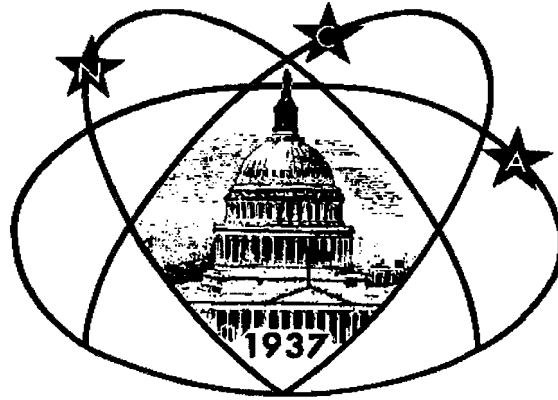


MAY 01 2004
picked up at meeting
S * ✓

Star



Dust

National Capital Astronomers, Inc.

<http://capitalastronomers.org>

Volume 62, Number 9

May 2004

ISSN 0898-7548

The President's Letter

Our intent in moving to the UMD observatory was to have a location where we could again meet at our traditional time of 7:30 P.M. To bring back some of the membership we have lost, a letter penned by Benson Simon is also going to these former members in hopes of enticing them to re-join.

To widen participation, I would like to see the reinstatement of the survey we have used in the past to ascertain membership interests. Also, as a start, I would like one or more volunteers to assist Victor Slabinski in publicizing our meetings. Presently, he is sending notices to some of the local newspapers. If you have any ideas or pub-

licity experience, let me know. If we have several people involved, no one will have more than an hour or so per month.

Lastly, Dr. Fred Espenak spoke to us at the April meeting about the upcoming 8 June transit of Venus. We will be able to see

(Continued on page 2)

Congratulations to NCA Science Fair Winners!

We are pleased to announce the winners in the 2004 science fair judging.

They are:

Fairfax County Regional Science and Engineering Fair

Nikita V. Kohli, *Effect of Time of Day on Gamma Ray Trajectories*

Prince George's Regional Science Fair

Madeline N. Kirk, Eleanor Roosevelt High School, *The Prediction of Long-Term Trends in Position and Orbital Elements for the IMAGE Spacecraft*

Montgomery Area Science Fair

Joshua Stern, Montgomery Blair High School, *Water Indicators in Sirenum Terra and Around the Argyre Impact Basin, Mars*

Allison Arai, Tacoma Park Middle School, *How A Refractor Telescope Works*

Washington, D.C. Mathematics, Science and Technology Fair

Andrew Munteanu, Benjamin Banneker High School, *A Novel Algorithm for Computing the Minimum Distance Between Two Elliptical Orbits*

Judges: Bob Bolster, Wayne Warren and Andrew Seacord.

These science fair winners will be honored at the May NCA meeting. They will bring their projects to the meeting, where each will give a three to five-minute summary of his or her project. Each student will be presented with a certificate. The award also includes a one-year membership in NCA with a one-year subscription to *Sky and Telescope*.

May Speaker: Dr. Kim Weaver, "Beyond the Dragon's Lair: Black Holes Disturbing the Neighborhood"

Submitted by Jeff Guerber

Dr. Kim Weaver will present the featured talk "Beyond the Dragon's Lair: Black Holes Disturbing the Neighborhood" at the May 1 meeting of the National Capital Astronomers.

The meeting will be held at 7:30 P.M. in the University of Maryland Astronomy Observatory on Metzert Road in College Park, MD.

Abstract

Einstein didn't believe they existed, but in the last 40 years, black holes have

progressed from mathematical curiosity to reality. Astronomers are now finding them everywhere. More than that, black holes shape their surroundings by producing explosive events that wreak havoc on their host galaxies and beyond. Dr. Weaver will review the current evidence for black holes and show why they may be fundamentally important in the birth and evolution of galaxies, including our own Milky Way. She will also discuss NASA's future plans for learning even more about these remarkable denizens of our Universe.

Bio

Dr. Kimberly Weaver is an astrophysicist at NASA's Goddard Space Flight Center in Greenbelt, MD, and is also an adjunct assistant professor in the Department of Physics and Astronomy at the Johns Hopkins University in Baltimore, MD. She graduated from West Virginia University in 1987 and received her Ph.D. in Astronomy from the University of Maryland at College Park, MD in 1993. She specializes in studies of black holes, active galactic nuclei and starburst galaxies.

