NOVAC

THE NEWSLETTER OF THE NORTHERN VIRGINIA ASTRONOMY CLUB

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President's Message

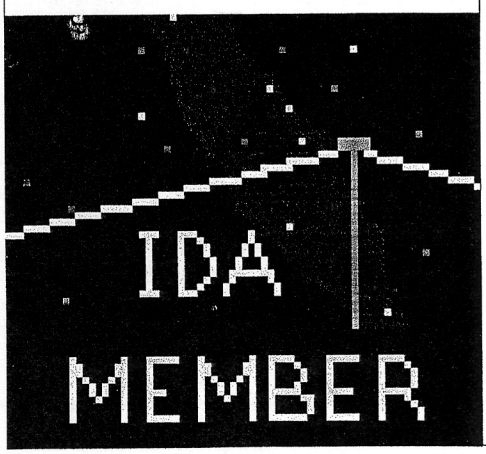
Tilly Smith

In this, my final President's Message, I would like to express my sincere thanks to all of NOVAC for their support over the past two years. I can truthfully say that it has been a very interesting and active two years, but most of all it has been FUN. NOVAC is a great group of people to work with, and I am constantly amazed by the number and scope of activities we support. I know it is a burden sometimes, so I want you to know it is appreciated, not just by the Board, but by the public as well.

We have addressed a lot of key issues over the past two years, Newsletter mailings, General Meeting location, new observing site, strategic plan, NOVA Star Party just to name a few. These issues and decisions could not have been addressed without an outstanding group of Board members, including Bill Burton and Nicole Mastej from my first year. I would also like to thank a couple of others who were always there to provide me support - Brent Archinal, Brenda Jones, Bob L'Hommedieu and Bob Bunge.

There are a lot of things left to do over the next few years, but with the newly elected Board, NOVAC is "in good hands"

. // tilly



Reminder

The Annual Meeting of the Northern Virginia Astronomy Club will be held on Wednesday, January 5, 2000, 7:30 P.M. E.S.T. at the Arlington Planetarium, 1426 North Quincy Street, Arlington, VA.

NOVAC Programs at George Mason University

Pete Johnson

All meetings start at 6:00 P.M.

January 9

Greg Redferns - Moon Observations

February 13

Peter Chen – Telescopes on the Moon, A Project Update

What's Up?

Al Schumann

Was it a storm? A shower? A sprinkle? How about a slow leak? It all depended on where you were when Earth passed through the stream of debris left behind by Comet Tempel-Tuttle. From all reports, the Leonids put on a grand show in the Middle East and Europe. It was a lot less dramatic back here. Our conditions were perfect. The Moon set fairly early, and the skies were clear. However, the Leonids were few and far between. It was the drip, drip, drip of a slow leak. I did not intend to make any kind of a scientific count. I just wanted to sit on the deck and enjoy the spectacle. I figure I saw about 20 Leonids from 11 p.m. to 3:30 a.m.. I did duck into the house now and again to warm up and go to the loo, so I'm sure I missed a few. I did

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Inside This Issue

Savage with Ben

Ralph Marple

I've wondered, as I'm sure have others, how to introduce one's children to astronomy and the wonders of the night sky. Certainly, Marc DeFrancis continually comes up with imaginative activities to this end. I hope I have his enthusiasm as my boys get a little older.

I have two boys. The oldest, Ben, is nearly eight, while Chris is five and a half. My cousin helped with Ben by registering a star for him when he was born. I promised Ben we'd see it through the telescope one day, and the thought of having his own star piqued his interest.

Along the way I showed him pictures in *Astronomy* and *Sky and Telescope*. The Horsehead Nebulae intrigued him, but he was disappointed when I told him we'd probably never be able to see it. Then he got it into his head that he wanted to see Pluto. I told him we needed something larger than my four-inch telescope and that it would take some work. I knew I was doing something right when he made a mural of the solar system that included other interesting objects such as a supernova.

But what about the hands-on stuff? Both boys and I have peered at the Moon, Jupiter, and Saturn from our front lawn, but their interest doesn't last very long.

This past spring I decided to take Ben with me to Crockett Park to help with a public program. We saw a crescent Venus, M42, M81, and M82, and he was a bit fascinated seeing the galaxies. I tried to persuade him to camp out in the back of our minivan, but that didn't work very well. Then I talked to Jonathan Bien whose son accompanies him and camps out on a lounge chair. I decided to try the same method and planned a trip to Savage.

The drive to Savage takes about an hour, the first 50 minutes of which are on major highways, but as many of you know, the last three miles are on more scenic and rustic roads. Ben and I started a bit late and stopped at K-Mart to purchase a lounge chair, so we didn't get to the Route 601 turnoff until 9:45 p.m., which is well past his bedtime. As we drove along this two-lane road Ben reported that he was starting to fall asleep. I turned up the CD player, which startled him. "Not so loud, Dad!", he yelped.

I offered him a cookie instead, which was more to his liking. Then I slowed and made the turn onto the unpaved road that leads up to the site. That woke him up! He had never been on roads that looked like that. He wasn't concerned, but he was suddenly very awake!

After several minutes of very slow and careful driving, we came to the gate. I opened the car door. The night sounds were incredibly loud!

Ben was starting to wonder why we were doing what we were doing. He wasn't sure if he wanted to stay in the car without me, or go with me to the gate. He decided to stay in the car. After a moment of fiddling with the gate lock, I realized that I didn't have the correct combination. I returned to the car for the combination and poked my head inside. Ben was watching me anxiously through the windshield. I muttered that I'd forgotten the combination.

I didn't know it then, but now he was really worried. I returned to the gate and opened it.

Screeecchhh!

