

NOVAC

THE NEWSLETTER OF THE NORTHERN VIRGINIA ASTRONOMY CLUB

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November/December 1998

President's Message

Tilly Smith

It is really not too difficult to decide what to write about this month - the NOVA Star Party on 26 September. I really hope many of you were able to make it out to Crockett for the Star Party Saturday night, for if you did, you were witness to, in my opinion, one of the very best "public" programs NOVAC has put together. Right up front I want to thank Jeff Cook who did a great job developing and coordinating the program for the event and to all the club members who assisted by making themselves available to help the public.

No matter how time consuming it is to put on such an event, and all of you know it does take time, it is all worth it when things go smoothly and the turn out and response of the public is as positive as it was Saturday night. There is absolutely nothing as gratifying as showing the public things they have never seen before. You never get tired of hearing "Wow! I never seen anything like that before." Ladies and gentlemen, that is what it is all about.

"I counted more than 80
NOVAC cars and close to 100
scopes"

Yes, our "Mission" statement says "To Observe and To Help Others Observe". However, the second part of that statement is where we are at our best; that is in helping others. This is a great club with a very fine group of members. Let's do it again next year! For the record, I counted more than 80 NOVAC cars and close to 100 scopes, and I know more came in after that count. I do not ever recall seeing four rows of NOVAC cars with scopes in the field at any event in the past. As for the public, I would estimate approximately 300-500 attended. All I know is we had Boy Scouts and several bus loads of school kids attend in addition to the general public. Great job by all. Thank you for your help.

// tilly

Official Notice

The annual meeting of the Northern Virginia Astronomy Club will be held on January 13, 1999 7:30 P.M. E.S.T. at the Arlington Planetarium, 1426 North Quincy Street, Arlington, VA.

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What's Up?

Al Schumann

The night of September 24 was the nicest night we had on the peninsula in a dog's age. It got me off my bum and out in the driveway with the 13-inch telescope. It was an opportunity to do some deep sky observing and take a long look at Jupiter and Saturn. But first, Hercules had passed the zenith, so I studied M-13 for a spell. Magnificent. While there, I made a stab at NGC 6207, a tiny galaxy just half a degree from M-13. It is less than 10 minutes in diameter and glows at a skimpy magnitude 12.5. I ran the power up to 150X and scoured the area. Having M-13 so close at hand was a plus and helped keep me from getting lost. Even with the higher power, I could get back to M-13 and start over when the search went awry. I think I might have seen 6207 as an ever so slight light patch. However, in retrospect it might have been a case of averted imagination.

(Continued on page 2)

NOVAC Programs at the Arlington Planetarium

Pete Johnson

All meetings start at 7:30 P.M.
November 18
General Meeting - Club members' slides, photos and stories of 1998 star parties
December 16
General Meeting
January 13, 1999
NOVAC Annual Meeting
January 20, 1999
General Meeting
February 17, 1999
General Meeting
March 17, 1999
General Meeting - Dr. David Atkinson, NASA Investigator on Galileo and Co-investigator on Cassini/Huygens
April 21, 1999
General Meeting - Ron Parise, NASA Mission Specialist (tentative)

What's Up?

(Continued from page 1)

Jupiter looked like a bright shiny pearl as it glided along the ecliptic. It was really bright through the 13-inch, f/4.5 telescope, so I plugged in a 2X Barlow and added an off-axis mask with a 4.75" aperture. In essence, that gave me a 4.75", f/21 instrument, and the contrast was much better. The atmosphere was rather jumpy, but in moments of good seeing the planet was a beautiful sight. The temperate bands would suddenly snap into focus for just a second and then get lost once again in the atmospheric shimmer. The highest usable power was 198X. Anything over that just did not seem to work out. It was too tough to track and focus. I watched Jupiter for a long time, and it was hard work with the Dobsonian. A clock drive is invaluable for high power observing. You can spend more time concentrating on the view instead of constantly re-centering the object. Saturn had risen high enough for a decent look, so I switched over to take a look. Saturn is so much smaller when one has been studying Jupiter, but it is a breathtaking sight. The rings are opening up nicely, and there was a fair amount of shadow from the rings showing on the planet itself. A grand sight.

I took a break from the planets and went on to take advantage of the pretty night for some deep sky observing. I have always been a sucker for globular clusters. To me, they are like fascinating little galaxies in their own right, and from the start I have been captivated by their unusual beauty and nature. By now, there were four globulars visible in my narrow, tree-framed patch of sky, so I set to work on M-15, 2, 71, and 56. M-15 is easy enough to find, since Enif is nearby, but M-2 can be a little tricky. I locate it by drawing an imaginary line between Enif and Beta Aquarii and looking one third of the way up from Beta. In a sense, it's just about the same way you find M-13 along the edge of the keystone in Hercules. M-56 can be a bit difficult as well. I go right to Albireo, the head of Cygnus the swan. Then I draw a line from Albireo to Gamma Lyrae near the Ring. M-56 is smack dab in the middle of that line. After pigging out on globular clusters, I spent a little time on the Veil in Cygnus and a few planetary nebulae, among them the Dumbbell; the Ring; and NGC 7009, the Saturn Nebula. The latter is a bright little thing which takes power pretty well. It gets its name from its oblong appearance. Think of a green Uranus with ears. It lies just south of a line between Beta Aquarii and Beta Capricorni. As a bonus, it is right next door to M-72 & 73. Check it out.

Such a nice night wouldn't be complete without viewing a few galaxies, so I swung the telescope to the upper right corner of the great square of Pegasus and found NGC 7331. That galaxy is the gateway to Stephen's Quintet which is only half a degree away. I took a brief look for the

Feeling Your Way around the Sky

Jack MacDowall

A large hurdle in recognizing constellations is determining how large an area in the sky the constellation takes up. If you look closely at your star atlas, you can find out how big the constellations are as measured in angular degrees. Since the stars are light years away, there is no way to quickly measure their distance from one another, so we must express their relationships in angular degrees of separation. The ancient Babylonians did a lot of observing in hopes of predicting the seasons. They figured out that the sun takes about 360 days to move completely around the background of the sky.

They devised a lunisolar calendar of 12 lunar months of 30 days each and they added extra months when necessary to keep the calendar in line with the seasons of the year. They used a base-60 (sexagesimal) counting system instead of our current base-10 (decimal) system. Their advanced calculations marked by methods of dividing the 60 led to the development of fractions which was adopted by the Greek astronomers to devise a way to measure a circle and the inside of the celestial sphere. The ancient Egyptians gave up on the lunar calendar and tried it again with a solar calendar. They measured the solar year as 365 days, divided into 12 months of 30 days each, with 5 extra days at the end.