NCA Events This Month

The Public is Welcome!

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

Fridays, May 7, 14, 21, and 28, 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 gfbrendenburg@yahoo.com. For more information, see the article on Page 5.

Sunday, May 2, and Saturdays, May 8, 15, 22, & 29, at 8:45 P.M. Observing with NCA's 14-inch telescope in Chevy Chase, MD. For more information, see article this page.

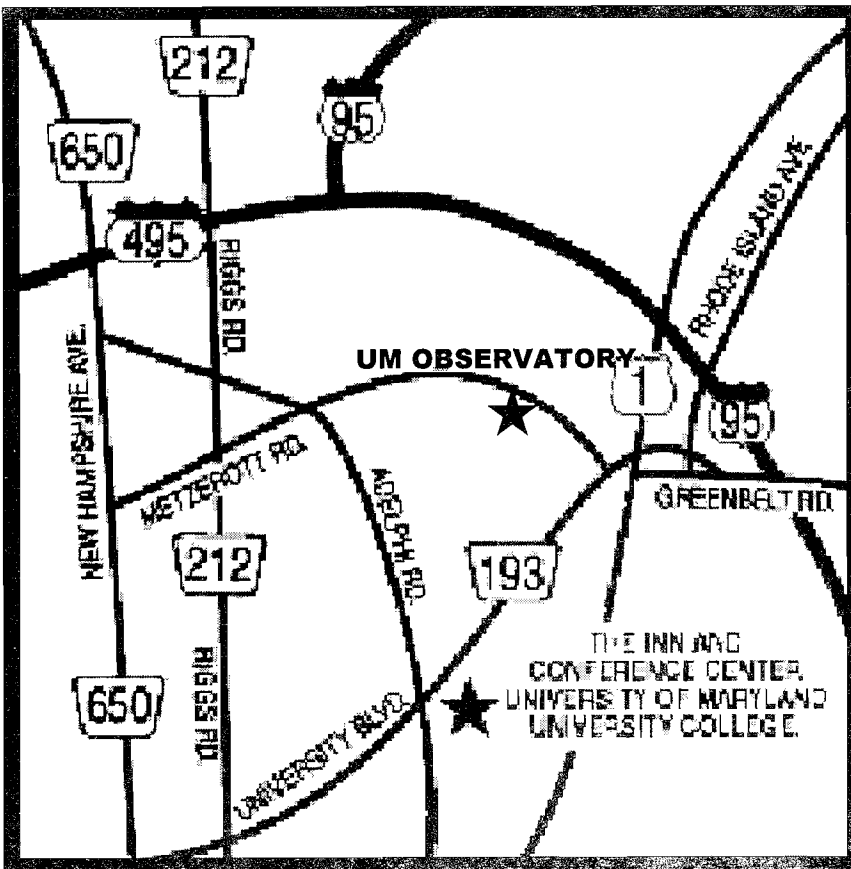
To join the National Capital Astronomers, use the membership application on Page 7.

Saturday, May 1 at 7:30 P.M. NCA meeting at the University of Maryland Astronomy Observatory on Metzert Road in College Park, MD.

Dr. Kim Weaver will present the featured talk "Beyond the Dragon's Lair: Black Holes Disturbing the Neighborhood."

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

Saturday, May 1, preceding the meeting, dinner with the speaker and NCA members will be at 5:30 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.



See written directions on Page 8.

The President's Letter

(Continued from page 1)

only about the last 1-1.5 hours at sunrise. While we are at the mercy of the weather, if you know of a location in the general area with a good view of the eastern horizon, let us know. Some members will have their cars packed and ready to travel if the weather here is bad. Harold Williams will be on the top of one of the Montgomery College/Takoma Park buildings. Does anyone know of the availability of Sugarloaf Mountain? It seems to me that it would have a clear eastern horizon. At the Sunday morning transit of Mercury in the early 70's we went to a field near Comus Inn in upper Montgomery County.

John Wetmore can no longer store our audio-visual equipment so we need someone to store it at their house. It's a box about 2'x2'x3' and I think it has wheels.

Also, I want to thank Bob Bolster, Wayne Warren and Andrew Seacord for their assistance in judging at the area science fairs.