I got back into the van, drove through the gate, got back out and closed the gate. The loud "Screeecchhh!" again! And then a loud clang as it swung into place.

Ben really likes a Nintendo game called Zelda. When the young hero of this game enters a room with a major bad guy in it, the door closes behind him and metal bars drop in place with a loud clang. Just like the sound of the

(Continued on page 7)

What's Up?, continued

(Continued from page 1)

see one anemic fireball that left a trail for a couple of seconds. The rest of the meteors were pretty much run of the mill. Next day, I called the astronomy department of the Virginia Living Museum to see how they fared. A group of observers had set up shop on the Yorktown battlefield. They counted 28 over a 4½ hour period. We were in the wrong place at the right time.

Anyhow, the big event for me was Mercury's transit of the Sun on November 15. It was only the 14th time this century such an incident was to occur. The weather was perfect here on the peninsula, and I staked out a spot along the James River so as to have an unobstructed western horizon. I took the Astroscan with its solar projection screen. I set up early enough to take a good look at the Sun before Mercury began its act. When I centered the Sun on the screen and focused the telescope, the sight was breathtaking. There was an enormous sunspot grouping in the western hemisphere. The area was probably larger than all the solar system planets combined. In addition to that spellbinding sight, were numerous other highly visible dark spots scattered around the Sun's disc. All this activity was in marked contrast to the four puny sunspots we saw during the February 1998 partial solar eclipse. The Sun has moved a long way towards maximum.

I was getting a little edgy as 4:15 p.m. approached. I still wasn't sure I would even see Mercury in the Astroscan. Not to worry. At 4:17 I saw Mercury's shadow emerge right where it was supposed to be. As close as I could figure, the second contact was around 4:30. Mind you, all of my times are iffy at best. The atmosphere was really boiling all around the circumference of the Sun. It looked as if there was a fast-moving whitewater river racing clockwise around the Sun. Mercury never did get very far from the "shore", and at times it looked like a tiny black ball bouncing along the waves. The transit, after all, was scarcely more than a grazing event. Third contact took place between 4:45 and 4:50. It all depended on how you wanted to follow the bouncing ball. Mercury was still visible as the Sun began to set. I got to thinking that the C-8 with the Thousand Oaks filter would have eliminated a lot of the atmospheric distortion, but there were some advantages to using the projection screen. Throughout the event I could look at gulls, herons, and egrets flying across the surface of the Sun. How cool is that. Also, as the Sun began to set, I could see the trees come into view on the other side of the river. Mercury disappeared off the edge of the solar disc when the Sun was a bit more than halfway below the horizon. Just a few minutes later the Sun was gone. What a kick. And how impressive that little Astroscan really is. For most of the transit I used an eyepiece that gave 46X, and the projected image almost filled the screen. It was really a nice view. If this Mercury transit did nothing else, it has regenerated my interest in observing the Sun. I was so taken by those enormous sunspots that I want to keep an eye on them as we go through the maximum. I can whip the Astroscan out of the garage in minutes and keep track of those big spots. Check it out ... carefully.

What's coming up? A total lunar eclipse will occur on January 20 - 21. Time wise, we are well placed for the event. Totality begins at 11:05 p.m. E.S.T., and it doesn't end until 12:22 a.m. That will give us a whopping 1 hour and 18 minutes of totality. It should be fantastic. Of course, the weather in mid-January can be bloody awful, but I plan on being ready for anything. Multiple telescopes, camera, neighbors, soup, hot coffee, the works. Keep your fingers crossed for decent skies and moderate temperatures.

In the event someone missed it, I want to note that David Levy wrote a very nice profile on Brent Archinal in the November issue of Sky & Telescope. I urge you to read it if you haven't already done so. I never really understood what Brent did at the U.S. Naval Observatory. Now I know the what, but the HOW, ahhhh, that's magic. Way to go, Brent.

Finally, since this newsletter edition comes out in January, Lynn and I, belatedly, hope all of you had a very enjoyable holiday season. From Williamsburg, we wish you all the best of health and good fortune in the coming year.

Bob Speaks for All of Us When He Says —

We should all thank Tilly Smith for his excellent service as president. Tilly supported a multitude of worthwhile and exciting projects that contributed directly to the success of NOVAC. He put in many long hours to make ours a successful astronomy club.

Thanks to Tilly's support, we are beginning to make a significant impact on light pollution reduction. Also, we appreciate the astronomical outreach, the numerous and well-run meetings, and so much more. It's no wonder that NOVAC's membership is growing so strong.

Thank you Tilly, and thanks to all the officers of NOVAC!

In addition, I would like to sincerely thank ALL of you for your continued membership and support of the Astronomical League. Your membership helps me and other League officers in our campaign to fight light pollution and to promote the science of astronomy. Your support is deeply appreciated and much needed!

Bob Gent

Volunteers Needed for Mickey Gordon Star Party on April 1

Loudoun County parks and recreation would like to give a star party at Mickey Gordon on April 1, 2000. Our help has again been requested. They have begun to prepare the advertisements for the program and according to those who attended the clouded-out event the organizers did a very nice job. Please try to keep April 1 open to help out with this. If the weather is nice, we will possibly have several hundred guests. Organization of volunteers should begin in early March.

Yours,

Jonathan Bein

Lost and Found

There are two items that were left behind at the NOVA Star Party by their owners and they have not come forward to claim their property. Let's see if anyone knows who these two items belong to.

The first item is a pair of binoculars. The characteristics are as follows:

1. Bushnell's 7x50
2. They are sportsview that has an instant focus feature to focus them.
3. The binocular is old with a dirty appearance.
4. The color of the binocular is black.

