto Center Drive. Continue uphill to Building 10, the tallest building on campus (walking time about 10 minutes). Also, the J2 bus line connects the Bethesda (7:16 PM) and NIH (7:23 PM) Metro stops with Building 10 (7:25 PM).

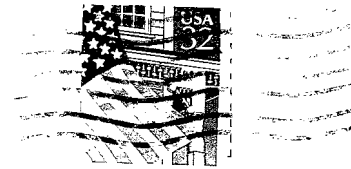
To O'Donnell's Seafood Restaurant- Take Wisconsin Avenue past Woodmont Avenue toward Battery Lane. It is located on the corner of Rosedale and Wisconsin Avenue on the left side of the street. There is free parking across the street on Rosedale. The address is 8301 Wisconsin Avenue, Bethesda, MD.

Star Dust is published ten times yearly (September through June) by the National Capital Astronomers, Inc. (NCA), a nonprofit, astronomical organization serving the entire National Capital region, and beyond. NCA is the astronomy affiliate of the Washington Academy of Sciences and the National Capital region's representative of the International Dark-Sky Association. President: Harold Williams, 301/565-3709. Deadline for *Star Dust* is the 15th of the preceding month. Editors: Alisa & Gary Joaquin, 4910 Schuyler Dr., Annandale, VA 22003, 703/750-1636, E-mail: ajglj@erols.com. Editorial Advisor: Nancy Byrd *Star Dust* © 1998, *Star Dust* may be reproduced with credit to National Capital Astronomers, Inc.



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March 1998