

NOVAC

THE NEWSLETTER OF THE NORTHERN VIRGINIA ASTRONOMY CLUB

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President's Message

Pete Johnson

NOVAC is a large club with a very active core group of observers. One of my goals as president is to try to draw the inactive and new members out under the stars. I believe new members are often hesitant to come out to club events because they feel they are intruding into the domain of experienced observers and won't be welcome. So, what to do?

In the spring when things start warming up and observing is no longer an iron man activity, I am going to post informal invitations to new members and their families to come observing with me at Crockett or Mickey Garden. Of course all members are welcome to come and help. The invitations will be posted a few days in advance on the club e-mail list and all will be welcome. I may bring pizzas and ask others to bring beverages or munchies. The idea is to help break down the barriers that are keeping new members from experiencing the joys of observing, meet other members, and have fun. Hope to see you there.

New Newsletter Editor

Elliott Fein

Starting with the next issue, Michael Mills will be the editor of the NOVAC Newsletter. I've enjoyed working on the newsletter these past five years, and want to especially thank the members who contributed articles, and Kevin Brown who has assisted in the production of the newsletter.

Michael's e-mail address is mjmill@nautilus.nrl.navy.mil, his home phone is (703)333-5075, and his address is 5001 Ridgewood Road, Alexandria, VA 22312.

Raising Dues Postponed

At the annual meeting I recommend that NOVAC raise its dues to cover growing expenses. To that end, I announced that there would be a vote at either the March or April membership meeting to raise the dues. There have been some changes since that announcement. The Board of Directors is currently evaluating changes that may result in cost savings that may eliminate the need to raise dues. Therefore, we are postponing a vote until we can review the impact of the changes.

-Pete Johnson

NOVAC Programs at George Mason University

Craig Tupper

All meetings start at 6:00 PM

March 12

Dr. John Rummel:
"Looking for Life in All the Wrong Places"

April 9

Dr. Peter Chen: "Update on Large, Lightweight Optics"

See inside for more information on these programs.

What's Up?

Al Schumann

What a difference a year makes. As I write this, it was just over a year ago that we were up to our kiesters in downed trees, broken branches, fallen power lines, and other debris from the Christmas ice storm of '99. Back then, I had to hack up a turkey and cook it on the charcoal grill while Lynn heated a bucket of beans in the fireplace. In contrast, this year the sky was clear, the sun shone, and we were in shirtsleeves through much of the holidays. Go figure.

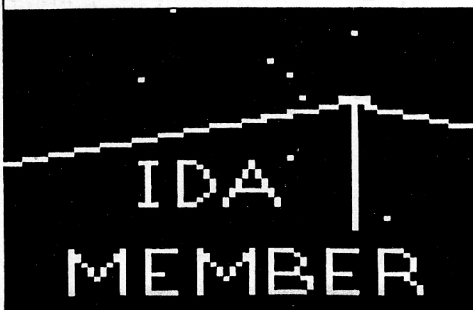
The answer

Meanwhile, I have been using the Astroscan to keep an eye on the Sun. However, with so much going on during the holidays, my efforts have been sporadic. Observations in early January revealed a fairly quiet disc. There were only a few small spots visible. It was nothing like the raging surface I saw during the Mercury transit. The heavy stuff may still be around the other side. To make solar observations even more convenient I whipped up a new solar filter for the Astroscan. The projection setup from Edmund Scientific is nice for extended periods of viewing or group observing, but it is not very convenient for a quick peek. Also, the projection device tends to pull the telescope off target because of its extra weight. So, I rooted through my spare parts boxes and found a couple pieces of Roger Tuthill's Mylar Solar Skreen. I had just enough to do the job. I used two pieces of cardboard and made a mask with a two-inch aperture. The Solar Skreen went between the

(Continued on page 2)

Inside This Issue

President's Message - Page 1
What's Up - Page 1
Upcoming Programs - Page 3
Jeff's Observing Report - Page 4
New Members - Page 5
Meeting Highlights - Page 6
Financial Statements - Page 7
Notices - Page 10
Observing Schedule -
Back Cover