The second item is a red laser beam pointer. The characteristics are as follows:

1. It has a shape of a thick pencil with the ending that has no eraser no lead point just has a small glass circle as one end.
2. The red laser pointer is black that gives a red laser beam when it is used.
3. The serial number of the item is 931568. and has no name brand indication.

Let's return items back to their proper owners. In January the items are going to be placed in the NOVAC library so that the owners can come forward to claim their property

Pedro Martinez

Mickey Gordon Coordinates

John Deriso

I haven't seen it posted in the newsletter like it is for the other sites. I frequent Mickey Gordon, and I had a Magellan GPS 2000 receiver out there a couple weekends ago:

38° 58.58' N

77° 42.31' W

The reading was taken near the soccer net on the left side of the road, just before the road bends right to go to the ball field. I let the receiver stabilize a half hour before reading.

[Ed.: The coordinates will appear in the newsletter starting with this issue.]

Jeff's Observing Report

Jeff Stetekluh

Jeff's astronomical calculations are made for the Northern Virginia area. See credits at the end of this article.

The Sun	rises	sets
Jan 9	7:27 AM	5:04 PM
Jan 9	7:27 AM	5:04 PM
Feb 13	7:03 AM	5:43 PM
Mar 12	6:24 AM	6:13 PM

The Moon

Jan 6	New Moon
Jan 14	First Quarter
Jan 20	Full Moon
Jan 28	Last Quarter
Feb 5	New Moon
Feb 12	First Quarter
Feb 19	Full Moon
Feb 26	Last Quarter
Mar 6	New Moon

Events

Jan 4 Quadrantid meteor shower peaks (from AM)
Jan 4 Quadrantids ZHR=120, active Jan 01 to Jan 05 (from IMO)
Jan 15 Mercury at Superior Conjunction (from Espenak)
Jan 20 Total Lunar Eclipse; mag=1.328 (from Espenak)
Jan 24 Neptune-Sun Conjunction (from Espenak)
Feb 5 Partial Solar Eclipse; mag=0.575 (from Espenak)
Feb 6 Uranus-Sun Conjunction (from Espenak)
Feb 14 Mercury at Greatest Elong: 18.1?E (from Espenak)
Feb 22 Venus passes 0.5 degrees north of Neptune (morning) (from AM)
Mar 1 Mercury at Inferior Conjunction (from Espenak)
Mar 3 Venus passes 0.07 degrees south of Uranus (morning) (from AM)
Mar 14 Mercury passes 2 degrees north of Venus (morning) (from AM)
Mar 20 Vernal Equinox (from Espenak)

The Planets

Jan 9	rises	transits	sets
Mercury	7:21 AM	11:59 AM	4:38 PM
Venus	4:41 AM	9:35 AM	2:29 PM
Mars	9:53 AM	3:20 PM	8:48 PM
Jupiter	12:00 PM	6:30 PM	1:05 AM
Saturn	12:44 PM	7:27 PM	2:15 AM

	mag	diam	notes
Mercury			
Venus			
Mars		35*	
Jupiter		54*	
Saturn		49*	

Feb 13	rises	transits	sets
Mercury	7:48 AM	1:30 PM	7:13 PM
Venus	5:30 AM	10:21 AM	3:13 PM
Mars	8:39 AM	2:41 PM	8:45 PM
Jupiter	9:52 AM	4:28 PM	11:04 PM
Saturn	10:28 AM	5:13 PM	12:02 AM

	mag	diam	notes
Mercury	-0.6	6.9"	WSW, 16*
Venus	-4.0	12.0"	
Mars	1.2	4.5"	WSW, 33*
Jupiter	-2.3	37.1"	SW, 57*
Saturn	2.1	17.7"	SSW, 63*

Mar 12	rises	transits	sets
Mercury	5:29 AM	11:03 AM	4:36 PM
Venus	5:31 AM	10:52 AM	4:13 PM
Mars	7:38 AM	2:09 PM	8:39 PM
Jupiter	8:15 AM	2:58 PM	9:40 PM
Saturn	8:44 AM	3:32 PM	10:20 PM

	mag	diam	notes for Mar 12
Mercury	1.4	9.9"	
Venus	-3.9	10.9"	
Mars	1.4	4.2"	WSW, 28*
Jupiter	-2.1	34.8"	WSW, 39*
Saturn	2.2	17.0"	WSW, 47*

(* degrees elevation at sunset taking into account atmospheric refraction)
(mag = apparent magnitude, diam = apparent equatorial angular diameter)

Jupiter Eclipse Events on Principal Club Observing Nights

Dec 12 11:33 PM Io Eclipse End (S -73 J 255 37)
Jan 29 6:31 PM Io Eclipse End (S -13 J 221 57)
Feb 5 8:27 PM Io Eclipse End (S -34 J 260 35)

References for Jeff Stetekluh's Observing Report

Sun and moon rise and set times, moon phases and Galilean moon events are calculated using my software that is based on algorithms from the book "Astronomical Algorithms" by Jean Meeus, 1991. This includes Bretagnon's and Francou's VSOP87 (the 1987 version of Variations Seculaires des Orbites Planetaires) planetary theory, the Chapront ELP-2000/82 (ELP means Ephemerides Lunaires Parisiennes, although this work is not an ephemeris (a list of calculated positions) but rather an analytic theory (a series of periodic terms)) lunar theory and Lieske's theory E2 and E2x3 of Jupiter's satellites. The Preliminary NOVAC Observing Reports are created using my software; some of the algorithms listed above and the following as noted.
from Espenak: Fred Espenak's Twelve Year Planetary Ephemeris: 1995 - 2006; (NASA Reference Publication 1349, available at http://www-lep.gsfc.nasa.gov/code693/TYPE/TYPE.html); from S&T: Sky & Telescope's Evening and Morning Highlights for Skygazers, (available at http://www.skypub.com); from IMO: the International Meteor Organization calendar (http://www.imo.net/calendar); from AM: Astronomy Magazine's Highlights of the Night Sky (http://www.kalmbach.com/astro/astronomy.html)