Jay Miller, President NCA

Your Restaurant Seat

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.

Observing with the NCA C-14

Mike McNeal

All at 8:45 p.m.

Prime Objects

Sunday, May 2

Jupiter, M95

Saturday, May 8

Jupiter, M44

Saturday, May 15

M64, Comet NEAT?

Saturday, May 22

M51, Comet NEAT?

Saturday, May 29

M3, M101

In Mike McNeal's backyard, 5410 Grove St, Chevy Chase, MD, (Friendship Heights Metro). Call Mike at 301.907.9449 or email menealmi@verizon.net to let him know you are coming.

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).

Support the IDA

Join the International
Dark-Sky Association
3225 N. First Avenue
Tucson, AZ 85719-2103

www.darksky.org

*The deadline for the
June Star Dust is
May 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 ear-
lier), or WordPerfect.*

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

Come See the Stars!

by Joe Morris

Exploring the Sky 2004-2005 Schedule

Date	Time	Notes
5/15	9:00 P.M.	
6/19	9:00 P.M.	Summer Solstice 6/21
7/24	9:00 P.M.	Moon at first quarter
8/7	8:30 P.M.	Perseid meteor shower 7/17-8/24
9/18	8:00 P.M.	Equinox 9/22
10/16	7:30 P.M.	Orionid meteor shower 10/2-11/7
11/13	7:00 P.M.	Leonid meteor shower 11/14-11/21

Exploring the Sky is an informal program jointly sponsored by National Capital Astronomers and the National Park Service that for nearly fifty years has offered monthly opportunities for anyone in the Washington area to see the stars and planets through telescopes from a location within the District of Columbia.

Sessions are held in Rock Creek Park once each month on a Saturday night from April through November, starting shortly after sunset. We meet in the field just south of the intersection of Military and

Glover Roads NW, near the Nature Center. A parking lot is located immediately next to the field.

Beginners (including children) and experienced stargazers are all welcome—and it's free!

Questions? Call the Nature Center at (202) 895-6070, or check the Internet sites:
<http://www.nps.gov/rocr/planetarium>
or
<http://www.capitalastronomers.org>

Meteor Showers May Radiants

Full Moon: May 4

Major Activity

Radiant	Duration	Maximum
Eta Aquarids (ETA)	April 21 - May 12	May 5 at 16:25 UT

Minor Activity

Radiant	Duration	Maximum
Epsilon Aquilids	May 4-27	May 17/18
May Librids	May 1-9	May 6/7
Eta Lyrids	May 3-12	May 8-10
Northern May Ophiuchids	April 8-June 16	May 18/19
Southern May Ophiuchids	April 21-June 4	May 13-18

Daylight Activity

Radiant	Duration	Maximum
Epsilon Arietids	April 25 - May 27	May 9/10
May Arietids	May 4 - June 6	May 16/17
Omicron Cetids	May 7 - June 9	May 14-25
May Piscids	May 4 - 27	May 12/13

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

Mid-Atlantic Occultations and Expeditions

by David Dunham

Asteroidal Occultations

Date	Day	EDT	Star	Mag	Asteroid	dmag	s	in.	Location
May 1	Sat	23:16	TYC14041681	11.5	Eurydike	3.6	5	8	N.J., e. Penn.
May 4	Tue	2:33	TYC50771016	11.0	Nora	2.2	12	7	w. S.Carolina
May 5	Wed	4:29	TYC62871516	9.7	Nanon	4.1	19	4	n.e.PA,s.NY,CT
May 7	Fri	5:40	2UC21394051	11.6	Thisbe	0.5	213	8	e. N. Carolina
May 12	Wed	1:04	TYC19591346	9.5	Filipoff	7.5	1	3	NYC area; NJ?
May 15	Sat	22:00	TYC24520577	10.5	Ianthe	3.3	3	6	Carolinas
May 16	Sun	0:42	2UC26911662	12.0	Patientia	0.5	17	8	VA, s. MD
May 17	Mon	22:31	2UC32232481	11.9	Armenia	2.2	10	8	Quebec?
May 18	Tue	4:58	TYC78890781	8.6	Kuopio	6.2	2	2	Carolinas?-low
May 21	Fri	3:13	SAO 142384	9.3	Storeria	5.7	2	3	New Jersey
May 23	Sun	1:22	SAO 158711	9.4	Happelia	3.1	8	3	n.Pennsylvania
May 26	Wed	2:42	2UC22066049	11.0	Brunsia	2.8	4	7	Maine?
May 31	Mon	0:48	TYC68100460	11.5	Koronis	2.1	3	8	N. Carolina
Jun 5	Sat	22:53	TYC02900392	11.6	Princetonia	2.3	21	8	Maryland & VA
Jun 12	Sat	1:23	SAO 185158	10.0	Suleika	3.1	4	5	Carolinas