What's Up?, continued

(Continued from page 1)

bits of cardboard like a sandwich, and it is all held together by double-sided sticky tape. A couple of strips of duct tape secure the mask to the front of the telescope. It will not win any beauty prizes, but it works like a charm. During a test hop yesterday I saw a couple of small sunspot groupings in the eastern hemisphere and one small spot in the north polar region. If I need to use the Astroscan at night, all it takes is a quick zip of the tape, and I'm in business.

Choose three

Some time back, *the Daily Press*, our peninsula newspaper, ran a little contest called "Guess Who's Coming to Dinner." The object of the game was to select three people – all deceased – whom you would like to have as dinner guests. Now, before you start giggling at the thought of decaying corpses propped up at the dining room table, we must make believe our guests have not assumed room temperature, but are alive and well. The rules didn't even require reasons for selection. Anyhow, given the imagination of people today, I figured the editors would be inundated with invitations tendered to JFK, Martin Luther King, Jr., and either Eleanor Roosevelt or Princess Diana. There is an outside chance that someone would remember Mother Teresa.

Well, I didn't want to play that game. Instead, I approached this thing from an astronomical angle. At that point, for me, the game was secondary. It had become a think piece that I puzzled over for a week. How in the world do you pick only three? And what three? I checked on the real old guys: Democritus, Aristotle, Aristarchus, and Hipparchus. I thought about the Renaissance: Copernicus, Tycho, Kepler, Galileo, Halley, and Newton. Then, I mulled over the myriad 19th and 20th century luminaries: Foucault, Einstein, Hubble, Gamow, and even Hoyle with his derisive Big Bang term. My nominees are among those listed above. May I have the envelope please? And the winners are: Nicholas Copernicus: who, through observation and deduction, correctly placed the sun at the center of our solar system and set the stage for overturning 1,800 years of erroneous thinking. Galilei Galileo: for figuring out the acceleration rate of falling objects and his telescopic observations which verified the Copernican heliocentric concept. Sir Isaac Newton: for his laws of motion, the Law of Universal Gravitation, invention of calculus, and inventing the type telescope which bears his name.

I selected these three men because their work was revolutionary. The learning curve was basically flat at the time, and there wasn't even the Internet! I doubt that there were any books which could help them along to any great extent, so their discoveries came from their own brilliance. Perhaps Kepler's work on determining the orbital motion of the planets was very useful to Newton, but Newton took a great leap from there. They did not have many building blocks to work from. Indeed, they were part of the foundation.

So there you have it. Also, I thought it would be cool to add a couple extra leaves to the table and flesh out the guest list with the aforementioned Kepler, along with Edmund Halley, Edwin Hubble, and Albert Einstein to tie it all together. Finally, I would want to include Aristotle, the grand old man himself. Anyone who could be wrong for almost 2,000 years must be very persuasive in any discussion.

What guest list won, you ask? I have no idea. My enjoyment came from the thought provoking exercise itself. But what about you, dear reader? Who would you invite for a stimulating discussion during dinner?

[Ed. Note: The following was received too early for the next issue of the newsletter]

What's Up?

Al Schumann

Crikey, it was cold. The temperature during the Jan 20/21 lunar eclipse was bad enough, but a stiff breeze made for an attention-getting wind chill. It was reminiscent of the "blue northers" we knew from our north Texas days. When an Alberta Clipper headed our way, there was nothing to slow down the bitter wind, but a barbed wire fence in Wyoming. Anyhow, the eclipse was beautiful, and I hope all of you had a chance to see it. The Moon passed a bit closer to the center of Earth's shadow, so, as I saw it, totality was darker than eclipses in the recent past. The colors were very pretty. To the north, the Moon was bathed in a deep red/orange. Moving south, the colors went through orange, a nice yellow, and finally to sort of an off-white. Quite a spectacle.