New Members - October 13 through December 22

Kevin Brown

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C. Scot & Elizabeth B. Atkins
14099 Eagle Chase Circle
Chantilly, VA 20151-2242
atkinscs@spectrum-internet.com; atkinseb@spectrum-internet.com

William A. Baughman
10121 Spring Lake Terrace
Fairfax, VA 22030-2037
wabhe@erols.com

Jeffrey D. Beish
14522 Bisbee Ct.
Dale City, VA 22193
cecropia@gte.net

Paul Berlejung
6631 Wakefield Dr., #216
Alexandria, VA 22307-6844
blandfrd@erols.com

Emery R. & Katrina Bowles
900 N. Randolph St., #309
Arlington, VA 22203
heroes@flashcom.net

Brad Brown
20812 Old Hickory Ln.
Leesburg, VA 20175-6632
bktlbrown@erols.com

Timothy J. Bultman
P.O. Box 1971
Manassas, VA 20108-1971
tjb3@ix.netcom.com

Vic Burton
8900 Hill Pl.
Manassas, VA 20110-8822
raymond.v.burton@lmco.com

Ian Charters
96 South Wise St.
Arlington, VA 22204
ian99@writeme.com

John S. Crowe
14654 Balsam St.
Woodbridge, VA 22191
tophie@erols.com

Pradip Kumar Das
7601 Wildwood Ct., B3
Lorton, VA 22079

Cheryl Dybas
2923 Lockport Dr., #101
Falls Church, VA 22042
cdybas@nsf.gov

John N. & Nancy B. Entzminger
3203 Dominy Ct.
Oakton, VA 22124-2008
jentzminger@mcfairfax.rr.com

J. D. & J. M. Fritsvold
14352 Jacob Ln.
Centreville, VA 20120-3305
j.fritsvold@att.net; jdfrits@juno.com

Thomas E. & Rebecca Gallahue
1108 Gatewood Dr.
Alexandria, VA 22307-2027
gallahue@novalaw.com

Keith L. Green
8463 Summer Breeze Ln.
Springfield, VA 22153
kgreen@ida.org

Rob & Tami Greene
11415 Great Meadow Dr.
Reston, VA 20191
greener@osg.saic.com

Ralph H. Gruen
18318 Possum Point Rd.
Dumfries, VA 22026
RHGruen@aol.com

David E. Harvey
4917 Grafton St.
Alexandria, VA 22312

John G. Hoecker
7004 Ashbury Dr.
Springfield, VA 22152-3222
johnhoecker@homemail.com

Stephen Kalnoske
5736 Bradley Blvd.
Bethesda, MD 20814
midshift@prodigy.net

Adam L. & Jennifer L. M. Kilburne
6481 McCoy Rd.
Centreville, VA 20121
thequeenofeverything@email.com

Robert M. Kwartin
9908 Chase Hill Ct.
Vienna, VA 22182
rkwartin@aol.com

Peter Lawrence
206 W. Beech Rd.
Sterling, VA 20164

Christopher J. Leet, M.D.
12004 Robin Dr.
Catharpin, VA 20143
leet@erols.com

Gwen M. Linde
6500 Powatan Knoll Ct.
Alexandria, VA 22312
gwenlinde@aol.com

Tom Littlejohn
500 N. Roosevelt Blvd., #519
Falls Church, VA 22044
tlit@loc.gov

David MacDonald
P.O. Box 1171
Purcellville, VA 20134
misterarmageddon@aol.com

Sintha Manoharan
1902 Holly Ridge Dr., #103
McLean, VA 22102
sintha47@hotmail.com

Alessandro Miglino
13505 Carmel Ln.
Chantilly, VA 20151-2738
alessandrom@prodigy.net

Charles S. Montroll
10500 Rockville Pike, #1008
Rockville, MD 20852
folksing@aol.com

Daniel M. & Patrick Muldoon
14008 Roanoke St.
Woodbridge, VA 22191-2419
dandoon@ix.netcom.com

Peter L. Norloff
10820 Miller Rd.
Oakton, VA 22124
pnorloff@toward.com

Michael D. Olson
18963 Airmont Rd.
Purcellville, VA 20132
nvkayaker@mindspring.com

Robert M. Pelton
445 Elmcroft Blvd., #8202
Rockville, MD 20850
peltonrm@aol.com

Joseph M. Pierson
15091 Jarrell Place
Woodbridge, VA 22193
jmpierson@home.com

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New Members - October 13 through December 22

Kevin Brown

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Clifford F. Pitts, Jr.
6729 Fern Ln.
Annandale, VA 22003
poppap@erols.com

Renee R. Pleasant
P.O. Box 54
Goldvein, VA 22720
kayakker@aol.com

Richard K. & Janice D. Preston
225 Church St., NE
Vienna, VA 22180
jdprestn@ix.netcom.com

Lawrence Rosen
523 N. Armistead St., # T-2
Alexandria, VA 22312-2891
largos21@erols.com

Kenneth L. Rummage
11765 North Shore Dr.
Reston, VA 20190-4509
krummage@erols.com

Monica I. Sanjur
208 Skyhill Rd. #1
Alexandria, VA 22314
reina@chickmail.com

Mark S. Slish
422 N. Market St.
Frederick, MD 21701
mksslish@pep200.gsfc.nasa.gov

Mark G. Smith
5303 Rich Ct.
Burke, VA 22015
aurms@jumo.com

Gary W. & Jeffrey Strong
42845 Chesterton St.
Ashburn, VA 20147
gstrong@loudoun.com

Lois Strunce
10303 Galpin Ct.
Great Falls, VA 22066

Charles K. Unger
7116 Richard Casey Ct.
Alexandria, VA 22307
chasop@aol.com

Mark & Carolyn Voytko
46643 Spectrum Way
Sterling, VA 20164
markvoytko@aol.com

Karl C. Walli
4400 South Four Mile Run Dr., Apt. 2
Arlington, VA 22204
perezch@erols.com

Bruce Wetzel & Sandra Occhipinti
7615 Cabin Rd.
Cabin John, MD 20818
bkw@tidalwave.net

Highlights of NOVAC Board Meetings and General Meetings

Kevin Brown

November 3 Board Meeting

19:30 Tilly Smith, President, called the board meeting to order.