Grazing Occultations

DATE	Day	EDT	Star	Mag	% alt	CA	Location
May 21	Fri	22:16	SAO 78041	7.8	7+	7 12N	Frostburg, MD; Haymarket, VA
May 22	Sat	21:27	ZC 1067	7.1	12+	25 13N	Buchanon & Bracey, VA
May 25	Tue	21:10	X14522	9.6	37+	48 14N	Sun-9;Aberdeen,MD;NwFreedomPA

Total Lunar Occultations

DATE	Day	EDT	Ph	Star	Mag	% alt	CA	Sp.	Notes
May 2	Sun	0:04	D	SAO 138774	7.7	90+	47	66S G5	maybe close double
May 2	Sun	0:35	D	ZC 1785	7.8	90+	44	57N A5	
May 4	Tue	1:43	D	EV Vir	6.8	99+	35	55S M3	ZC 2034; terminator 7"
May 5	Wed	3:32	R	iota Lib	4.5	100-	24	74S A	ZC 2172; term.5"; double
May 5	Wed	3:46	R	ZC 2175	6.1	100-	23	53N A2	term. 4"; maybe double
May 5	Wed	22:59	R	ZC 2305	5.9	97-	12	80S B8	
May 6	Thu	0:07	R	ZC 2314	5.9	97-	20	59N B9	maybe close double
May 6	Thu	3:09	R	ZC 2328	6.4	97-	26	77S B6	
May 6	Thu	3:58	R	ZC 2336	6.7	97-	23	18N B9	terminator 6" away
May 7	Fri	0:20	R	ZC 2476	6.6	92-	12	75N F2	Azimuth 140 deg.
May 10	Mon	3:45	R	ZC 3010	6.4	62-	15	30S A9	
May 11	Tue	5:27	R	BQ Cap	8.0	51-	24	51N F3	SAO 190504; Sun -6 deg.
May 22	Sat	20:41	D	SAO 78957	7.5	12+	32	69S G8	Sun alt. -5 deg.
May 22	Sat	22:21	D	SAO 79022	8.0	13+	14	75N K0	Azimuth 293 deg.
May 29	Sat	0:10	D	SAO 119212	7.5	69+	30	64S K0	
May 29	Sat	2:45	D	10 Vir	6.0	70+	2	17N K3	ZC 1749; Azimuth 271
May 30	Sun	0:02	D	ZC 1850	6.5	78+	34	45S K0	
May 30	Sun	1:08	D	SAO 139039	7.3	79+	24	48S G5	
Jun 3	Thu	22:18	R	X Sgr	4.5	98-	5	89S F7	ZC 2554; Az132; double?
Jun 4	Fri	2:31	R	ZC 2583	5.8	98-	23	56N A7	maybe close double
Jun 6	Sun	1:04	R	SAO 188955	7.2	86-	11	89S F5	Azimuth 137 deg.
Jun 7	Mon	2:41	R	ZC 3102	7.0	76-	19	50N A0	Maybe close double

David Dunham, e-mail dunham@erols.com. My Web site, <http://iota.jhuapl.edu> has data for many other late May events - crescent Moon in Milky Way. Phone home 301-474-4722; office 240-228-5609; car 301-526-5590

News from the Telescope-Making Group

Guy Brandenburg

This past month, Kemp Brinson finished parabolizing an outstanding 6" mirror. Foucault knife-edge calculations with a 4-zone Couder mask revealed it to have at most about 1/23rd wavelength error on the wavefront. Nagesh Kavindeh also finished his 8-inch mirror, which measured to have at most about 1/5 or 1/6 wavelength error on the wavefront. In both cases, the Ronchi lines were very smooth. We aluminized both of them. Kemp already has his telescope built - it's an equatorial mount out of the book on basic telescope construction by Richard Berry. Several other people are in the process of parabolizing and figuring their mirrors, which can at times be rather lengthy and involve trying repeatedly to return to a sphere.