I set up the C-8 in the driveway and loaded my camera with ISO 400 print film. Also, I hooked up a cable release to minimize vibration while clicking the shutter. Because of the wind, I elected to use the f/6.3 reducer/corrector instead of using the telescope at f/10. The change to f/6.3 would give a smaller image on the film at prime focus, but it would allow shorter exposure times.

The Plan

I would take pictures at 30 minutes and three minutes before and after totality. I figured the photos bracketing totality by 30 minutes would show a nice crescent moon in its usual color. The three-minute pix should show a dark reddish color and a bright band along the edge not yet covered by Earth's shadow. The remainder of the photos would be taken at five-minute intervals during the 78 minutes of totality. I intended to vary the exposure times from three to ten seconds. In between photos, I brought the binoculars into play. After all, it isn't often that one can observe dim objects during the Full Moon. The plan came off without a hitch. Everything worked perfectly, and the photo effort was a success. Only a couple of pictures were blurred when strong wind gusts shook the telescope. Later, I put three pictures in a frame. The Moon at mid totality was the cen-

terpiece. It was flanked by the aforementioned 30-minute crescents. The color contrast is quite eye-catching. The gray/white crescents really accentuate the lovely reddish colors of the fully eclipsed Moon. I put together another frame using the three-minute before and after photos as flankers for a mid eclipse picture and sent it to Tilly for show and tell. I hope you like it.

Well, the eclipse wasn't the only thing going on. Earlier in the month I rolled out the 13-inch scope for a one-eyepiece, low-power (55X) gambol through the deep sky. At the time, Orion was right on the meridian, and I spent a long time gawking at the Great Nebula. The longer you look at M-42, the more you see, and the larger it seems to grow, until it just about fills up the field of view. Magnificent. While there, I edged the telescope up to M-78, a challenging little nebula just north and a bit east of Alnitak, the lowest of the three belt stars. M-78 is not much to write home about. It's a diffuse nebula, which reflects the light of a nearby star. It isn't very bright, and it's only 8 x 6 minutes in size. Orion's belt is a fine starting point in searching for this little fellow. Check it out. Next, I played around looking at clusters. I started out with M-35 in Gemini and then moved on to Auriga for M-37, 36, and 38. There is another small cluster, NGC 1907, which is very near M-38. I have never truly been able to identify it as a cluster in its own right. I have to say the same thing for many other small clusters along the Auriga to Puppis axis of the Milky Way. The myriad stars in the area make the positive identification of dinky little clusters very difficult for me. Sometimes I think you can point a backyard telescope almost anywhere along the Milky Way and call whatever appears in the eyepiece an open cluster. I took a look at the Crab and Eskimo nebulae. It was a surprise to see how bright they were; the night was darker than I thought. Later, as the Big Dipper swung around a bit, I was able to spot M-81 & 82 through the bare trees. They were a glorious sight, and I'll have to take advantage of the opportunity to see them before the trees begin filling out with leaves.

Meanwhile, my solar observing hit the skids. We did have a lot of nice days, but I was spending most of my time shoveling snow and chipping ice. However, on eclipse day I ran the Astroscan out to the driveway, and I saw a more active Sun than earlier in January. There were no great expanses of spots, but there were a lot more spots than I had seen recently. I'll keep at it. Also, I'll keep in mind that each tick of the clock brings us closer to springtime and warmer weather. Crikey, it was cold.

[Ed. Note: Al Schumann has a new e-mail address: Schumen@aol.com]

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Upcoming NOVAC Meeting Programs

Craig Tupper

March 12

Dr. John Rummel: "Looking for Life in All the Wrong Places"

As NASA's Planetary Protection Officer, Dr. Rummel is responsible for ensuring that all interplanetary NASA missions take necessary steps to prevent the contamination, especially biological contamination, of other planets and of the Earth (from future sample return missions). Dr. Rummel's presentation will touch on such subjects as:

- recent discoveries of life in extreme environments on Earth;
- the possibility of life elsewhere in the solar system, and in the Universe;
- NASA's plans for future missions to Mars and Europa; and
- avoiding the risks of interplanetary contamination.