Tilly Smith welcomed the newly appointed NOVAC Historian, Bill Pierce to the board.

Tilly Smith briefly recapped the successful NOVA Star Party that was held in October.

Tilly Smith spoke about the Leonid Meteor Shower public event to be held at Crockett Park and Mickey Gordon on November 17.

Pete Johnson spoke about the upcoming general meeting programs.

There was a discussion about having a members-only star party in the coming year.

Tilly Smith adjourned the meeting at 21:30.

Submitted by
Kevin Brown, Secretary

December 1 Board Meeting

19:30 Tilly Smith, President, called the board meeting to order.

Tilly Smith presented the slate of next year's officers and trustees to be voted on at the December 12 general membership meeting.

Pedro Martinez led a financial review for the past year and presented a draft budget for the coming year.

Jeff Cook has volunteered to re-design the NOVAC web page.

Pete Johnson reported on the upcoming general meeting programs.

Tilly Smith adjourned the meeting at 21:30.

Submitted by
Kevin Brown, Secretary

December 12 General Meeting

18:15 Tilly Smith, President, called the meeting to order. The prospective and new members introduced themselves.

Tilly Smith presided over the election of the NOVAC officers and trustees for the coming year. The slate was approved by a voice vote.

Pete Johnson presented the upcoming meeting programs.

Pete Johnson gave the sky tour. The featured constellation of the month was Perseus.

For the main program, NOVAC's Brent Archinal and Pete Johnson presented highlights of the star parties they had attended during 1999.

Tilly adjourned the meeting at 20:00.

There were approximately 50 in attendance, at least 5 of whom were not members.

Submitted by
Kevin Brown, Secretary

NCA January Meeting

Nancy Byrd

At the Saturday, January 8, 2000 meeting of National Capital Astronomers (NCA), Dr. Michael A'Hearn will talk to NCA and friends about the Deep Impact mission. The meeting will take place at the Lipsett Auditorium in the Clinical Center (Building 10) of the National Institutes of Health at 7:30 P.M. Dr. A'Hearn, is Professor of Astronomy at the University of Maryland and a recognized authority on comets. The following is a portion of the abstract of his talk: "The Deep Impact mission was recently chosen by NASA to be the 8th Discovery Program mission. This mission will be the first to explore the interior of a cometary nucleus. The mission will deliver a 500 kg. cylindrical impactor into the nucleus of Comet 9P/Tempel 1 at 10.2 km/s. For a baseline model of a cometary nucleus, this should excavate a crater of 28m depth and 120m diameter. A flyby spacecraft will view the impact and the resultant crater with optical cameras and near-infrared spectrometers."

[Information about the NCA is available at
http://capitalastronomers.org
or
NCA c/o Jeffrey B. Norman
5410 Connecticut Avenue, N.W. Apt. #717
Washington DC 20015-2837]

In Search of Planet Vulcan

John Avellone

In Search of Planet Vulcan
By Richard Baum and William Sheehan
Plenum Press, c. 1997
ISBN 0-306-45567-6

"To the people of the late 19th century, Vulcan was real. It was a planet" . . . so starts this excellent book. Indeed, my 1903 copy of *Lessons in Astronomy*, by C.A. Young, discusses "Intramercurian Planets", as does its contemporary, a 1902 copy of *Astronomy for Everybody*, by Simon Newcomb. These were two of the best American astronomers of the period. Vulcan was a serious subject to them, a conflict between theory and observation. Why?

Sheehan and Baum trace the interesting story from the first detection of a transit of Mercury (by Gassedni, in 1631) to the as yet undiscovered (and possibly nonexistent!) Planet X that may lurk in the far outer depths of the Solar System. Isaac Newton's Theory of Universal Gravitation, difficult to develop and difficult to apply to the three-body problem (sun/planet/planet), is a key element of the story. As, of course, are the French.

Newton, despite heroic efforts and demands for the most accurate observational data, was unable to make his theory describe the motion of the Moon. About 25 years after Newton's death, Alexis-Claude Clairaut attacked the problem with greater rigor (basically including more terms) and succeeded. Thus, thanks to French rigor, Newtonian gravitation seemed universal after all. So, why were there persistent discrepancies in the orbital positions of the newly discovered planet Uranus?

Brilliant and driven, U. J. J. Le Verrier forced from the Newtonian Laws a prediction for the position of a new planet influencing the orbit of Uranus. Acting immediately on this prediction, the young Berlin astronomer, J. G. Galle discovered the planet Neptune in 1846. As the observing assistant, d'Arrest, later recalled: "We went . . . to the dome, where there was a kind of desk, at which I placed myself with the (star) map, while Galle, looking through the (9") refractor, described the configurations of the stars he saw. I followed them on the map one by one, until he said: 'and there is a star of the 8th magnitude in such and such a position,' whereupon I immediately exclaimed: 'that star is not on the map!'"