Nagesh and Guy Brandenburg are now

thinking about making a Lurie-Houghton telescope, which requires two corrector plates, not just one, but is supposed to have much better optical results than either a Maksutov or any of the Cassegrain variants, such as a SCT.

Over his spring break, Guy Brandenburg worked for several long days (about 12 hours each!) showing an entrepreneur from Ohio the basics of grinding, polishing, and figuring parabolic mirrors. The businessman hopes to use the knowledge he gleaned to set up telescope-manufacturing operations in an American factory, rather than having all that sort of work go overseas. He had some interesting stories on what optical work was like in Chinese factories.

Our donated mirror-making machine has undergone some more modifications again. We hope that these will improve

its operations. There are two mirror projects (a 16" and a 16.5") that could use its services.

As usual, if you want to make the optics for a telescope, this workshop is the place to visit. We are open every Friday evening from 6:30 to 9:30 P.M., and you don't need an appointment to drop by and visit if you are merely curious about what exactly it is that we do. We have on hand all the materials for all sizes of ordinary parabolic telescope mirrors from 4.25" (10.8 cm) up to 12.5" (31.8 cm) in diameter. We can also aluminize mirrors as well – and that includes re-aluminizing old mirrors whose current coatings are coming off.

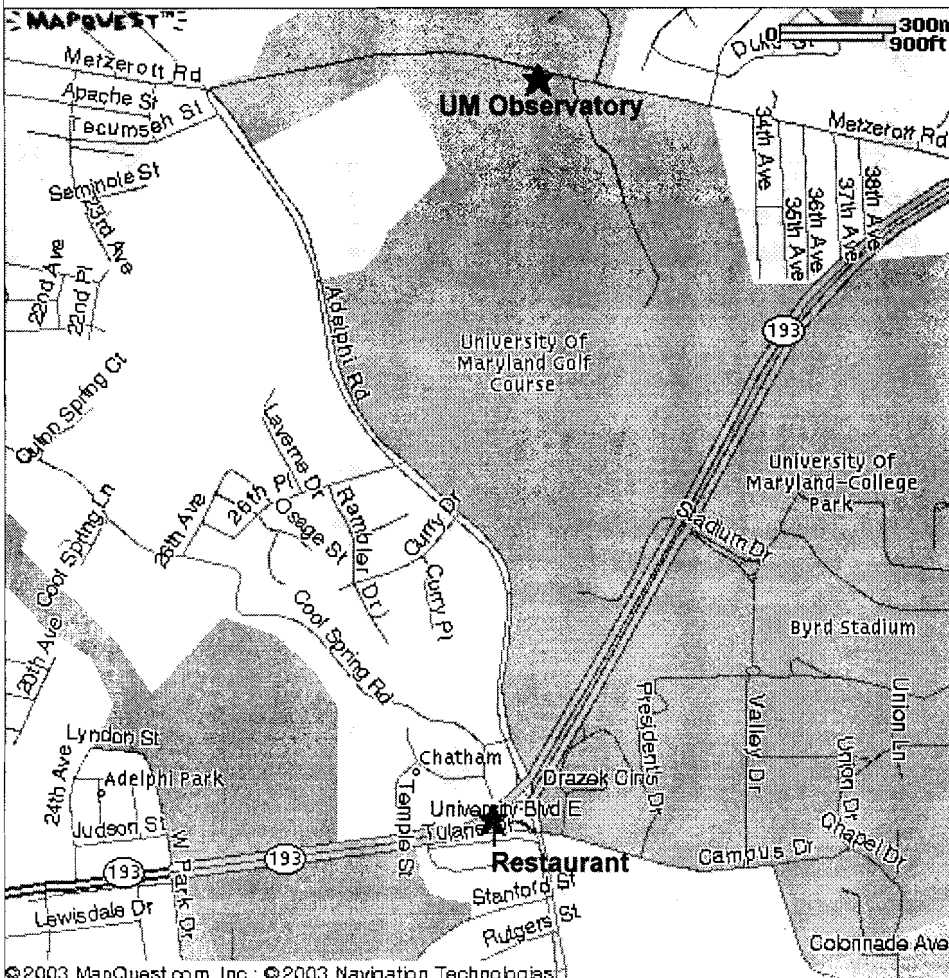
A 4.25" kit (which includes a Pyrex mirror blank, a tool to grind it against, all the abrasives needed, use of a pitch lap, optical testing, and hands-on instruction – but not the telescope itself, or its other components, or aluminization) is currently about \$45; a 6" kit is about \$70; and an 8" kit is about \$110. This is considerably less money than you would pay through Willmann-Bell or Newport Glass for nearly identical kits. We can charge such low prices because we re-use the tools and the pitch laps, and because those two companies have to mail you way too much abrasive, just in case you run out. Plus, we are non-profit. However, we could use a few new tools, so we might raise our prices a bit in the near future. If you have any metal-working or wood-working tools that you don't need, or have lumber to donate, we could certainly put them to use. (Good plywood, socket wrenches, box wrenches, drills, paintbrushes, springs, and saws come to mind.)