Dr. Rummel was featured in the July 1999 issue of *Astronomy* magazine, as part of the article "The REAL Men in Black". Dr. Rummel previously served as NASA's Deputy Chief of the Mission from Planet Earth Study Office, and for six years led NASA's Exobiology Program, to understand the origin, evolution, and distribution of life in the universe. He was also the SETI Program Scientist. Before rejoining NASA in 1998, he was the Director of Research Administration and Education at the Marine Biological Laboratory (MBL) in Woods Hole, Massachusetts. His current research interests include the ecology and biogeography of deep sea hydrothermal vents. He was an undergraduate at the University of Colorado in Environmental Biology, and served on active duty as a Naval Flight Officer for five years before attending graduate school. He currently is a Commander in the U.S. Naval Reserve.

April 9

Dr. Peter Chen: "Update on Large, Lightweight Optics"

Dr. Chen, an astronomer at the NASA Goddard Space Flight Center, has been developing the technology for large, lightweight, replicated (molded) optical mirrors, with the intention of someday deploying robotic telescopes on the surface of the moon. Dr. Chen was our featured speaker early in 1999, and has also given talks during NOVAC public star parties. His project is of interest due to its potential contributions to both professional and amateur astronomy. Check it out at <http://snoopy.gsfc.nasa.gov/~lunartel/lunar1.html>.

Dr. Chen's presentations are lively and have generated interesting discussions. He may be bringing an amateur telescope or two, built around his lightweight molded mirrors! Come see and hear an update on his progress.

PLEASE NOTE: the schedule of speakers is subject to change. Please check at <http://users.erols.com/ctupper/NOVAC/speakers.htm> for the latest info, prior to the meeting.

What's YOUR interest? Let ctupper@erols.com know.

Come share and learn about YOUR favorite topic!

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\$120.00, John Avellone (703)-768-8086 // jgavellone@aol.com

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.

<u>The Sun</u>	rises	sets
March 12	6:24 AM	6:13 PM
April 9	6:40 AM	7:40 PM
May 14	5:56 AM	8:13 PM

<u>The Moon</u>	
March 6	New Moon
March 13	First Quarter
March 19	Full Moon
March 27	Last Quarter
April 4	New Moon
April 11	First Quarter
April 18	Full Moon
April 26	Last Quarter
May 4	New Moon
May 10	First Quarter
May 18	Full Moon
May 26	Last Quarter

Events

- March 1 Mercury at Inferior Conjunction (from Espenak)
- March 3 Venus passes 0.07 degrees south of Uranus (morning) (from AM)
- March 14 Mercury passes 2 degrees north of Venus (morning) (from AM)
- March 20 Vernal Equinox (from Espenak)
- March 28 Mercury at Greatest Elong: 27.8?W (from Espenak)
- March 28 Mercury is at greatest western elongation (from AM)
- April 2 EDT starts
- April 6 Mars passes 1.1 degrees north of Jupiter (evening) (from AM)
- April 16 Mars passes 2 degrees north of Saturn (evening) (from AM)
- April 21 Lyrid meteor shower peaks (from AM)
- April 21 Lyrids ZHR=15, active April 16 to April 25 (from IMO)
- April 28 Mercury passes 0.3 degrees south of Venus (morning) (from AM)
- May 4 Eta Aquarid meteor shower peaks (from AM)
- May 5 eta-Aquarids ZHR=60, active April 19 to May 28 (from IMO)
- May 7 Jupiter is in conjunction with the Sun (from AM)
- May 8 Jupiter-Sun Conjunction (from Espenak)

The Planets

March 12	rises	transits	sets
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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 March 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*