Interesting side story - the English really should have made the discovery, but they managed to blow it! Prior to Le Verrier's prediction, an obscure young Cambridge mathematician, John Couch Adams, had independently worked out the position for the new planet. However, the director of the Cambridge Observatory, James Challis, was too overworked to carry out the search and told Adams to take his predictions to the Astronomer Royal, George Biddell Airy. After an almost comical series of missed encounters, Adams communicated his solution to Airy by message. Airy thought the work interesting but apparently had little confidence in the unknown Adams, until Le Verrier sent his prediction to Airy. The two independent predictions agreed, so Airy, now more confident, asked Challis to go look since he had the better telescope. Challis commenced a search program, but did not concurrently reduce the observational data, and thus detected but did not recognize Neptune.

After conjuring up Neptune out of theory, Le Verrier next turned to an annoying problem in the motion of Mercury - the perihelion of Mercury's orbit precessed more than theory allowed. If the effect of one new planet resolved the difficulties in the orbit of Uranus and affirmed the power of Newton's Laws, why not for Mercury too? So, there was a theoretical predisposition for an intramercurian planet -needing only observational confirmation. Such a hypothetical planet, Vulcan, might be observable during transit across the face of the Sun, or near the Sun during an eclipse. These are difficult observations, as many NOVAC members found out during the recent transit of Mercury!

The account given of the supposed sightings and attempted sightings of Vulcan presents a good picture of the state of observational astronomy in the mid to late 19th century. Mostly visual, with modest equipment. Much like amateur astronomy today. Sometimes something was observed ("averted imagination"?). Perhaps sun-grazer comets, or inner Solar System asteroids? Not a big planet of the required mass, not Vulcan. The problem with Mercury was really the breakdown of Newtonian mechanics under conditions where, as calculated by Einstein in 1915, the curvature of space-time due to proximity to a large mass starts to become significant. Good book!

Savage with Ben, continued

(Continued from page 2)
gate closing! And there's usually some puzzle to solve in order to escape. This is what he thought of when I couldn't remember the lock combination. This was turning into more of an adventure than he'd ever expected!

We finished the remaining short drive to the site and got out of the van. It was dark! The number of stars he could see astounded him. I pointed out the Milky Way. We walked over to the patio holding hands and introduced ourselves, then set up the lounge chair with a sleeping bag. He quickly settled in and gazed skyward, awed.

We only saw a few objects that night, but it was declared a success, if for no other reason then it gave my son time to spend doing something special with Dad. So far we've only made a second trip to Savage Farm. It was slightly more successful from an astronomy point of view, but it certainly wasn't the same adventure as the first time. Ben really liked the Owl or Alien Cluster (NGC457). He could see the figure and thought that a name with letters and numbers was perfect for an alien. Now we're looking forward to fall evenings when the earlier sunsets let us get to the site before bedtime. He's also excited because we have a larger telescope now. Maybe we'll spot Pluto soon!

Editor's Note

Elliott Fein

Please keep those letters and articles coming in!

The 10th of the month preceding publication is the cutoff. Material that I receive after the 10th will appear in a later newsletter. Copy (in ASCII, please), not previous published, for the March/April issue must be in my hands by February 10.

When I receive copy for an article, I start to format and edit it. If later, I receive an updated copy of the full article, I need to either figure out what changed and update the article in progress, or throw away the work I've done and start anew with the second copy. It would be much better if authors would tell me what changes they want made to the first, or if the changes are too complex for that, send me the second one and tell me the paragraph or whatever that has been changed.

NOVAC Notices and Benefits

Discounts on *Sky & Telescope* and *Astronomy.*

As a member of NOVAC, you can get astronomy magazine subscriptions at a discount. To obtain *Sky & Telescope* for $29.95 (instead of the standard $37.95), make your check out to "Sky Publishing Co." You can subscribe to *Astronomy Magazine* for $29.00 for one year. Make your check payable to "Kalmbach Publishing Company". In each case, note on the check: "new subscription" or "renewal." If a renewal, include your customer number. Send your check to Treasurer Pedro Martinez, Jr., 6319 Anneliese Dr., Falls Church VA 22044.

You can also order any publication directly from Sky Publishing at a 10% discount. Just mention the Club Discount Plan and that you are a member of NOVAC.

Discount on Books

NOVAC is participating in the discount book sales program offered by Kalmbach Publishing. They will sell our members any astronomy-related book in their catalog for 25% off the list price when we send in a group order. Kevin Brown is coordinating the sales. If you are interested, please see him at a meeting, or call him at home (703) 503-9523 to place an order. Make your check payable to "NOVAC" for the price of the book minus the discount, when you place the order. We anticipate doing this 3 - 4 times a year if demand warrants.

Club Telescopes and Binoculars

NOVAC makes available two six-inch (*f*/5) Newtonian reflectors for club members to check out, free of charge, and use for a limited time.

One telescope is a Celestron model SP-C6 on a Super Polaris German equatorial mount and wood tripod. The telescope comes with Orion Ultrascopic 10mm and Meade MA 25mm eyepieces with 1.25-inch barrel sizes.

The other telescope is a homemade six-inch reflector on a Dobsonian mount, and comes with a 25mm Kellner eyepiece. It is easy to transport to dark sky sites, and easy to use.

To borrow a telescope you will need to show your NOVAC observing pass and leave a $500 (for the Celestron) or $250.00 (for the Dobson) security deposit. To borrow the Celestron, contact Doug Mistler at (703) 437-0513; for the Dobson, contact Bob L'Hommedieu at (703) 978-0946. Note: Checks must be made payable to "NOVAC".

The club also has a pair of 10x50 binoculars available for members to borrow. They are kept in the club library in the back of the planetarium, and can be checked out after the regular monthly meeting, for a period of one month. Please show your observing pass.