Today, we still use their method of dividing a circle into 360 degrees. You can quickly find your way around the heavens with nothing more than your hand. Make a closed fist and hold it at arm's length. This is your measure of 10°. Don't worry if you have big hands. God gave you long arms to match, so this will still work. (This all works for little kids too because their little hands are matched with short arms.) Starting at the horizon, pace off fist over fist until you reach the zenith. Counted nine 10° fists? Turn around and work your way back to the other horizon. Another 90°? 180° from ho-

zizon to horizon? Half a circle? Hmm. It works . . . You can estimate smaller amounts of angular separation. Try gauging the distance between the lower rear star of the Big Dipper to the upper right star that forms the spout. Your thumb's width at arm's length subtends about 2°. Five thumbs would suggest 10°. Check your atlas! If you hold up your pinky, you can just cover the full moon. 1/2 degree! Experiment: Is the moon actually larger on the horizon than near the zenith? Use your new celestial protractor to find out.

Pinky alone = 1/2 degree (try to cover the moon)
Thumb alone (Thumb's Up!) = 2°
Three fingers held together (Boy Scout salute) = 5°
Closed fist = 10° degrees
Extended index and pinky (Devil's Horns or Fig sign) = 15°
Extended pinky and thumb (Hang-ten!) = 20°

Armed with your new found knowledge of how to use your hands to feel your way across the sky, your star chart takes on new meaning. Even a little 5-inch planisphere becomes useful: Dial-in the date and hour, figure that from edge to edge the little map shows 180 degrees. Visualize a halfway line cutting the map in half. Two ninety-degree segments. Pick one of those and divide it in half to get 45 degrees. Now that segment in thirds--15 degrees each. If you make a fist and then extend your index and pinky fingers you have a 15-degree measure to match your 15-degree segments on the planisphere. Count the number of closed fists between Arcturus and Vega. Six? Count the number of finger-extended-15-degree-measures. Four? Twenty degrees from Vega towards Arcturus is the Keystone of Hercules. Another twenty degrees puts you smack dab in the middle of Corona Borealis. Count off another 20 to get back to Arcturus. If you get good at this, maybe you can lead the sky tour at the next new members' picnic!

quintet, but it isn't dark enough around here to pick 'em out. The Andromeda Galaxy is another story. It was sensational! It is always a surprise to see how large and bright that object is, especially when you haven't seen it for many months. The two companions were also very pretty. Speaking of the companions, for years I thought M-32 was M-110 (NGC205.) From looking at all those beautiful, long exposure photos of M-31, I thought that through the eyepiece M-32 was overpowered and obscured by the light of M-31. Then, one day I took a fresh glance at another photo and the world turned upside down. Whoa, Nellie! NGC-205 is on the other side of M-31! Next night out, I sheepishly moved the scope in the other direction, and there it was. We live and learn. Some of us just take longer to learn.

My favorite parking lot observing site is no longer available. Last time out I was visited by the York County cops. While they didn't exactly run me out of Dodge at the time, I got the distinct impression they'd rather I went and bothered the National Park Service at the battlefield, or anyone/anywhere else. It was a good run while it lasted, but now the quest for a dark, full sky viewing area must begin anew.

[Ed. note: Lynne and Al have a new E-mail address Schumen@msn.com]

Editor's Note

Elliott Fein

Please keep those 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 January/February issue must be in my hands by December 10.

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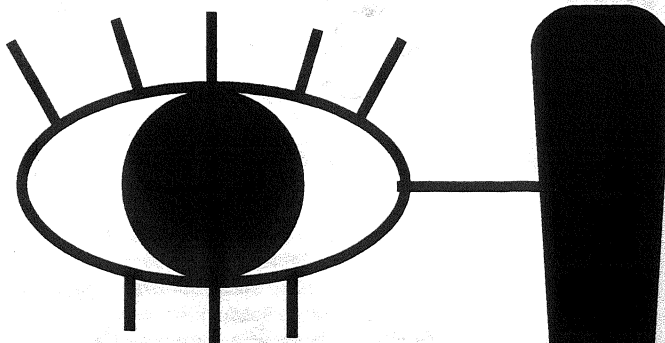
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Election Night '98

You must be present to vote!
December 16, 1998 meeting
starting at 7:30.

Vote for Officers and 3 Trustees.
Nominations as of 10/14/98:

For President: Tilly Smith

For Vice-president: Pete Johnson

For Secretary: Kevin Brown

For Treasurer: Pedro Martinez

For Board Member:

Jonathan Bein

Tom Dietz

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
Oct 21	7:24 AM	6:22 PM
Nov 18	6:54 AM	4:53 PM
Dec 16	7:20 AM	4:48 PM
Jan 20	7:23 AM	5:16 PM

The Moon

Nov 4	Full Moon
Nov 10	Last Quarter
Nov 18	New Moon
Nov 26	First Quarter
Dec 3	Full Moon
Dec 10	Last Quarter
Dec 18	New Moon
Dec 26	First Quarter
Jan 1	Full Moon
Jan 9	Last Quarter
Jan 17	New Moon

Events

Nov 11 Mercury at greatest eastern elongation (may be visible at sunset, from Nov 8 to 20 Mercury will be 9 degrees above the horizon at sunset)
 Nov 17 Leonid meteor shower peaks
 Nov 27 Mercury is 1 degree east of Venus (from S&T)
 Dec 1 Mercury at Inferior Conjunction (from Espenak)
 Dec 4 Earliest nightfall (from S&T)
 Dec 7 Earliest sunset (from S&T)
 Dec 14 Geminids ZHR=120, active Dec 07 to Dec 17 (from IMO)
 Dec 19 Mercury at Greatest Elong: 21.6°W (from Espenak)
 Dec 21 Winter Solstice (from Espenak)

The Planets

Nov 18	rises	sets	magnitude
Mercury	8:46 AM	5:55 PM	0.1 SW, 9*
Venus	7:19 AM	5:08 PM	-3.9 WSW, 2*
Mars	1:49 AM	2:16 PM	1.5
Jupiter	1:53 PM	1:22 AM	-2.6 SE, 31*
Saturn	3:36 PM	4:38 AM	1.4 E, 14*

Dec 16 magnitude notes
 Mercury -0.3 rises at 5:34 AM
 Venus -3.9 SW, 7*
 Mars 1.2 rises at 1:15 AM
 Jupiter -2.4 SSE, 44
 Saturn 1.6 ESE, 35*

(* degrees elevation at sunset taking into account atmospheric refraction)

Jupiter Eclipse Events on Club

Observing Nights

Nov 15	12:52 AM	Ganymede Eclipse
Start	(S -66 J 263 7)	
Dec 11	6:19 PM	Europa Eclipse End
(S -17 J 190 46)		
Dec 13	5:02 PM	Ganymede Eclipse
Start	(S -3 J 166 44)	
Dec 13	8:05 PM	Ganymede Eclipse End
(S -38 J 227 38)		
Dec 16	10:01 PM	Io Eclipse End
(S -60 J 255 18)		
Dec 18	6:17 PM	Europa Eclipse Start
(S -17 J 198 45)		
Dec 18	8:58 PM	Europa Eclipse End
(S -48 J 244 27)		
Dec 20	9:05 PM	Ganymede Eclipse
Start	(S -49 J 247 25)	

References for Jeff Stetekluh's Corner

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 Varia-

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Pedro Martinez

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tions Seculaires des Orbes Planetaires) planetary theory, above and in the following as noted.