April 9	rises	transits	sets
Mercury	5:52 AM	11:41 AM	5:31 PM
Venus	6:08 AM	12:11 PM	6:15 PM
Mars	7:41 AM	2:37 PM	9:33 PM
Jupiter	7:42 AM	2:31 PM	9:21 PM
Saturn	8:03 AM	2:54 PM	9:45 PM

	mag	diam	notes for April 9
Mercury	0.0	6.3"	
Venus	-3.9	10.2"	
Mars	1.5	4.0"	W, 21*
Jupiter	-2.1	33.3"	W, 19*
Saturn	2.2	16.5"	W, 23*

(* 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

March 30	7:09 PM	Ganymede Eclipse Start
(S -8 J 280 18)		
April 7	8:15 PM	Io Eclipse End
(S -8 J 285 13)		

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 Franco'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 NO-VAC 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 - December 23 through February 16

Kevin Brown

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CCD Project Update

Craig Tupper

The NOVAC CCD Project provides club members with an opportunity to try their hand at CCD imaging, to learn more about how it is done and perhaps to help decide whether to spend the big bucks required to take up this branch of the hobby. In 1999, I was pretty busy with the project, spending about 15 nights out with various members at Crockett and elsewhere, and having it working for Astronomy Day and the NOVA Star Party. I think the project has been very successful; those members I've been out with have agreed, and we've had a lot of fun.

One of the few frustrations has been the difficulty of getting targeted objects on the CCD chip. Until recently, I've been using the club's 8" f/16.4 Cassegrain telescope on a Losmandy

G-11 mount. While this was an excellent system for taking images, it provided only a 4 x 7 arcminute field of view on my SBIG ST-7 CCD chip. Combined with often marginal skies, I found myself spending too much time finding faint objects, and not enough time imaging them, which didn't add to the learning experience of whoever I was out with.

By the time you read this in the newsletter, I should have the solution to this problem in place. In late 1999, I spent several nights out with Joe Colaccino, hooking up my CCD to his 8" Meade LX-200, confirming that the GOTO capability of the LX-200 really is good enough to get faint targets quickly on the chip. Then, with the approval of the NOVAC Board of Directors, I sold the old telescope and mount, and

acquired a new scope for the project: a 10" f/6.3 LX-200 with an equatorial wedge.

As I write this in late January, I am waiting on an adapter to hook my camera up to the 10", but I expect to have everything working smoothly soon, and perhaps to have the next project outing in February. If you'd like to spend a night learning about CCD imaging, drop me a line at ctupper@erols.com. You can also check out the project from the NOVAC web page by clicking on "CCD Project", or go directly to <http://www.erols.com/ctupper/NOVAC/ccdproject.html>

Highlights of NOVAC Board Meetings and General Meetings

Kevin Brown

January 5 NOVAC Annual Meeting

19:30, Pete Johnson, President, called the annual meeting to order. 17 members were in attendance.

Pete Johnson and Pedro Martinez, Treasurer, reviewed the budget for the coming year. Pete Johnson led a discussion on the possibility that NOVAC may need to raise dues. John Nussbaum volunteered to come up with options for raising dues and different levels of membership, which will be presented at the February board meeting.

Pete Johnson led a discussion on whether to keep or drop the current voice-mail system. Ian Keith volunteered to check with Bell Atlantic on voice-mail boxes.

Pete Johnson led a discussion on the maintenance and content of the NOVAC web site. Jon Stewart-Taylor volunteered to research various options for hosting the web site somewhere other than GMU.

A discussion of NOVAC's current observing sites was held and included desired improvements to Savage and the potential for adding a new site or sites.

Upcoming club events were discussed. It was decided to keep the Astronomy Day event at Crockett Park. However, if the public event that is to be held at Mickie Gordon the previous weekend gets clouded/rained out, then NOVAC will have Astronomy Day events at both Crockett Park and Mickie Gordon. It was also decided to schedule one or two members-only observing events during the coming year at a dark sky site such as Spruce Knob, WV.

