

Star



Dust

National Capital Astronomers, Inc.

<http://capitalastronomers.org>

Volume 62, Number 6

February 2004

ISSN 0898-7548

The President's Corner

We had a very successful January meeting. There were almost two dozen at the dinner, twice what we had been getting, and there were 53 at the meeting, about 50% more than we had been getting at the Services Center and around what we'd been getting at NIH. The sky was clear after the meeting so we were able to do a little observing with the observatory's 7" AstroPhysics refractor. I hope to see you at the February meeting.

As I'd said last month, Bob Bolster has not been able to bring the C-14 to Exploring the Sky and I'd asked for a volunteer to house it, bring it to *Exploring the Sky* and also open it for observing at his house. Michael McNeal of Chevy Chase, MD has offered to do this. Mike will let us know in Stardust what his schedule will be. NCA would like to thank Bob Bolster very much for housing the C-14 all these years and opening his house for weekly viewing.

Jeff Norman pointed out to me on 13 January that one of our members had died. Philip Barringer was also a diplomat, member of the Potomac Appalachian Trail Club and a director of the Barringer Crater Co. (i.e., meteor crater). He spoke to us at NIH about the crater several years ago.

Jay Miller, President NCA

February Speaker: Dr. Larry Nittler, "Nanogram Probes of Galactic, Stellar, and Interstellar Processes"

Submitted by Jeff Guerber

Dr. Larry Nittler will present the featured talk "Nanogram Probes of Galactic, Stellar, and Interstellar Processes" at the February 7 meeting of the National Capital Astronomers.

The meeting will be held at 7:00 P.M. in the University of Maryland Astronomy Observatory on Metzert Road in College Park, MD.

Abstract

Our galaxy is filled with small solid material, interstellar dust particles. For decades, the properties of this dust were inferred primarily from its effect on starlight passing through it. However, in the last twenty

years, actual samples of presolar interstellar dust have been identified in terrestrial laboratories, isolated from meteorites and interplanetary dust particles. Studies of tiny extraterrestrial dust grains have revealed large ranges in isotopic compositions, relative to anything known to have formed in the solar system. These materials contain a record of a wide array of cosmic processes, from the evolution of the Galaxy to exotic chemical reactions in molecular clouds. This talk will review how we identify microscopic presolar materials in the laboratory and how we use them to gain new understanding about the Universe.

Bio

Larry Nittler is a staff scientist in the Department of Terrestrial Magnetism (DTM) at the Carnegie Institution of Washington, in Washington D.C. He received a B.A. in Physics from Cornell University in 1991 and a Ph.D. in Physics from Washington University in St Louis in 1996. Prior to joining the DTM staff in 2001, he was a postdoctoral fellow there and also worked for two years at NASA's Goddard Spaceflight Center in Greenbelt, MD. His research focuses on the microanalytical study of extraterrestrial materials and planetary geochemical remote sensing by spacecraft missions.

Reserve your Ride and/or Restaurant Seat

Jay Miller

If you are planning to come to the dinner before the meeting, please tell Benson J. Simon, telephone: 301-776-6721, e-mail: st88@ioip.com, so that we can make

reservations for the right number of people. Please contact Elizabeth Warner 703-587-0181 (cell), if you need a ride from the metro to dinner or to the meeting at the

observatory. (Please try to let her know in advance by email at warnerem@astro.umd.edu or calling at 301-405-6555 so that she will know who to expect.)

NCA Events This Month

The Public is Welcome!

NCA Home Page: <http://capitalastronomers.org>

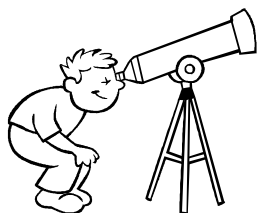
Fridays, February 6, 13, 20, and 27, 6:30 to 9:30 P.M. NCA mirror- and telescope-making classes at the Chevy Chase Community Center, at the northeast corner of the intersection of McKinley Street and Connecticut Avenue, N.W. Contact instructor Guy Brandenburg at 202-635-1860 or email him at gbrandenburg@yahoo.com. For more information, see the article on the next page.

To join the National Capital Astronomers, use the membership application on Page 7.