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 are listed

From Espenak: Fred Espenak's Twelve Year Planetary Ephemeris: 1995 - 2006 (NASA Reference Publication 1349, available at <http://www-lep.gsfc.nasa.gov/code693ol>: the International Meteor Organization calendar.

[Ed. Note: Jeff Stetekluh has a new work number: 301 286-1570]

Go Deep! 1998 Oregon Star Party

Bill Jensen

*"We go deep.
And we don't get no sleep
'Cause we be up all night.
Until the early light.
I'm feelin' fine.*

"Cause in time I'll be out tonight"
Jackson Janet -from *The Velvet Rope* "Go Deep"

Janet's song blasted on the radio as I drove down the dirt road from Indian Trail Springs in the Ochoco Mountains in Central Oregon, the site once again for the 1998 Oregon Star Party (OSP). The perfect refrain for a seriously fun-observer's star party. OSP 98 had the clear, dark skies that I had relished the prior two years. On top of that, the OSP committee, led by Chuck and Judy Dethloff, made several improvements on the "people" end to make it a premiere event.

The Location

I wandered from the bright humid northern Virginia suburbs of Washington, D.C. to the sunny wilds of Oregon on Wednesday, August 19. Flying and driving for 13 hours, I arrived at Prineville, a town of approximately 6,000 residents, about an hour away from the star party site. Central Oregon is a land of river gorges, snow-capped mountains, and thousands of acres of national forest. Much of the area is high desert country, ideal for a star party, with sparse vegetation, rocks, and trees clinging to the dusty soil. After the well-marked drive from Prineville, one is greeted by the waterless Indian Trail Springs: a wide flat area, with trees around the edges, providing a natural shady spot for some campers. It has excellent 360 horizons. The lack of nearby towns and their light makes up for the rough conditions.

Bright Sky Action

Building on eleven years of party experience, the OSP committee provided plenty of daytime diversions and comforts for more than 600 amateurs. Like many star parties, there are talks on astronomy and other natural events from observers and authors. Richard Norton autographed copies of his book "Rocks in Space" after providing an overview. Mel Bartels provided beginner to advanced telescope essentials. Other talks featured astrophotography, the history of telescopes, and even a summary of the search for near earth asteroids by Roy Tucker, who has several discoveries notched in his amateur astronomy belt. The committee added a very large meeting tent, making slide and video displays possible, and providing welcome relief from the sun. As day blended into night, novices were offered a nightly sky tour, even as the Milky Way sprawled lazily overhead.

Children's activities abounded this year. Creating a solar system model to scale on site, and making astronomy artwork, were just some of the arts and crafts coordinated by Margaret McCrea. There were also Mars Sojourner races with little radio-controlled vehicles which looked at home in the red, rocky, dusty terrain. For those children who participated in the fun, the OSP folks had put together a 4.5 inch Dob-

sonian reflector during the party, and one lucky young lady took home the prize. With more than 100 people under 18 in attendance, the children's activities hit the right spot.

Adult amateurs had a blast too. By far the best improvement was the shower truck. There is nothing like a sweet-smelling party, and the sixteen shower stalls took care of us nicely. When not resting or taking part in the action, many folks took advantage of studying several hundred scopes in the field. The tempting vendors, and on Saturday the group photo and prize drawing, rounded out the daytime fun. Over 50 prizes were given away, including eyepieces, software, a one-year subscription to *Amateur Astronomy*, and the grand prize of a Celestron C5 Standard telescope. And for the third year my luck was better under the stars than at the drawing.

It's Dawn Already?

OK, enough about the day. It's the night that we crave. Thursday night was ominous, as it rained during the late afternoon, and clouds still ruled the sky early evening. But as dusk settled, the sky broke and cleared. What followed reminded me of the last year's event: transparent, steady skies making a wide range of observing possible. Naked eye astronomers had the glow of our own galaxy, frequent meteors, and even wonderful views of M31, the Pleiades, and many of the brighter objects.

Binocular observers grabbed the best of the rest of the Messier objects, especially in the Scorpion, Sagittarius, and Scutum regions. The Double Cluster in Perseus is one of my favorites, and comparing the views in the 10x50's to those in the eyepiece was great fun. But being a star party, telescopes reigned supreme with an array of Dobsonian reflectors, SCT's and pinpoint refractors.

Quite a few novice observers shared the time at the focusers early in the evening. After a midnight starburger from Mary's grill, my energy picked up. As Taurus rose in the East, the crowds thinned, and the skies seemed to improve.

My 8-inch truss-tube Dob, built by Chuck Dethloff of Telescopes & More, again showed its versatility after flying cross country as luggage. Even though it was probably one of the smallest of the land of the Dobs, its focal length yields an overall range of targets with a wide field that makes it a great dark sky performer. Within its limits, brighter objects show fine detail, and a wider field-of-view with equivalent eyepieces than its larger cousins. But the nice thing about the star party is that you DO share the views. While flying cross country with an eight-inch scope is manageable, once there, I was able to view often in much larger scopes like Chuck and Judy's 16-inch, and from some of the fine Swayze scopes set up nearby. Many Dobs of the 20-inch plus category swayed among the stars.

Topping off the hill were a 30-inch Telescope & More scope and a 40-inch Swayze-built Dob. Astrophotographers had their own road, so that stray visitors and light were minimized.

If the deep sky objects weren't enough, the planetary viewing was superb. I pushed my little scope to 364x, and many other larger scopes treaded into the 700-1000x ranges. With ideal conditions, the detail on Jupiter was delightful, and we were treated to a shadow and moon transit. Saturn rode high later on, showing a dark Cassini division and detail in the rings and surface. Closing in on the dawn, Orion had risen to give us a pre-winter glimpse of M42. I crawled into the rented Blazer at 4:45 A.M. slowed only by the glow in the East.

Friday's viewing was nearly a carbon copy, without the threat of rain of the day before. One especially large meteor overhead lasted long enough for almost everyone to see, and the long-ball hitters saw an aurora in the north about 4A. M. Once again, I spent time observing many favorite targets, and seeing more detail than ever before. Jupiter was tempting, despite the loss of dark adaptation. Even viewing with the other eye was not enough. Casting its own shadow, the light through the eyepiece was rock steady. Just before dawn I joined several others in yielding the sky to the predawn light.