A discussion of NOVAC's light pollution project was held and the members in attendance voted to create an official "Dark Sky Coordinator" position on the board.

Pete Johnson adjourned the meeting at 21:30
Submitted by Kevin Brown, Secretary

January 9 NOVAC General Meeting

18:05, Pete Johnson, President, called the meeting to order. The prospective and new members introduced themselves.

Pete Johnson presented a plaque to Tilly Smith for his service as NOVAC President for the past two years.

Pete Johnson briefly discussed the NOVAC Annual Meeting that had been held on January 9.

Brent Archinal discussed the upcoming public meeting to be held by VDOT concerning additional lighting along parts of I-66 and the Beltway.

Bill Burton gave a short presentation on a new light pollution mapping project.

Craig Tupper, Vice President, listed the upcoming meeting programs.

Pete Johnson gave the sky tour and upcoming celestial events.

For the main program, Greg Redferns gave a presentation on lunar observing.

Pete adjourned the meeting at 20:00

There were approximately 59 in attendance.

Submitted by Kevin Brown, Secretary

February 9 NOVAC Board Meeting

19:30, Pete Johnson, President, called the board meeting to order.

Pete Johnson reviewed the upcoming club public events in April. On Saturday, April 1, there will be a public event at Mickie Gordon in Loudoun County. Saturday, April 8, is NOVAC's annual Astronomy Day event at Crockett Park.

John Nussbaum outlined the issues and options for raising dues. As an example, he handed out information from the Internet on the dues structure and activities of the Orange County Astronomers (California), which is similar in size to NOVAC. The board members will look over

these materials over the next month and continue the discussion at the March board meeting. Craig Tupper listed the upcoming general membership meeting programs.

Tom Dietz presented potential dates for a members-only observing trip to Spruce Knob, WV. It was decided to schedule two trips in the coming year: June 2/3 and July 28/29.

Pete Johnson adjourned the meeting at 21:00

Submitted by Kevin Brown, Secretary

February 13 NOVAC General Meeting

18:10, Pete Johnson, President, called the meeting to order. The prospective and new members introduced themselves. Pete Johnson briefly discussed the possibility of raising dues. Pete Johnson introduced the new newsletter editor, Mike Mills, and discussed the plan to do bulk rate mailing of the newsletter. This will save the club a significant sum in postage.

Ed Witkowski, Public Outreach Coordinator, and Bill Burton reviewed upcoming public events.

Tom Dietz discussed the planned club observing trips to Spruce Knob, WV, scheduled for the first weekend of June and the last weekend of July.

Craig Tupper, Vice President, listed the upcoming meeting programs.

Ian Keith gave the sky tour and upcoming celestial events.

In lieu of a speaker for the main program, the members broke up into special interest groups covering ATM, astrophotography and CCD imaging, binocular astronomy, learning the sky, amateur research projects, and light pollution.

Pete adjourned the meeting at 20:00

There were approximately 58 in attendance.

Submitted by Kevin Brown, Secretary

National Capital Astronomers Meetings

Nancy Byrd, NCA V.P.

Dr. Kenneth Johnston will talk to NCA on "Recent and Future Advances in Astronomy"

Dr. Kenneth Johnston, Scientific Director for the U.S. Naval Observatory (USNO), will present the featured talk for the March 4, 2000 meeting of National Capital Astronomers (NCA)

The March meeting will be held in the Lipsett Auditorium in Building 10 (Clinical Center) of the National Institutes of Health in Bethesda at 7:30 PM.

The talk, entitled "Recent and Future Advances in Astrometry," draws on Dr. Johnston's con-

siderable experience in the field of astrometry and radio astronomy, and on the current efforts he directs at USNO. He is "responsible for the scientific oversight of precise time, time interval and astrometry programs," and is "developing the areas of radio and optical interferometry for astrometric and imaging applications with both ground and space instruments." The Astrometry Department at USNO has many functions: producing numerous astronomical catalogs, establishing reference frames, maintaining and improving the International Celestial

Reference Frame (ICRS), investigating new

techniques of observation while performing observations and investigating methods of optical and infra-red interferometry, including continued development of the Navy Prototype Optical Interferometer.