Saturday, February 7 at 7:00 P.M.
NCA meeting at the University of Maryland Astronomy Observatory on

Metzerott Road in College Park, MD. Dr. Larry Nittler will present the featured talk "Nanogram Probes of Galactic, Stellar, and Interstellar Processes"

See maps below and on Page 5 and directions on Page 6



Saturday, February 7, preceding the meeting, dinner with the speaker and NCA members will at 5:00 p.m. at the Garden Restaurant at the

UMD University College Inn and Conference Center, See maps below and on Page 5 and directions on Page 6

Meetings in February and March will be at the University of Maryland Observatory at 7:00 - 9:00 P.M. March 6: Al Holm (STScI): "The AAVSO"

Science Fair Judges Needed

Jay Miller

I just received a list of local science fairs with a request for volunteer judges. I'll get the exact locations later, but here are the dates:

- March 13 - Fairfax County and Northern Virginia (Arlington)
- March 20- D.C. at Howard Univ.
- March 27- Montgomery County (Gaithersburg) and P.G. County (Largo)

Contact me if you can judge a science fair: 301-530-7942 or jhmiller@os2bbs.com. Thanks.

Jay

NCA Celestron Has a New Home

Mike McNeal

Hi,
My name is Mike McNeal. Bob Bolster transferred NCA's Celestron-14" telescope to me on Jan. 10. I am currently trying to get it set up in my backyard. It's a little cold out there at the moment. There is a little work that needs to be done on the electronics for the scope and I hope to have it working in a week or so. It is probably not the best viewing from my backyard, but it is in town.

I live at 5410 Grove St, Chevy Chase, MD 20815, a 6 minute walk from the Friendship Heights Metro Station. Give me a call if you want to view here on a Friday or Saturday night. This is about 4 blocks from the Chevy Chase Community Center where the mirror-making classes take place. (Maybe we can coordinate with them to come over after class?) Please call me if you'd like to help set up the scope.

Thanks
Mike McNeal

Phone: 301-907-9449



See written directions on Page 6.

Observing after the January NCA Meeting *Benson J. Simon*



Following the January NCA lecture, members were invited to observe through two of the University of Maryland telescopes. Observatory Director Elizabeth Warner is standing to the right of the telescope talking with NCA members. Members also toured the main scope, which will be available for observing after the February NCA meeting.

Photograph by Benson J. Simon

*The deadline for the
March Star Dust is
February 15.
Please send your
material to Elliott Fein by
that date to
ensure inclusion.*

*Send submissions to
Elliott Fein at
elliott.fein@erols.com.*

*Text must be in ASCII,
MS Word (97 or earlier),
or WordPerfect.*

*All articles submitted may
be edited to fit the space
available.*

The NCA Mirror-Making Group Continues *Guy Brandenburg*

Several people have just moved from grinding to polishing their mirrors, which is a major step: Carrie Pledger, George Kanigopolis, and Pete Wobus. Michael McChesnes is very close to finishing his mirror after a number of back-tracks needed to reduce typical figuring problems.

A few weeks ago, in order to work on Wade Duvall's 16-inch thin plate-glass mirror, some of us modified the mirror-grinding machine that was donated to us a few months ago. Wade (a 9th-grader) and I cut two 20-inch plywood disks on the bandsaw, and he screwed them together and made a hole to fit the center rod into. David Gordon and others removed the main drive belt so that they could figure out exactly where the mirror should go, by clamping pencils and rulers to the edge of the machine and rotating the turntable by hand.

David also found a suitable piece of iron to place in the middle of the tool to use as a pivot. I heated up some blocking pitch and poured it on the back of the tool, and placed the piece of iron on the pitch and let it all cool. Unfortunately, it didn't stick at all, so I ground the rust off of the iron, then heated it up very hot on our hotplate, and placed the metal pivot device back onto the dome of the now cold pitch on the back of the dental-stone tool. The hot metal attach-

ment not only melted the black blocking pitch in a hurry, but also heated everything up so much that after a couple of minutes I heard a loud POP as the dental stone tool developed a large crack down one side. I was afraid I had ruined everything, but we discovered that after things cooled down, the crack seemed to close - at least for the most part. Probably the blocking pitch is helping it to stay together. We may be able to get some mileage out of this after all, although it will probably have to be replaced when polishing.