Saturday's blue sky turned overcast as night approached, and I wisely retreated to the motel around 9 P.M., surrounded by thunderstorms. While most of the folks left that night or the following morning, I joined Chuck and Judy, JP and Priscilla, and at least one other diehard for a Sunday night unofficial encore. Coyotes yelped, and a nearby owl hooted while we racked up a third clear, amazing night. I lasted until after 4 A.M., and felt deeply satisfied as I reluctantly left the following morning. Later that same day, while in the foothills surrounding Mount Hood, I grinned at seeing the three-day-old crescent moon set, because OSP was like the Beatles' line: "Gettin' Better All the Time".

99 - As Good As It Gets?

Due to a conflict with the last solar eclipse of this century during August 1999, it is likely that the 12th Oregon Star Party will be September 9-12, 1999. Check out their web site if you want to join in the fun, <http://www.teleport.com/~ospinc>. I am hoping that you may see an escapee from the East Coast with eyes bright with dark anticipation. He will be glad to let you "go deep" on his traveling Dob till dawn invades.

Two Great Rivers in the Amazon

Myron E. Wasjuta

The AMOR BEATRIZ, a small, open-air vessel, pulled slowly out of the harbor of Manaus, Brazil and into the mocha-colored water of the Amazon River. It was 4:30 P.M., June 30, 1998 and my group had been already traveling for 32 hours with very little sleep. For the next twelve days, this boat would be my home. I settled into my hammock, and along with 31 other "missionaries" prepared for the 29-hour, 500-mile journey down the Amazon to Lago Sumauma, a small lake off the Trombetas River. As an optometrist, my job would be to provide glasses and eye care to the residents of the remote area we would be traveling to.

I had come to Brazil for two reasons. First and foremost was the humanitarian aspect, but I was also answering a call. Ever since learning the constellations as a boy, I had wanted to see the splendors of the southern sky. I knew that Lago Sumauma, at 2 degrees below the equator, would be an ideal location for this.

Standing on the bow, I watched the twilight fade as the AMOR BEATRIZ made a steady easterly course on the river. The drone of her engines had become less noticeable, and in the fading light, the river, shore and sky had become one. The only artificial light was the occasional burst from our searchlight as the pilot scanned the water ahead for debris. High overhead was a crescent moon. Facing into a 15-knot headwind, I held in one hand a 1964 edition of Donald Menzel's "A Field Guide to the Stars and Planets". This was the same book I used more than 20 years earlier to learn the northern sky. In my other hand was a small red flashlight and observing journal. No sooner had I stepped onto the bow when two commanding stars high in the south drew my attention. These were Alpha and Beta Centauri. Nowhere else in the sky are there two stars so bright and so close together! Just to their west was the unmistakable outline of the Southern Cross, its form standing upright about 30 degrees above the southern horizon. It was more beautiful than I had ever imagined. I noted the time and made a journal entry. As the darkness became complete, the exquisite beauty of the Milky Way from Centaurus to Carina became evident. I was lucky to have a friend who let me borrow his telescope for this trip, and as I unzipped the bag and brought the Pronto out into the night, memories of my childhood and first telescope awakened from years of slumber. I aimed the telescope at the Coalsack, a conspicuous island of blackness within the Milky Way between Alpha Centauri and the Southern Cross. The absence of stars here seemed surreal. I then panned over to the Southern Cross and studied the contrasting colors of its stars. Most had a distinctly bluish white tint, except Gamma, which was orange-red. Just off the left edge of the Cross was a beautiful, tight open cluster known as the "Jewel-Box", which in the Pronto looked like a glittering swarm of diamonds! I became quite proficient at compensating for the pitching and rolling motion of the boat as I cradled the telescope. I continued to sweep the Milky Way ever south until a soft

glow enveloping a host of faint stars came into view. This was the Eta Carina nebula, and I had seen it at last! What a magnificent sight it must be in a larger telescope! After a few more minutes, the sky began to cloud. With fatigue setting in, I reluctantly retired to my hammock for a good night's rest.

Sleep ended suddenly as I slammed into the railing on the edge of the boat. I was rocking wildly in my hammock as we pitched side to side from large swells kicked up by an approaching storm. As the crew lowered the rain flies, I struggled out of my hammock and made my way to the bow. The night smelled of impending rain, and with every wave, bow splash pelted my face. I held on tightly to the railing and instinctively looked towards the sky. Nearly overhead was a hole in the clouds framing the constellation Sagittarius. All around it, looking like fog in the headlights of a car, were the rich star clouds of the Milky Way. They were carved up along their length by dark rifts and voids. Located within one of these dark areas was a bright little glow. I knew this had to be the Lagoon Nebula. Or was it? For a moment I hesitated. It's funny how a belief based on years of observation can be shattered in an instant. Until this moment, I had believed the Lagoon Nebula was located within the bright star clouds of Sagittarius, within the "steam" of the teakettle. But here before my eyes somewhere on the Amazon River, it glowed from the darkness of a rift in the Milky Way. No sooner had I seen this than the sky clouded completely and the rain began to fall. But in that instant, I had made a personal discovery. The sky, which I felt I had known so well, had shown me otherwise. Forced by clouds to concentrate on this one area, I saw the sky in a way I had not done so before. The implication here was enormous. If something as obvious as this had escaped me for all these years, how much more was there to see that I had overlooked? How much had I missed because I was in a hurry to get somewhere else? Over the next few nights from the placid waters of a tropical lake, I journeyed slowly on sails of polished glass. The entirety of the Small Magellanic Cloud fit nicely in the Pronto's field of view. Flanked by the magnificent globular 47 Tucanae, it was a sight I will never forget. My views of the Milky Way with its granular star clouds and dark dust lanes were indescribably beautiful as well. On one especially memorable morning, I gazed along the Milky Way at the Great Rift, its continuous expanse stretching from Deneb all the way to Alpha Centauri, which was low in the southwest almost touching its reflection on the far shore of the lake.

My stay in the Amazon had changed me. I had seen two great rivers. One flowed overhead among the stars, the other through an immense South American forest. Both moved slowly, with direction. Like these rivers, we need to do the same. Savor what your eyes are showing you. Try to spend more time really looking. For as sure as night follows day, the more you look,

Southwest to Stellafane

William C. Burton

(Continued from last issue)

The official Stellafane schedule says that the Saturday morning swap meet starts at 7:00 A. M. Actually, the swap meet starts as soon as it is light enough to read outdoors, so at 4:30, I was awakened by cars loaded with astro stuff driving past my tent. At 5:30, I stumbled over to the swap tables, which were crowded with bargain-seekers. I didn't need to buy anything, but it was the place to be, and it's always fun to scan the offerings, which range from telescopes to cameras to books to assorted odds and ends that may or may not be related to astronomy. NVTM regular Kent Blackwell from Virginia Beach was selling a pile of red 60-mm refractors, stacked like cordwood, on the ground. The lady with the T-shirts and ties handpainted with astronomical themes showed up. I finally settled on a pair of red LED flashlights at \$7 apiece for my kids, and went for breakfast.