Dinner before the meeting will be at 5:30 PM on March 4 at Cesco Trattoria
4871 Cordell Ave.
Bethesda MD
phone: 301-654-8333

The April 1, 2000 meeting speaker will be Dr. Judith Lean of NRL, speaking on the topic of Solar variation and climate.

Northern Virginia Astronomy Club

Statement of Cash Received and Disbursed

For the period January 1, 1999 through December 31, 1999

Pedro Martinez

CASH RECEIVED:

Membership Dues:			
Regular and Additional:			
Renewals	\$4,650.00		
New Members	2,670.00		
Patron Members-New	<u>150.00</u>	\$7,470.00	
Interest Income		358.39	
Library Book Sales		1,138.75	
Calendar Sales for 1998		169.65	
Donation		6.00	
Kalmbach Book Discount		<u>0.00</u>	
 Total Cash Received			\$9,142.79

CASH DISBURSED:

Newsletter:			
Printing & Assembly	2,045.65		
Postage	<u>1,254.33</u>	3,299.98	
Astronomical League			
Astronomical League Dues		1,024.00	
Observing Site Expenses:			
NOVAC Picnic:			
Picnic Permit	60.00		
BBQ Food & Supplies	<u>163.02</u>	223.02	
Observing Site Improvements:			
Crockett Park-Light Shield	39.00		
Mickey Gordon-Light Shields	78.00		
Savage Farm	96.10		
Grass Seed & Chain Saw Blades			
Savage Farm-Porta-Jon Rental	438.90		
Extra Light Shield on Reserve	<u>78.00</u>	730.00	
Library			
Supplies & Postage for Book Sale	38.15		
New Bookshelf	57.74	95.89	
Arlington Planetarium:			
Reception Food		61.94	
General Meeting Signage-GMU Site		186.60	
International Dark-Sky Association (IDA)		100.00	
Astronomy Day Star Party:			
Publicity	16.72		
Parking/Telescope Station Signs	121.22		
Lightsticks	<u>27.75</u>	165.69	
NOVA Star Party:			
Moon Rock Security Guard	250.00		
Speaker System Rental	73.85		
Pictures	65.64		
Supplies	30.65		
Lightsticks	148.35		
Printing	<u>110.31</u>	678.80	
Printing-"Getting Started in Astronomy"		100.31	
Slide Show-Light Bulbs		49.38	
Administrative:			
Printing -			
Membership Applications	40.76		
Liability Insurance	424.00		
Printing - Administrative	121.27		
Printing Business Cards	52.25		
Postage	<u>338.75</u>		
Supplies	170.90		
State Registration Fee	25.00		
Personal Property Tax	23.81		
Bank Service Charge	<u>8.00</u>	1,204.74	
 Total Cash Disbursed			7,920.35

(Continued on page 8)

Statement of Cash Received and Disbursed, continued

(Continued from page 7)

EXCESS OF CASH RECEIVED OVER CASH DISBURSED		1,222.44
Cash at beginning of period:	9,595.81	
Write-off 1998 Outstanding Check	<u>2.00</u>	<u>9,597.81</u>
CASH AT END OF PERIOD		<u>10,820.25</u>
Cash At End Of Period		
Checks Received, Undeposited	0.00	
Checking Account	1,020.07	
Savings Account	3,367.43	
Certificate of Deposit Due 1/7/2000	2,708.57	
Certificate of Deposit Due 11/2/2000	2,115.40	
Certificate of Deposit Due 5/2/2000	<u>1,608.78</u>	<u>10,820.25</u>