We re-assembled everything, put on some abrasive and water, and let it grind away. David and others tried various adjustments on the linkages that control the back-and-forth motion of the arm, and it seemed to work, more or less. When it passes over the exact center of the mirror, the tool tends to rotate just like the mirror, and we suspect it might end up not doing much work at that position. We thought about placing various weights on the arm, or just holding the tool still when that happens. If anybody has some extra 5-, 10-, or 15-pound barbell weights, they would be perfect.

We only ran the machine for about 40 to 45 minutes after all the preparatory work was done. We also discovered that some of the hexagonal tiles had some paraffin

wax on their surfaces, which needed to be removed. The electrical circuits on the grinding machine need to be improved for the sake of both convenience and safety.

David Gordon also brought in a 9-inch circular flat that he had made by hand, and showed the fringes that it exhibited using the monochromatic light box I had made and a reference flat. His flat is amazingly good! He made it so that Wade and his classmates at St. John's can have a diagonal flat for their incredible flying balloon-glider-telescope cum aerial photography project.

As usual, if you are interested in making your own mirror for a telescope, please come and visit one of our classes. They are every Friday evening from 6:30 to 9:30 P.M. in the woodshop in the basement of the Chevy Chase Community Center at the northeast corner of Connecticut Avenue and McKinley Street in Washington, D.C. There is parking in the back of the building. All of the materials and instruction for a 6-inch mirror cost \$70. The cost for an 8-inch mirror is \$110. You can start or finish your project at any time.

For more information, email the class leader, GuyBrandenburg, at gfbrendenburg@yahoo.com or else call him at 202-262-4274.

Mid-Atlantic Occultations and Expeditions

by David Dunham

Asteroidal Occultations

Date	Day	EST	Star	Mag	Asteroid	dmag	dur.	Ap. s	in.	Location
Feb 7	Sat	4:53	SA0 160289	7.6	2000 AG55	12.0	1	2	2	Virginia
Feb 9	Mon	4:30	SA0 159594	9.2	Shcherban'	8.3	1	3	3	Georgia
Feb 21	Sat	21:24	TYC00340800	11.0	Apollonia	3.4	2	8	8	New York
Feb 23	Mon	23:17	TYC02800709	11.1	Hersilia	1.9	7	7	7	New England
Feb 27	Fri	20:53	TYC28991178	11.9	Ianthe	1.6	8	8	8	s. Georgia

Grazing Occultations

DATE	Day	EST	Star	Mag	% alt	CA	Location
Feb 13	Fri	1:39	ZC 2171	6.5	53- 8	15S	Carmel Church, VA
Feb 25	Wed	19:04	SA0 93066	8.0	29+ 49	10S	Gettysburg & York, PA
Feb 27	Fri	23:04	SA0 76600	8.1	49+ 26	3N	Palmyra & W. Chester, PA