At midmorning my family showed up, and we decided to attend one of the newer Stellafane events, hands-on activities for children. This is run by an assistant professor of astronomy from Connecticut, who runs a one-hour session on Friday afternoon and two sessions on Saturday. In the one we attended, in the classroom of McGregor Observatory, with about 10 other children, ages about four to ten, she conducted two activities. In the first short one, every kid got a random jigsaw piece of a planet and had to match it up with another kid's piece. In the second, more challenging activity, every child got a piece of paper with pictures of the planets that he or she had to cut out and paste on a roll of register tape, to scale! The tape was about 50 feet long, and everybody walked out with a rolled-up solar system in his or her pocket.

Outside the observatory, a few telescopes with filters were focused on the sun. We went over to a guy and his scope I recognized as having last been at Stellafane about 8 years before, when the scope had been entered into competition. Bill Benesche's 5-inch Daly Solar Telescope was a remarkable instrument, because it had a coated, optically flat, glass plate on the front that served simultaneously as a solar filter, and a secondary mirror. The light from the sun is filtered through the plate, bounces off the primary at the back of the scope, then off the back of the coated front plate, and back to an eyepiece mounted next to the primary. This produces a long, unobstructed light path, and a high-contrast image. The view was stunning: despite the naturally poor seeing at midday, the complex internal structure of several sunspot groupings was clearly visible, including the fibrous texture of the penumbrae, white, linear solar flare regions, and the faculae mottling the

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the more you will see. And the more you see, the more you'll want to look! And who knows, you might even "discover" something new in a familiar part of the sky!

A Train, a Rainbow, and a Big Bang

Marc DeFrancis

For Young Astronomers ages 8 and up

I'd like to tell you how astronomers figured out that our universe, yes the whole darn shebang, is getting bigger every day. But to do that, we'll need to think first about sound and light.

SOUND. Can you remember the last time you were at a railroad crossing waiting for a train to pass? If the train was careening by at high speed, the conductor probably leaned on the horn. Did the horn sing out a constant, unchanging note, or did it seem to rise as the train approached, and then fall like the voice of a worn out singer?

Standing at a roadside rest stop alongside any major highway, you can tell when the big trucks are passing, by the powerful hum of their tires. Again, try to recall: Do trucks hum by on a single, unchanging note, or does their sound rise and fall?

I don't want you to run out to the highway to check this right now, so take my word for it (but check it later): the sound of fast passing trains and trucks grows higher as they draw closer and then lower as they fade into the distance. But, why?

Sound comes to our ears in waves, indeed sound is waves, waves made of squeezed and stretched air. You can feel this for yourself by holding your hand in front of a speaker booming out the bass beats of a rap song. With each beat you can feel a pulse of air.

WATER. Unfortunately, it's impossible to see sound waves. But you can learn a lot by watching the patterns of waves you can see: water waves.

Do an experiment: take a flat baking pan, a pizza pan is perfect, and fill it with water. Now drag your finger through the water, just fast enough so that little ripples gather ahead of it. Look closely: what do these ripples do as you

drag your finger faster? How do they change as you slow it down? And what about the waves behind your finger? You should see some squashing and stretching going on.

Think of the train and truck again. As a truck approaches you, if it's going fast enough, it's catching up with the sound waves rippling outward from its engine and tires. It's bound to squash those waves. Shorter sound waves, by the way, sound higher, while stretched ones sound lower. That's why the long strings of a bass fiddle, which vibrate in bigger waves, give out lower notes, while the teeny strings of a teeny ukulele give out high notes.

LIGHT. Light also moves in waves. And like sound waves, light waves come in different sizes. While the length of sound waves gives them different musical pitches, the length of light waves gives them different colors. The best way to see this is with a prism, though a crystal of quartz or a glass pendant from a chandelier will do. (I know you didn't run onto the highway before, so please don't climb any chandeliers now.)

As a plain beam of light shoots through the glass at an angle, it breaks apart into colors. We can't see this happening, because the light waves are so tiny, but in fact the longer light waves come out at one end of the prism while the shorter ones come out at the other end, and that means the red part (long waves), the green part (medium) and the violet part (short) all get separated, rainbow style.

THE WHOLE SHEBANG. Now, at long last, I can tell you what this has to do with whether or not the whole universe is growing bigger or not. If light waves act like sound waves, then anything that glows (say a truck's headlights at night) should end up squashing its waves

shorter as it approaches us, and stretching them as it speeds away. Right? Well, this does happen. But because light travels so fast, a truck would have to move many times faster than the Space Shuttle before you would notice any change in color.

Around the beginning of this century, astronomers started examining the colors of stars and galaxies very closely to see if there was any color squashing or color stretching going on. They knew that even if there were, it would be so slight that they could only see it by looking at the stars' rainbow spectrums with a microscope (to see if the red bit had gotten a wee bit bigger or the violet bit a wee bit bigger).

After peering for ten years at rainbow spectra from galaxies photographed with the most powerful telescope in the world, Edwin Hubble discovered something amazing. The color of the far galaxies was redder than that of nearby ones, and not only that, but the farther away they were, the redder they were. The only explanation was light stretching caused as the galaxies moved away from us, in every direction.

Hubble found, as others have continued to find with thousands of ever more distant galaxies, that wherever you look, the galaxies are moving away from us and from each other, their light stretched deeply red among the farthest of all. It logically follows that some time in the past all these galaxies were closer together, and far enough in the past they must have been all on top of one another, at a kind of starting point.

The starting point has been given the nickname of the Big Bang. But in reality, it was very quiet (no air for sound waves) and very, very tiny (some say infinitely small).

Think about it.

Southwest to Stellafane

(Continued from page 6)

solar surface. It was the best view of the sun I'd ever had, and only thickening afternoon cumulus clouds could tear me away from the eyepiece.

I boarded the shuttle from Stellafane South to Stellafane North, to view the homemade telescopes on display around the pink clubhouse. I somehow missed the telescopes entered by Craig Tupper and Pete Johnson, but I can report that humor was back after a several-year hiatus (remember the watermelon scope?). There was the Dob constructed from a salad bowl and artist's easel and our own John Avellone had an Astro Can, with its tube made from coffee cans.

NOVAC members at Stellafane gathered at the natural amphitheater with their chicken barbecue dinners, to await the Saturday evening program. It was the best attendance from our club in years: Pete, Craig, and

John, perennial regular Jerry Wolczanski, Ron Ferris, Brenda and Kevin Jones, and my family. After the awards and raffle, David Levy gave a nice talk reminiscing about Stellafane past and present. He was followed by Stephen Dick of the U.S. Naval Observatory, on the history of the search for extraterrestrial life.