NOVAC Library

NOVAC has established a library at the Arlington Planetarium for use by NOVAC members. Books may be checked out and returned only at the monthly meetings. Members may check out books for one month at a time. To borrow books, see NOVAC Librarians Pedro Martinez or Craig Tupper at the monthly meeting.

The NOVAC library seeks book donations to the library. If you have any astronomy books or materials you are thinking of discarding, please consider a donation to the NOVAC library.

A complete list of all library holdings is available upon request.

General Membership Meetings

General Membership Meetings are held at George Mason University (GMU), Fairfax Campus, off Ox Road (Rt. 123) on the second Sunday of every month. To reach GMU, take either Rt. 66 to Ox Rd. (South) or Braddock Rd. to Ox Rd. (North). Enter GMU at the main entrance off Ox Rd. (University Drive) and proceed to Parking Lots F, G, or H for free parking. Pay Parking is also available in the Parking Garage.

The meetings are in the Lecture Hall, next to Fenwick Library, on the North side of campus across Patriot Circle from the parking lots. Meetings start at 6:00 p.m.

Trustee Meetings are held on the first Wednesday of every month. Members who are not trustees, but are interested in attending, should contact a club officer or board member for further information.

NOVAC On-line

NOVAC maintains an e-mail mailing list. Messages sent to the list include reminders about scheduled observing sessions, announcements for unscheduled sessions, requests for quick observing session summaries, MIR observability predictions, etc. For more information, send a message to Bob L'Hommeddieu, bobcat@erols.com.

NOVAC Observing Site Rules

C. M. Crockett Park: We have permission from Crockett Park to unscrew the light bulbs on the light sensor fixture on the side of the gate guard building facing the observing field (south side).

Please leave the lights on the far side (north side) active so people can see the gate.

Weekends (Fri./Sat. only), NOVAC has unlimited access to the park for all weekends. The weekends will also be open to the public. The gate will be locked and will not be unlocked unless a NOVAC member enters the park; after which time the gate will stay open to approximately 10:00 p.m., when the Assistant Park Manager will ask the public to leave. The gate will then be locked, and should remain locked through the rest of the evening. NOVAC members may remain until they are finished with their observing sessions.

Weekdays (M-Th & Sun.), NOVAC members need to notify Assistant Park Manager Bonner Davis by e-mail (bdavis.cmcp@juno.com) or phone (540-788-4867) by 2:00 p.m. on the day they plan to observe. Assume approval unless the park notifies you in the negative. The weekdays are not open to the public. The gate should remain locked after you enter the park and throughout your observing session.

If any NOVAC member notices any member of the public violating park policy, he or she is to notify the Assistant Park Manager, who lives in the house adjacent to the end of the parking lot. During EDT, set up on the large field to the left. During EST, set up on the paved cul-de-sac 200 yds. past the gate. No loud radios, alcoholic beverages, or loose pets permitted. Please do not leave trash or debris behind. We are guests of the park; Park Management may revoke our observing privileges at any time due to carelessness of one person.

Savage Farm Site: Weekends (Friday/Saturday/Sunday): NOVAC has unlimited access to the park for all weekends.

Weekdays (Monday-Thursday.): For unscheduled observing sessions, contact the park manager, Paul McCray, at (703) 729-0596 or <wodtrail@erols.com> at least 24 hours in advance, and leave a message with your phone number or e-mail address. You may use the site for that session ***unless*** you hear from Mr. McCray stating otherwise.

No loud radios, alcoholic beverages, or loose pets. Pick up after yourself, and do not leave any trash behind. Make sure the gate is locked whenever you are in the park, and when you leave. We are guests of the NVRP and could have our access to this site revoked at any time if it is abused.

Mickey Gordon Regional Park:

There is a light pole on the road entering the park and it is a problem near the entrance of the park. It is better to set up further back in the park, or on a lower field behind the baseball diamond to escape the light.

The park is available without notice to all members seven days a week. As sports season begins, we will post the schedule when the lighted baseball facility will be in use.

Directions to NOVAC Observing Sites

C. M. Crockett Park:

From the Washington, D.C./Northern Virginia area, go west on I-66 to Exit 43A in Gainesville onto Rt. 29 South toward Warrenton. After 11.8 miles on Rt. 29, stay left (toward Culpeper), to bypass Warrenton (but still on Rt. 29 S.) Go about 1 mile to the Rt. 643 exit, Meetze Road. Turn left (East) on Rt. 643. Go 7.5 miles on Rt. 643. Watch for the C.M. Crockett Park sign on your right, and turn right into the Park Entrance Road.

Alternate directions to Crockett

From Washington, D.C./Northern Virginia, go West on I-66 to exit 44. (234 bypass around Manassas). Take 234 bypass to Rt. 28 West. Stay on Rt. 28W for about 13.7 miles, through Nokesville, Catlett and Calverton. Turn right at Rt. 643 (store on corner). Go 1 mile to Crockett Park entrance road on left.

Savage Site:

From D.C., I-66 West to Route 17 North. Stay on Route 17 North until it intersects with Route 50 at Ashby Gap. Turn left onto Route 50 and go 1.0 mile and turn right on Route 601. Continue on Route 601 (Blue Ridge Mountain Road) and go two miles past the main gate of the FEMA installation. Turn right at the park entrance after passing the gateposts with *Belle Allee* and *Ball Alley 1875* on your right.

The park entrance on Route 601 is marked by a small NOVAC sign. As you turn into the park, go straight ahead until you reach the gate, which is secured by both a keyed padlock and a combination lock. These locks are located to your left behind the gate as you face it from the outside. The combination is on your NOVAC observing pass. **Always** lock the gate behind you. The NOVAC lock **must be locked to the keyed lock, not to the chain,** to allow emergency access by the fire department. Drive to the observing area (the stone patio next to the house). There is very limited parking at the observing area itself, so please park in the parking area on the right as you face the patio.