Respectfully submitted,

/s/

Pedro Martinez,
Treasurer

Projected 2000 Budget

Pedro Martinez

Revenues

Membership Dues

Renewals Regular & Additional	\$5,196.00	
New Members Regular & Additional	<u>2,268.00</u>	
Total for Membership		\$7,464.00
Interest Income		<u>325.00</u>
Total Revenues Expected		\$7,789.00

Expenditures

Newsletter

Printing	\$2,200.00	
Postage	<u>1,300.00</u>	
Total for Newsletter Expenditures		\$3,500.00

Astronomical League

Dues		\$1,300.00
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Library

Books	<u>\$100.00</u>	
Total for Library		\$100.00

Observing Site Expenses

Porta-Jon Rental-Savage Farm	\$878.00	
Entrance Improvement-Savage	400.00	
Other Improvements	<u>222.00</u>	
Total for Observing Site Expenses		\$1,500.00

NOVAC Annual Picnic

Picnic Permit-Year 2001	\$120.00	
BBQ Food & Supplies	180.00	
Invitations-Printing & Postage	<u>100.00</u>	
Total Picnic Expenses		\$400.00

NOVA Star Party

Publicity	\$25.00	
Printing	35.00	
Lightsticks/Necklaces	240.00	

(Continued on page 9)

Projected 2000 Budget, continued

(Continued from page 8)

Miscellaneous	<u>200.00</u>	
Total Star Party Expenses		\$500.00
Science Fair Prizes		\$100.00
Astronomy Day		
Publicity (Printing & Postage)	\$40.00	
Lightsticks	<u>30.00</u>	
Total Astronomy Day Expenses		\$70.00
Slide Show Presentation Project		\$200.00
International Darksky Association Membership		\$100.00
Administrative		
Liability Insurance	\$440.00	
Printing-Membership Applications	80.00	
Printing-Stationary	60.00	
Printing Administrative	120.00	
Postage	325.00	
Supplies	200.00	
State Registration Fee	25.00	
Personal Property Tax	60.00	
Printing-Checks	15.00	
Bank Service Charge	<u>10.00</u>	
Total for Administrative Expenses		\$1,335.00
Subtotal Expenditures		<u>\$9,305.00</u>
New Projects	<u>\$500.00</u>	\$500.00
Total Expenses		\$9,805.00
Total Revenues Expected	\$7,789.00	
Subtotal Expenses	9,305.00	
New Projects Reserves	<u>500.00</u>	
Net Revenues	(\$2,016.00)	

	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Newsletter	\$4.40	\$5.86	\$7.59	\$6.43
International Darksky Membership	\$0.00	\$0.30	\$0.23	\$0.18
Astronomical League	\$2.32	\$2.64	\$2.36	\$2.39
Administrative	\$3.01	\$2.76	\$2.77	\$2.45
Operations	\$8.55	\$5.07	\$6.14	\$10.85
Savings	(\$0.28)	<u>\$1.37</u>	(\$1.09)	(\$4.30)
Total	\$18.00	\$18.00	\$18.00	\$18.00
Total Cost per \$18.00 Member	\$18.28	\$16.63	\$19.09	\$22.30

Editor's Note

Elliott Fein

Please keep those letters and articles coming in!

The NOVAC Newsletter editor for the next issue is Michael Mills who can be reached at mjmills@nautilus.nrl.navy.mil. His home phone is (703)333-5075 and his address is 5001 Ridgewood Road, Alexandria, VA 22312.

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

When he receives copy for an article, he starts to format and edit it. If later, he receives an

updated copy of the full article, he needs to either figure out what changed and update the article in progress, or throw away the work he's done and start anew with the second copy. It would be much better if authors would tell him what changes they want made, or if the changes are too complex for that, send him the second one and tell him 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'Hommedieu, 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. Elliott D. Fein, Retiring 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, to the Editor Elect, Michael Mills
mjmill@nautilus.nrl.navy.mil,
(703)333-5075,
5001 Ridgewood Road,
Alexandria, VA 22312.

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

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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

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

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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Inside:

Whats Up?

Upcoming Programs

CCD Project Upgrade