Afterward, I sampled some celestial delights through the large Dobs of Stellafane regulars Chris and Bruce, plus a number of other scopes. The members of a Connecticut star club were trying unsuccessfully to find the Bubble Nebula in Cassiopeia through their 25-inch Obsession. I consulted their copy of Uranometria, did some star-hopping with my binoculars, requested a turn on the ladder, determined that the alignment of their finder scope was off, and found the object, which we all saw for the first time.

The skies were not quite as transparent on Saturday night as they were on Friday, but the seeing was better, meaning there was less atmospheric turbulence. I got in line at the McGregor

telescope for another look at Jupiter. This time it was spectacular: the Great Red Spot, with internal structure, bordered on each side by swirling vortices; white spots in the South Temperate Belt; wispy festoons in the North Equatorial Belt; distinct color contrasts in every belt. I've seen Jupiter a lot through telescopes, and this was the best view ever.

"How to top that?," I wondered as I headed back down the hill to the other telescopes. But high clouds were now moving in, putting an end to any deep-sky observing. I crawled into the tent at 2:30, thankful for the fact that there was no Sunday morning swap meet. Before I drifted off, I thought of the words that David Levy closed his talk with the evening before: "There are hundreds of star parties in this country and around the world, but there is only one Stellafane."

Highlights of NOVAC General Meetings and Board Meetings

Ronald W. Cook

August 12 NOVAC Board Meeting

19:00-19:30 **Ron Cook** showed up early to present a Solar observing session.

19:30 **Tilly Smith** called the meeting to order. In regard to Crockett Park, new lights were installed on the guard-shack. If he is out there, he will turn off the interior-facing lights or we can.

New Observing Sites

Pete Johnson sent a letter to Loudon Co. about access to Mickey Gordon Regional Park. **Ron** mentioned **Richard Calhoon's** pursuit of Banshee Reeks Regional Park access. VAAS - Virginia Assoc. of Astron. Societies conference is intended to be yearly. **John Avellone** went to the previous meeting. They were just examining club activities. Tilly can see some benefit if they got together to have a star party at the NOVA Star Party or somewhere else. The main benefit would be clubs gaining awareness of each other. There were other activities, such as mirror grinding, etc.

During a scheduled star party, there could be a business meeting, cookout and other shared activities. The AL wanted to have some coordination activities also. Bottom line - NOVAC is not obligated to any such activity at this point.

Tilly mentioned two new permanent positions that would be appointed by the board: Membership Director - currently done by Pedro Martinez, Treas. would now be a separate position maintaining the database and mailings to all members.

Public Events Coordinator - would handle all outreach events.

Pedro Martinez passed around the current financials and they were discussed. **Ron** reported the Camp Rock Enon event was a success and that is the club's efforts were appreciated.

Pedro mentioned there were 55 new members so far this year.

The NOVAC Picnic was thought to be a big success. Tilly has reserved the Panorama site for next year's event. He has also started a club photograph album with pictures of the picnic. **Pedro** and **Pete** were working on the club database.

The club web pages were discussed.

Tilly mentioned the NOVA Star Party growing into a two-day event.

Submitted by Ron Cook, Secretary

August 19 General Meeting

At the Arlington Planetarium

17:30 about 8 gathered at the Santa Fe restaurant for the pre-meeting dinner.

19:00 A pre-meeting social half-hour was held in the Planetarium back room. Refreshments were available. **Ron Cook** provided sunspot

viewing through his binoculars outside the planetarium.

19:30 **Tilly Smith**, President called the meeting to order. New members introduced themselves.

Ted Roach talked about and provided a map to Banshee Reeks, a Loudon County Park. He said that it would be worthwhile going out in the daylight the first time.

Tilly mentioned the planetarium director **Steve Smith's** telescope maintenance.

John Avellone - ALCOR talked about their programs.

Craig Tupper offered some Sky & Telescope magazines.

Officers' Reports:

Pete Johnson discussed upcoming schedules. He also submitted a request to Loudon Co. for Mickey Gordon Regional Park access.

Ron Cook requested appreciative applause for **Ted Roach** and **Dale Cabanis** for their yard and observing area maintenance at Savage. He mentioned a cousin who attended Stellafane and returned with a picture of **John Avellone's** Coffee Can Scope.

Jeff Stetekluh gave the Observing Report. Copies are available by download from the website. The "Sky Tour" was given by **Jon Stewart-Taylor**.

The program was "Mirror-Making" by **Bob Bunge**.

There were 67 in attendance, 10 of whom were not members.

Submitted by Ron Cook, Secretary

September 2 Board Meeting

19:30 **Tilly Smith** called the meeting to order. Secretary **Ron Cook** declined to reoccupy the Secretary position. Of Trustees, **Nicole Mastej** is relocating to Arizona and **Bill Burton** expressed a desire to be replaced as a trustee because of many other projects such as Franklin Park, Science Fair Judging.

Kevin Brown is the Membership Director. The Public Events Coordinator position has not been filled and a volunteer for said position is sought.

Pete Johnson submitted a letter asking for unlimited access to Mickey Gordon, to the Loudon Co. Parks. **Kevin** and **Pete** thought **Mickey Gordon** rived or beat **Crockett** on a good night.

Ron Cook reported there had been no progress on securing Banshee Reeks as an observing site. The county would like an observing schedule, but the club would like any clear night for a schedule. Savage improvements were discussed.

Jeff Cook discussed plans for the NOVA Star Party. Publicity is moving along. Tilly passed out Washington Times articles concerning the club.

John Avellone and **Tilly** are planning for **Bob Gent** to do a talk on the Astronomical League.

There would be a vote for NOVAC membership in the AL in November. AL is strong in outreach and in the IDA.

Submitted by Ron Cook, Secretary

September 16 General Meeting

17:45 About six gathered at the Santa Fe restaurant for the pre-meeting dinner.

19:00 A pre-meeting social hour was held in the planetarium's back room. Refreshments were available.

19:30 President **Tilly Smith** called the meeting to order. New members introduced themselves. Elections will be held in Dec. for the NOVAC board and for two trustee positions. Anyone interested in any of these positions, please contact **Bill Burton** who is organizing the election. **Ron Cook** has resigned as Secretary of the club as of this meeting, and **Kevin Brown** has agreed to perform the function along with being the recently appointed "Membership Directory." The Public Events Coordinator position remains open.

The vote for membership in the Astronomical League will be held in November. **Bob Gent**, our resident NOVAC member also on the AL board as VP gave a talk about the AL and how to obtain awards of that 16,000 member organization.

Volunteers are being sought for the Camp High Road event this year. The educational-outreach web page was at the wrong address due to a server change.

Officers' Reports:

Pete gave the General Meeting schedule. **Ron** said there had been no progress on Banshee Reeks.

Pete did the observing report.

Richard Cohoon presented the papers for club use of the Banshee Reeks park in Loudon Co., VA

Someone inquired about local mirror-coaters.

John Avellone discussed his Jupiter receiver radio telescope that detects noise from the aurora.