Total Lunar Occultations

DATE	Day	EST	Ph	Star	Mag	% alt	CA	Sp.	Notes
Feb 4	Wed	23:06	D	lambda Cnc	5.9	98+	74	26S B9	ZC 1251; 6" to term.
Feb 9	Mon	1:38	R	ZC 1709	6.6	91-	53	17N K0	
Feb 11	Wed	6:03	R	ZC 1946	7.4	73-	37	22N G0	
Feb 12	Thu	2:00	R	lambda Vir	4.5	64-	23	23N A1	ZC 2053
Feb 12	Thu	2:49	R	X37784	7.4	63-	29	76N F8	
Feb 13	Fri	1:50	R	ZC 2171	6.5	53-	10	37S K4	Graze in Virginia
Feb 13	Fri	2:49	R	SA0 159116	7.2	52-	18	43N A5	
Feb 14	Sat	4:02	R	ZC 2329	7.9	40-	17	81S K0	
Feb 14	Sat	7:38	R	19 Scorpii	4.6	39-	26	45N A4	Sun alt. +6 deg.
Feb 15	Sun	3:42	R	ZC 2478	7.6	29-	4	75N G8	Azimuth 129 deg.
Feb 15	Sun	3:47	R	36 Oph	5.1	29-	4	87N K2	5" dbl., 1st ZC 2479
Feb 15	Sun	3:47	R	36 Oph	5.2	29-	4	88N K2	dbl., ZC 2480 6s later
Feb 15	Sun	4:07	R	ZC 2482	6.3	29-	7	63N K5	Azimuth 133 deg.
Feb 15	Sun	4:47	R	ZC 2488	6.9	29-	12	57N B9	dbl., mag. 9.1 12s before
Feb 23	Mon	20:39	D	SA0 109743	7.7	14+	9	51S F8	Azimuth 270 deg.
Feb 26	Thu	22:50	D	ZC 0520	7.5	40+	18	41S F5	Azimuth 282 deg.
Feb 27	Fri	19:50	D	SA0 076555	7.2	49+	62	5N G5	
Feb 28	Sat	0:57	D	ZC 0676	7.2	50+	6	69S B8	Azimuth 296 deg.
Feb 29	Sun	22:01	D	SA0 078041	7.8	68+	58	40N G5	
Mar 1	Mon	19:07	D	SA0 078957	7.5	76+	69	78S G8	
Mar 1	Mon	19:51	D	ZC 1067	7.1	76+	76	30N K2	Close double
Mar 2	Tue	1:02	D	SA0 079122	7.6	77+	34	86S K2	Close double
Mar 2	Tue	1:56	D	ZC 1089	6.7	78+	24	84S K0	
Mar 2	Tue	2:31	D	SA0 079164	7.4	78+	18	39N G8	Close double
Mar 2	Tue	23:05	D	omega Cnc	5.9	85+	65	39N G8	ZC 1206
Mar 2	Tue	23:32	D	ZC 1211	6.3	85+	60	83S A1	
Mar 4	Thu	0:45	D	ZC 1334	7.0	92+	54	46S G5	
Mar 4	Thu	20:31	D	ZC 1435	6.5	96+	52	39N K0	
Mar 4	Thu	21:25	D	ZC 1436	6.8	96+	61	48N K0	
Mar 5	Fri	18:25	D	46 Leonis	5.4	99+	17	55N M2	Az 85; terminator 14"

David Dunham, e-mail dunham@erols.com, Web <http://iota.jhuapl.edu>
Phone home 301-474-4722; office 240-228-5609; car 301-526-5590

Support the IDA

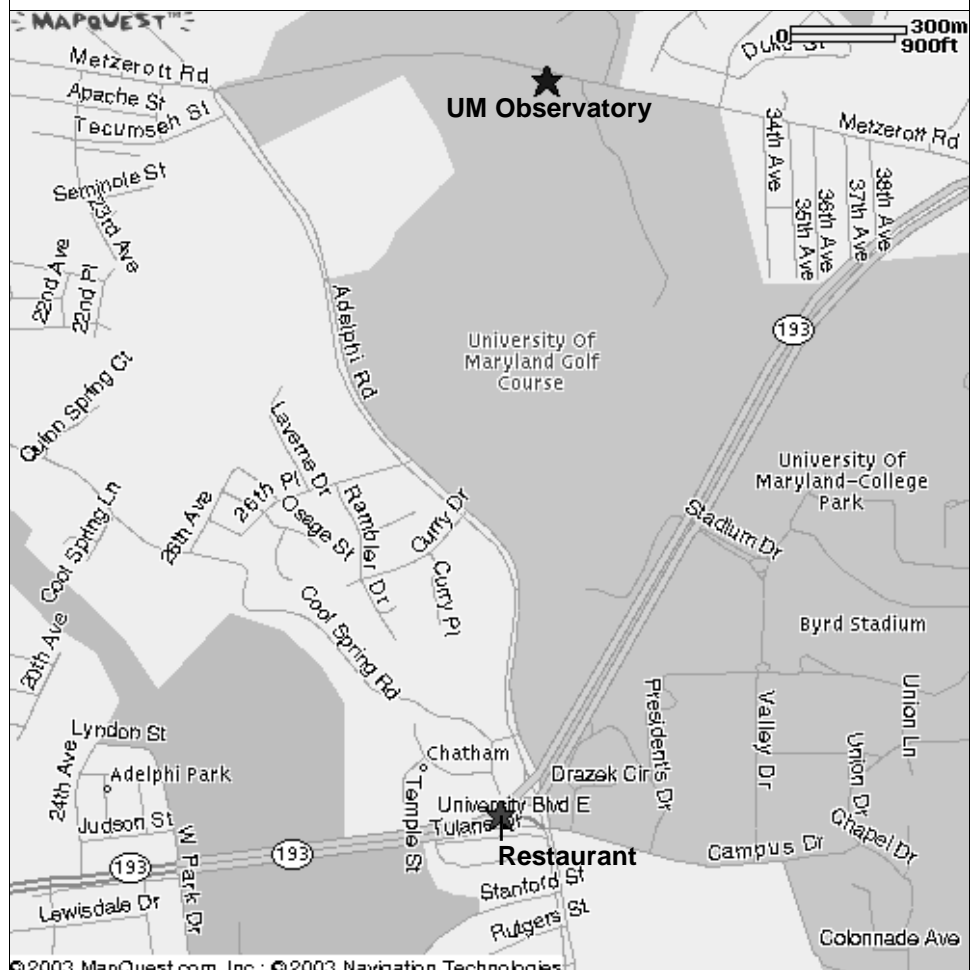
Join the International
Dark-Sky Association