Alternate Directions to Savage via the Dulles Toll Road

Take the Dulles Toll Road west to the Dulles Greenway. Take the Greenway west about 14-15 miles to where it ends at Rt. 7 near Leesburg. Stay in the left-hand lane to go to the exit for Rt. 7 West. Take Rt. 7 West for about 18 miles to Route 601, Blue Ridge Mountain Road, which is at the top of Snickers Gap and marked by a flashing yellow light on Rt. 7. Turn left onto Rt. 601 and continue 2.4 miles to the park entrance, which is on the left about two-tenths of a mile past a driveway on the left with a stone wall marked with the name "Ben Lomond." There is a white "NOVAC" sign nailed to a large tree to the right at the entrance to the somewhat rutted gravel driveway that leads to the park. Drive up to the white gate at the top of the hill. The combination for the gate is on your observing pass. The driveway curves down and around to the right to the observing area after you pass through the gate. Please lock the gate behind you and remember to use parking lights only as you approach the observing area, which is on the left as you reach the lawn in front of the old house.

Parking at the observing area itself is much more limited at Savage than at Crockett or Mickey Gordon. Try to leave an access lane to the area around the stone patio. If possible, unload your telescope and then park your car away from the area. There are plenty of places to park around the lawn and even south of the old house. This will allow those who arrive later to have access to whatever spots remain without having to lug equipment across the lawn. If you plan to leave early, please be considerate of others and either pack up away from the stone patio or avoid using backup lights when you drive down to pack up your equipment.

Mickey Gordon Regional Park:

The park is located fifteen miles west on Rt. 50 from the intersection of Rt. 28 and Rt. 50. It is only a 20-minute drive from the Centreville area and should be a convenient site for most members in western Northern Virginia. Directions to the park: take Rt. 66 west to Rt. 28 north. Take Rt. 28 to Rt. 50 West. Go 15 miles until you see the brown Mickey Gordon Regional Park sign. Make a right on Rt. 627, Carters Farm La. Go a few hundred yards to the park entrance on the left. The park has a gate but should never be locked.

Site Locations

Here are the locations of four observing sites as provided by NOVAC members:

- Savage: 39 ° 04.7' N; 77 ° 51.7' W
- Crockett: 38° 37' N; 77° 43' W
- Big Meadows: 38°32' N, 78°26' W
- Little Bennett Regional Park: 39°17.0' N, 77°17.5' W
- Mickey Gordon 38°58.58' N, 77°42.31' W

The NOVAC Newsletter is the official publication of the **Northern Virginia Astronomy Club** and is published six times per year at 5 Carter Court, Rockville, MD 20852-1005,
Elliott D. Fein, Editor.
The *NOVAC Newsletter* is sent to members of NOVAC as a regular membership benefit.

**Membership in the Northern Virginia Astronomy Club is $18.00 per year and is open to anyone interested in astronomy or the sciences. Additional memberships at the same address without additional copies of the newsletter are $6.00 per person. Contact Secretary Kevin N. Brown, 5755 Walnut Wood Ln.
Burke, VA 22015
703-503-9523.**

All notices of change of address should be sent to Kevin N. Brown. Please include both old and new addresses.

NOVAC does not knowingly accept advertising for products of inferior quality nor does it accept responsibility for the quality of advertised products.

NOVAC members are invited to submit articles for publication in the *NOVAC Newsletter*. The editor reserves the right to edit all materials submitted.

Article submissions, in ASCII please, may be sent to Elliott Fein at elliott.fein@erols.com, or to Elliott's address in Rockville, given above. Questions? Call 301 762-6261, or send e-mail.

The deadline for submissions is three weeks in advance of publication, e.g., June 10 for the July/August newsletter.

2000 NOVAC Observing Schedule

C. M. Crockett Park Every Friday night and Saturday night
Astronomy Day - April 8
NOVAC Picnic - June 24
NOVA Star Party - September 30

Savage Farm Every Friday night, Saturday night, and Sunday night

Prime Observing Nights

January 1, 2, 7, 8, 9, 28, 29, 30
February 4, 5, 6, 25, 26, 27
March 3, 4, 5, 10, 11, 12, 31
(Messier Weeks 3/1 - 3/12)
April 1, 2, 7, 8, 9, 28, 29, 30
May 5, 6, 7, 26, 27, 28
June 2, 3, 4, 23, 24, 25, 30
July 1, 2, 28, 29, 30
August 4, 5, 6, 25, 26, 27
September 1, 2, 3, 22, 23, 24, 29, 30
October 1, 20, 21, 22, 27, 28, 29
November 17, 18, 19, 24, 25, 26
December 22, 23, 24, 29, 30, 31

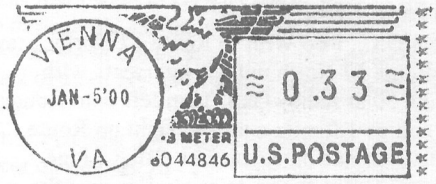
Meteor Shower Dates for C. M. Crockett, Mickey Gordon, and Savage

January 4 Quadrantids
April 21 Lyrids
May 5 Eta-Aquarids
July 28/29 Southern Delta Aquarids
August 12 Perseids
October 2 Orionids
November 18 Leonids
December. 13 Geminids

Source: http://comets.amsmeteors.org/

NOVAC

The Northern Virginia Astronomy Club
c/o Kevin Brown
5755 Walnut Wood Lane
Burke, Va. 22015-2710



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