Bill Burton reviewed the Franklin Park Observatory status.

Ted Roach talked about upcoming events at the Smithsonian and asked for help with Savage maintenance.

Bill Burton and others discussed the club's commitment to the Franklin Park Observatory. **Bill** then did the Sky Tour.

The program was "Astronomy on the Internet" by **Pete Johnson**

There were 56 in attendance, eight of whom were not members.

Submitted by Ron Cook, Secretary

Outdoor Lighting Workshop

Brent Archinal

Fellow NOVAC'ers -

Phil Ianna, of the University of Virginia Deptment of Astronomy, has sent out an announcement about the upcoming Virginia Section IDA meeting. This will be held in Richmond on Friday, November 13th. A copy of his announcement with details follows below.

At the meeting this past Spring to discuss goals for NOVAC, fighting light pollution was one of the highest rated items. Well, here's your chance to go and learn about the issues and the ways to address this problem. This is a critical issue for NOVAC, with greatly increasing light levels at all our observing sites - and the extremely poor lighting policies of local governments and the state.

I would also encourage everyone receiving this to forward copies to anyone you know in state and local governments. This is a meeting that should be attended by representatives of all local planning agencies and law enforcement agencies. Arlington and Fairfax counties in particular are apparently beginning to consider light pollution ordinances, so now is the time to let these folks know of the issues and the solutions. Likewise the state continues to put in very poor quality highway lighting. Officials in the Deptment of transportation, or your state representatives should be informed of these problems and this meeting.

This is an important meeting. I hope to see you all in Richmond on Nov. 13th.

- Brent Archinal

1998 Outdoor Lighting Workshop

This year's Virginia Section IDA meeting to promote quality lighting will be held on Friday, November 13 in Richmond, Virginia. We are all making progress with this issue.

Please join us to learn more, and to share your knowledge and concerns with others. And please spread the word to anyone you think might be (or should be) interested.

The workshop will be held at the Virginia Aviation Museum, 5701 Huntsman Road, Richmond International Airport, VA from 9:30 a.m. -

5:00 p.m. Topics to be addressed in presentations, discussions, and handouts will include criteria for good lighting design, street lighting, lighting ordinances, lighting for safety and security, and strategies for preserving the environment.

There are motels conveniently located just across the road from the Museum, including

Dinner Before the Meetings

Brent A. Archinal

Our next dinner and regular meeting will be the day after the "Great Leonid Meteor Storm of 1998" - if that's what it turns out to be!

Our December dinner begins about 3 hours before the Winter Solstice, as we begin our longest night of the year. Unfortunately December is also the cloudiest month of the year in this area, so having more time to observe may not be much of a help! But anyway, why not come to NOVAC's "dinner before the meeting" both nights and tell us of your success (or failure?) at observing the Leonids, or otherwise observing in the long nights of December. These dinners continue to be a place where NOVAC members can get together and meet their fellow members, in a nice, relaxed, unhurried atmosphere. Mark your calendars for the Wednesdays November 18 and December 16.

The place to meet continues to be the *Santa Fe Cafe* in Rosslyn. You should plan to arrive at about 5:45 P.M., in order to have time to make it to the regular meeting at the Arlington Planetarium at 7:30 P.M. This is particularly true with the larger groups of members we've had attending lately. The *Santa Fe Cafe* is a nice Mexican restaurant with good food, usually some worthwhile specials (crab cake quesadillas!), and reasonable prices, although credit cards are not accepted. Smoking is allowed in one part of this (large) one room restaurant, but so far NOVAC members have not been smoking and the few others dining at that time have rarely smoked. If you do arrive first, we would appreciate it if you'd try to sit in the front in the non-smoking section.

Directions: The *Santa Fe Cafe* is located at 1500 Wilson Blvd., in Rosslyn, with entrances off of both Wilson Blvd. and Clarendon Blvd. This restaurant is easily found, just west of "downtown Rosslyn", on the southwest corner of Wilson Blvd. and N. Oak Street, where Wilson splits becoming Wilson one-way west and Clarendon one-way east. From I-66 eastbound, take the Rosslyn exit to Lee Highway (US 29 East), and turn right at the second light onto Fort Myer Drive. Go two blocks and turn right onto Wilson, and the restaurant will be one block ahead on your left (on the corner across Oak/Clarendon from a big outdoor sculpture). On street parking is often available in front of the restaurant, on the other side of the street up the hill, around the long block (make two left turns) on Clarendon just before it ends by the restaurant, or one block north. However be sure to feed any parking meter if you arrive before 6 P.M. This location is also quite close to the Rosslyn Metrorail station.

Reservations are not necessary, although it HELPS A GREAT DEAL to know who's coming so we'll know how big a table to get or how many tables to get. We've recently been filling two or more large tables so this information does prove useful. Also should it be necessary to cancel, I can let you know. That's never been the case yet, but who knows what the weather - particularly in December - will bring. So if you think there's even a chance you may be coming or if you need a ride to the meeting and back to the Metro, or just for more information or directions, please e-mail me at baa@casa.usno.navy.mil, or give me a call (evenings) at 703-237-0201.

the Best Western Airport Inn, a Motel 6, and a Days Inn.

There will be a registration fee of \$10 at the door or \$5 paid in advance.

For further information, see the Virginia Section Web pages link on www.darksky.org, or contact:

Philip A. Ianna

Department of Astronomy, The University of Virginia

Charlottesville VA 22903-0818

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pai@virginia.edu

Beginner Scope Items for sale

Beginner scope items for sale, all in very good condition:

- Celestron CG-3 equatorial mount/wood tripod -- \$65.00
 - Pair of Lumicon 4000 pulse encoders (for DSCs) -- \$45.00
 - Celestron LER 6x30 finderscope w/bracket for SCT -- \$20.00
 - Celestron 25mm SMA eyepiece -- \$15.00
 - Pro-Optic (2x) 1.25" short Barlow -- \$15.00
 - 1.25" star diagonal (Chinese) -- \$10.00
- Contact: Mike Lewis (703) 823-3364
mike.lewis@mail.house.gov

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 \$27.00 (instead of the standard \$36.00), make your check out to "Sky Publishing Co." You can subscribe to *Astronomy Magazine* for \$29.00 for one year (Note price increase from \$24.00, effective November 1). 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.

The treasurer will send the checks to Sky Publishing and Kalmbach once a month, on the first of each month. To have your renewal included, be sure to have it in his hands by the last day of the preceding month.

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.

There are no special 10% discounts offered on publications from Kalmbach Publishing, but read what follows.

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. It will readily fit disassembled in any car, is easily transported, and can be set up quickly at

remote observing sites. 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". Checks used as security deposits on telescopes are not deposited, and will be returned to the originator when the telescope is returned in the same condition it was checked out. The scopes may be checked out for two to four weeks at a time, depending on demand.

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.