3225 N. First Avenue
Tucson, AZ 85719-
2103

www.darksky.org

Getting to the NCA Monthly Meeting

See next page for written directions.



Star Dust is Now Available Electronically

Any member wishing to receive *Star Dust*, the newsletter of the National Capital Astronomers, via e-mail as a PDF file attachment, instead of hardcopy via U.S. Mail, should contact Nancy Grace Roman, the NCA Secretary, at nancy.roman6@verizon.net or 301-656-6092 (home).

Meteor Showers

Full Moon: February 16

Major Activity: None

Minor Activity			Daylight Activity		
Radiant	Duration	Maximum	Radiant	Duration	Maximum
Aurigids	January 31-February 23	Feb. 5-10			
Alpha Centaurids (ACE)	February 2-25	Feb. 8/9	Capricornids-Sagittariids	January 13-February 28	January 30-February 3
Beta Centaurids	February 2-25	Feb. 8/9			
Delta Leonids (DLE)	February 5-March 19	Feb. 22/23	Chi Capricornids	January 29-February 28	February 13/14
Sigma Leonids	February 9-March 13	Feb. 25/26			

Source: <http://comets.amsmeteors.org/meteors>

Getting to the NCA Monthly Meeting

The Meeting

You may join us for dinner with the speaker and NCA members at 5:00 p.m. at the restaurant, attend the NCA Meeting at 7 P.M., or do both.

The Directions

Directions and maps compliments of Elizabeth Warner. The maps are on the proceeding page and Page 2.

Directions to the Restaurant

Garden Restaurant at the Inn & Conference Center (ICC), lobby level.

University of Maryland University. College 3501 University Blvd. East Adelphi, Maryland 20783

The directions below guide folks into a garage at UMUC/ICC.

From Washington, D.C.

Take New Hampshire Avenue (Route 650) north toward College Park. Turn right onto Route 193 East (University Boulevard). At the sixth traffic light*, cross Adelphi Road and turn right into the parking garage (not free) or continue around building(s) to Lot 1 (free).

*Lot 1 can also be accessed by crossing Adelphi to Campus Drive and turning left into the lot.

From Montgomery County and Points West

Take the Capital Beltway (I-495) toward College Park. Exit at New Hampshire Avenue/Takoma Park (MD Route 650 South). At the second light, turn left onto Adelphi Road. At the third light**, make a left onto Route 193 East (University Boulevard) and turn right into the parking garage (not free) or continue around building(s) to Lot 1 (free).

**Lot 1 can also be accessed by turning left onto Campus Drive and turning left into the lot.

From Alexandria, VA and Points South of Washington

Take I-295 north toward Baltimore. I-295 becomes the Baltimore-Washington Pkwy. (MD Route 295). Exit onto Riverdale Road west toward Hyattsville/ New Carrollton.

Riverdale Road becomes East-West Highway (MD Route 410). Turn right onto Adelphi Road. At fourth light***, turn right onto University Boulevard (MD Route 193) and take the first right into the parking garage (not free) or continue around buildings to Lot 1 (free).