Classes are in the basement of the Chevy Chase Community Center (CCCC) at McKinley Street and Connecticut Avenue, NW. Unless there is a play or a forum of some sort happening at the CCCC, there is usually plenty of parking in the lot behind the building.

For more information, contact instructor Guy Brandenburg at gbrandenburg@yahoo.com or 202-262-5274.

Getting to the NCA Monthly Meeting

See next page for written directions.



Getting to the NCA Monthly Meeting

The Meeting

Join us for dinner with the speaker and NCA members at 5:30 p.m., attend the NCA Meeting at 7:30 p.m., or do both.

Directions and maps compliments of Elizabeth Warner. The maps are on the preceding 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 you into a garage at UMUC/ICC.

From Washington, D.C.

Take New Hampshire Ave. (Route 650) north toward College Park. Turn right onto Route 193 East (University Blvd.). At the sixth traffic light*, cross Adelphi Rd. and turn right into the parking garage (not free) or continue around buildings 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 Ave./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 Blvd.) and turn right into the parking garage (not free) or continue around buildings 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 build-

ings 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 Blvd.). At the third traffic light (Adelphi Rd.), 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 Rd. between Adelphi Rd. 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 Rd. Take a right onto Metzerott Rd. 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 Admin. (3300 Metzerott Rd.).

Parking

The MD Observatory 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 stoplight and the observatory is about a quarter of a mile on the left side of the road after the stoplight. 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 Admin. (3300 Metzerott Rd.).

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

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.

On the graphic on Pg. 5, the star near the bottom is the location of the restaurant and the star at the top is the Observatory

Reserve your Ride

Please contact Jay Miller, 301-530-7942, if you need a ride from the metro to dinner or to the meeting at the observatory. (Please try to let him know in advance by email at jhmiller@os2bbs.com)

Observing after the Meeting

Elizabeth Warner

A bright gibbous moon high in the SE will light our path from the lecture hall to the Observatory. Venus and Mars will be getting closer and will be about 5 degrees apart. Venus should be a spectacular crescent through the telescopes.

But they'll be low in the west. Saturn is near by. Depending on when we finish with the meeting, we'll try for Venus and Saturn. Jupiter is also prominent and high in the sky. We'll definitely get some views (if it's clear!) of Jupiter that evening along with all four Galilean moons. With the moon so bright, we'll have a hard time seeing faint fuzzies. And May is galaxy month, not always the best month for trying to observe from the suburbs since it's mostly galaxies up there but we'll try for M96/95 (right close to Jupiter!), M65/66, M13, M51.

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
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<http://capitalastronomers.org>

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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, mcnealmi@verizon.net; 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).

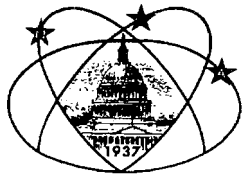
___ \$150 Sustaining member (with *Sky & Telescope*) (\$90 tax-deductible).

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



NCA Needs YOU

The Nominating Committee is actively seeking candidates for President and Vice-President of the NCA.

The primary responsibility of the President is to preside at the monthly meetings.

The primary responsibility of the Vice-President is to arrange for speakers and to introduce them at the monthly meetings.

If you have suggestions, please contact Jack Gaffey at 301-949-7667 / JDGaffeyjr@aol.com or Michael McNeal 301-907-9449 / mcnealni@bellatlantic.net. as soon as possible.

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