NOVAC Observing Schedule for 1998

Observing at Savage Farm and C.M. Crockett Park: see the back cover of this newsletter.

General Membership Meetings

General Membership Meetings are held at the Arlington Planetarium, 1426 N. Quincy Street, Arlington, VA, on the third

Wednesday of every month. To reach the Planetarium, take Interstate 66 to exit 71 West, North Fairfax Dr. (Rt. 237). Go east on Rt. 237 to the 5th stoplight, N. Quincy Street (about 0.8 miles). Turn left onto N. Quincy Street (at the funeral home). Go 6 blocks (about 0.5 miles). The planetarium is the low white domed building on the left.

Trustee Meetings are held the Wednesday before the week of the General Membership Meeting. Non-trustees 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 Chewning Toulmin, pct@his.com.

NOVAC Observing Site Rules

C. M. Crockett Park:

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 approx. 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 (crocketcow.aol.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

(Continued on page 11)

(Continued from page 10)

revoke our observing privileges at any time due to carelessness of one person.

Savage Farm Site: The Savage Farm site is reserved for NOVAC use on nights listed in our schedule at the back of this newsletter. For unscheduled observing sessions, contact the park manager, Paul McCray, at (703) 729-0596, at least 24 hours in advance, and leave a message with your phone number. You may use the site for that session unless you receive a call from Mr. McCray stating otherwise.

Alternatively, you may contact Mr. McCray via e-mail at <wodtrail@erols.com>, at least 24 hours in advance. Include your e-mail address in your message. (This e-mail is checked morning and afternoon.) You may use the site for that session unless you receive a reply 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.

Directions to NOVAC Observing Sites

C. M. Crockett Park: From the Washington, D.C./Northern Virginia area, go west on I-66 21.7 miles from I-495 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. At top of ramp, turn left to go 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. Once on the park entrance road, go one-half mile to the park gate.

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 (Mayhugh's store on corner). Go 1 mile to Crockett Park entrance road on left. Park is 1/2 mile up the road

Savage Site: Use some combination of Routes 7, 267 (Dulles toll road), and 28 to get to the Route 7 Leesburg bypass. Go around Leesburg on the bypass until you reach "regular" Route 7 again. From the intersection of the bypass and "regular" Route 7, continue on Route 7 west 18.5 miles to Route 601, at the top of Snicker's Gap.

Turn left onto Route 601 south and go 2.4 miles to the park entrance. The park entrance is past the driveway on the left whose gatepost reads *Ben Lomand*. The park entrance is the next driveway on your left. There will be a sign on a tree saying *Wildlife Sanctuary*. If you come to gateposts on the left that say *Belle Allee* and *Ball Alley 1875*, you have gone too far.

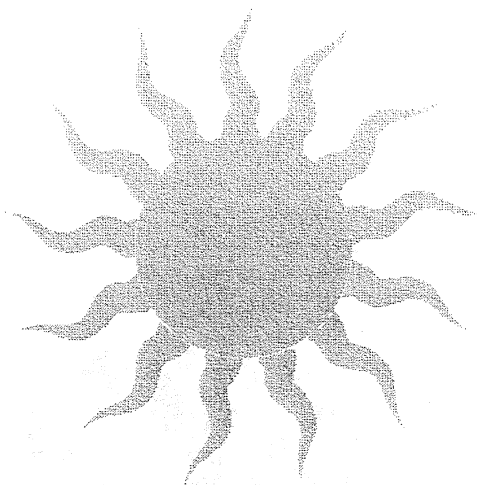
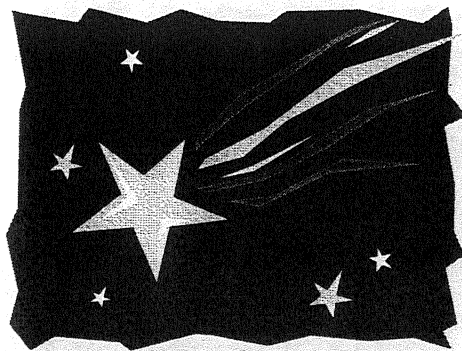
You may also take I-66 west to Route 17 North. Stay on Route 17 North until it intersects with Route 50 at Ashby Gap. Turn left onto Route 50 and go 1.0 mile and turn right on Route 601. Continue on Route 601 (Blue Ridge Mountain Road) and go two miles past the main gate of the FEMA installation. Turn 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 brown and white NOVAC sign. The neighbors periodically pull up the sign, so it may not be there. 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.

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



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 and Publisher. 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 Treasurer Pedro Martinez, Jr., 6319 Anneliese Dr., Falls Church VA 22044, 703 534-2604.

All notices of change of address should be sent to Pedro Martinez, Jr. 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.

Deadline for submissions is three weeks in advance of publication, e.g., December 10 for the January/February newsletter.

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1998-1999 NOVAC Observing Schedule

C. M. Crockett Park

All weekend nights (Fri./Sat.)
Astronomy Day - Sat. May 22

NOVAC Picnic - Sat. June 12
NOVA Star Party Oct. 16

Savage Farm

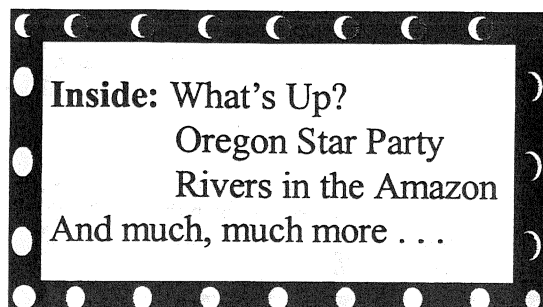
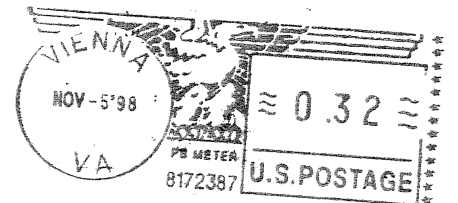
November 13, 14, 15, 17 (Leonid meteor shower), 20, 21, 22
December 11, 12, 13 (Geminid meteor shower), 18, 19, 20, 22 (Ursid meteor shower)
January 8, 9, 10, 15, 16, 17, 22, 23, 24
February 12, 13, 14, 19, 20, 21
March 12, 13, 14, 19, 20, 21
April 9, 10, 11, 16, 17, 18

May 7, 8, 9, 14, 15, 16
June 11, 12, 13, 18, 19, 20
July 9, 10, 11, 16, 17, 18
August 6, 7, 8, 13, 14, 15
September 3, 4, 5, 10, 11, 12, 17, 18, 19
October 1, 2, 3, 8, 9, 10, 15, 16, 17
November 5, 6, 7, 12, 13, 14
December 3, 4, 5, 10, 11, 12, 31
January 1, 2

NOVAC

The Northern Virginia Astronomy Club

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