***Lot 1 can also be accessed by turning right onto Campus Drive and turning left into the lot.

From Baltimore

Take I-95 south to the Capital Beltway (I-495) toward College Park. Take Exit 25 (US Route 1 South). Proceed about 1 mile south on US Route 1. Turn right onto MD Route 193 West (University Boulevard). At the third traffic light (Adelphi Road), make a U-turn and turn right into the parking garage.

From Annapolis and Points East

Take Route 50 to the Capital Beltway (I-495) toward College Park. Take Exit 25 (U.S. Route 1 South). Proceed approximately 1 mile south on U.S. Route 1. Turn right onto Route 193 West (University Boulevard). At the third traffic light (Adelphi Road), make a U-turn and turn right into the parking garage.

Directions to the Meeting Place

The meeting will be held at the University of Maryland Astronomy Observatory located on Metzerott Rd.

From the Beltway

The Observatory is located on Metzerott Road between Adelphi Road and University Blvd. in College Park. From the beltway (I-495) take the College Park/Route 1 exit. You will head south on Route 1 for about a mile until you see a sign for 193 West. You want to get on 193 West. The first light you come to will be Metzerott Road. Take a right onto Metzerott Road. Once on Metzerott, you will go through a stop light and the observatory is about a quarter of a mile on the left side of the road after the stop light. Our entrance is slightly hidden, but you should slow down to turn left as soon as you pass a large "System Administration" sign. We are almost directly across the street from the UM System Administration (3300 Metzerott Rd.).

Parking

Our lot has only twenty parking spaces. There is an overflow lot across the street at the University System of Maryland Administration Building. Parking is free in both lots. Please follow the directions of our volunteers in the parking lot and they will assist you. Please be extremely careful crossing the street.

From the Garden Restaurant

Exit onto University Blvd. (Rt. 193, heading east). At the second light, turn left onto Metzerott. Once on Metzerott, you will go through a stop light and the observatory is about a quarter of a mile on the left side of the road after the stop light. Our entrance is slightly hidden, but you should slow down to turn left as soon as you pass a large "System Administration" sign. We are almost directly across the street from the UM System Administration (3300 Metzerott Rd.).

Alternatively, if you exit onto Adelphi heading north, you'll turn right onto Metzerott and go about a mile and turn right into the observatory lot. UM System Admin. will be after the observatory from this direction.

Basically, University Blvd, Adelphi and Metzerott form a triangle. The restaurant is located at the intersection of Adelphi and University Blvd. while the Observatory is on Metzerott Road.

We've attached one graphic (see Page 5). The star near the bottom is the location of the restaurant and the star at the top of the map is the Observatory

What We Will Do after the Meeting

Members are invited to stay and observe (weather permitting) through the Observatory telescopes. Be sure to dress warmly!!!

Public Transportation

Please contact Elizabeth Warner 703-587-0181 (cell), if you need a ride from the metro to dinner or to the meeting at the observatory. (Please try to let her know in advance by email at warnerem@astro.umd.edu or calling at 301-405-6555 so that she know who to expect.)

Star Dust is published ten times yearly, September through June, by the National Capital Astronomers, Inc. (NCA).
Editor: Elliott Fein, Co-editor: Adele Fein, Editorial Advisor: Nancy Byrd. Consultant: Jeffrey Norman
Star Dust © 2001. *Star Dust* may be reproduced with credit to National Capital Astronomers, Inc.

National Capital Astronomers, Inc.

<http://capitalastronomers.org>

Jay H. Miller, NCA President, jhmiller@os2bbs.com, 301-530-7942 (home).
Jeff Guerber, NCA Vice-president, jeff.guerber@gsfc.nasa.gov, 703-281-4980 (home).
Dr. Nancy Grace Roman, NCA Secretary, nancy.roman6@verizon.net, 301-656-6092 (home).
Jeffrey Norman, NCA Treasurer, jeffrey.norman@att.net, 5410 Connecticut Avenue, NW, Apt. #717,
Washington, DC 20015-2837, 202-966-0739
Trustees: Gladys Fuller, Gary Joaquin, Dr. Andrew W. Seacord, II, Dr. Wayne H. Warren,
NCA Webmaster, Dr. Harold Williams, hwilliam@mc.cc.md.us, 301-650-1463 (planetarium), 301-565-3709 (home).
Elliott Fein, NCA *Star Dust* Editor, elliott.fein@erols.com, 301-762-6261 (home), 5 Carter Ct. Rockville, MD 20852-1005.
NCA Web Page: <http://capitalastronomers.org/>.
Appointed Officers and Committee Heads: Exploring the Sky - Joseph C. Morris; Meeting Facilities - Jay H. Miller;
Observing - Michael McNeal; Telescope Making - Guy Brandenburg; *Star Dust* Editor - Elliott Fein

SERVING SCIENCE & SOCIETY SINCE 1937

NCA is a nonprofit, membership-supported, volunteer-run, public-service corporation dedicated to advancing astronomy, space technology, 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 in a number of capacities. Many members serve as teachers, clinicians, and science fair judges. Some members observe total or graze occultations of stars occulted by the Moon or asteroids. Most of these NCA members are also members of the International Occultation Timing Association (IOTA).

Publications received by members include the monthly newsletter of NCA, *Star Dust*, and an

optional discount subscription to *Sky & Telescope* magazine.

Consumer Clinics: Some members serve as clinicians and provide advice for the selection, use, and care of binoculars and telescopes and their accessories. One such clinic is the semiannual event held at the Smithsonian Institution National Air and Space Museum.

Fighting Light Pollution: NCA is concerned about light pollution and is interested in the technology for reducing or eliminating it. To that purpose, NCA is an Organization Member of the International Dark Sky Association (IDA). Some NCA members are also individual members of IDA.

Classes: Some NCA members are available for educational programs for schools and other organizations. The instruction settings include star parties, classroom instruction, and schoolteacher training programs that provide techniques for teaching astronomy. NCA sponsors a telescope-making class, which is described in the *Star Dust* "Calendar of Monthly Events."

Tours: On several occasions, NCA has sponsored tours of astronomical interest, mainly to observatories (such as the National Radio Astronomy Observatory) and to the solar eclipses of 1998 and 1999.

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, and others. Contact: Joe Morris, joemorris@erols.com or (703) 620-0996.

Members-Only Viewing Programs periodically, at a dark-sky site.

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

Fine Quality Telescope, 14-inch aperture, see "Calendar of Monthly Events."

Yes! I'd like to join the NATIONAL CAPITAL ASTRONOMERS

Date:

Name(s): _____

Address: _____

Telephone: _____ E-mail: _____

Other family members who should receive a membership card: _____

_____ I prefer to receive *Star Dust* by e-mail

Dues:

___ \$60 With *Star Dust* and a discount subscription to *Sky & Telescope*.

___ \$27 With *Star Dust* ONLY.

___ \$45 Junior membership with *Star Dust* and a discount subscription to *Sky & Telescope*.

___ \$15 Junior membership with *Star Dust* ONLY.

___ \$100 Contributing member (with *Sky & Telescope*) (\$40 tax-deductible).

___ \$150 Sustaining member (with *Sky & Telescope*) (\$90 tax-deductible).

Junior members only: Date of Birth: _____ Only members under the age of 18 may join as juniors.

Tax deductible contribution: _____ Thank You.

Please send this form, with your check payable to National Capital Astronomers, Inc., to:

Mr. Jeffrey Norman, NCA Treasurer, 5410 Connecticut Ave NW #717, Washington DC 20015-2837



National Capital Astronomers, Inc.

If undeliverable, return to
NCA c/o Nancy Roman
4620 N. Park Ave., #306W
Chevy Chase, MD 20815-4551

**FIRST CLASS
DATED MATERIAL**

*Remember!
February
and March
Meetings
are at the
U. of Md.
Observatory*

Inside this issue:

The President's Corner	1
February Speaker and His Talk	1
NCA Events This Month	2
Science Fair Judges Needed	2
NCA Celestron Has a New Home	2
Mid-Atlantic Occultations and Expeditions	4
February Meteor Showers	5
Map to Dinner and Meeting Place	5
Directions to Dinner and Meeting Place	6
About NCA	7
Membership Application	7