NOVAC

THE NEWSLETTER OF THE NORTHERN VIRGINIA ASTRONOMY CLUB

Issue Number 77 **Volume 18** **May/June 1998**

Important NOVAC Numbers

NOVAC Information Hotline	703 803-3153
Crockett Park	540 788-4867
Savage Park (Paul McCray)	703 729-0596
Arlington Planetarium	703 358-6070

NOVAC's Web Page
http://astro.gmu.edu/~novac

President's Message

Tilly Smith

I hope everyone had a chance to get out and do some observing over the Messier Marathon week (25 March - 1 April). We had some of the best weather I can remember for this time of year - warm and clear for most of the week. More than forty people were out at Crockett on Saturday, 28 March.

There are two NOVAC events coming up in the next two months that you need to note - The Astronomy Day Star Party on Saturday 2 May and the Annual NOVAC Picnic on Saturday 20 June. After the picnic on 20 June, weather permitting, we plan to hold a special observing session for our new and novice members. This should be of interest to a large segment of the club, as we will focus on helping our members get the most out of viewing

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What's Up?

Al Schumann
(our correspondent in Williamsburg, VA)

Eclipse Wrap Up

Most of February was kinda punk for astronomers on the peninsula. We had lots of clouds, high winds, and almost nine inches of rain in the first three weeks alone. Chances of catching a glimpse of the solar eclipse seemed remote. However, February 26 turned out to be a beautiful spring-like day. The sky was clear, winds were gentle, and temperatures were expected to reach near 70 degrees. Conditions were perfect for observing the eclipse. Chalk it up to clean living.

We set up the C-8 for photos and the Astroscan for visual observation. That little Astroscan, with the Edmund solar screen attachment, is an ideal instrument for looking at the sun. It is easy to put together, and it is simple to use. Since it operates on the projection principle, a lot of people can watch the sun at the same

NOVAC Programs at the Arlington Planetarium

Pete Johnson

May 20
CCD Astronomy - Craig Tupper
June 17
Amateur Telescope Making
July 15
Eclipse "Night Before Totality"
Dr. Huddle, Naval Academy'
August 19
- Mirror Making - tbd
September 16
Astronomy on the Internet

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Other Upcoming Events

May 2
Astronomy Day Star Party
Crockett Park
June 20
NOVAC Picnic & Swap Meet
Crockett Park 2:30-dusk
(new members observing session)

What's Up

(Continued from page 1)

lot of people can watch the sun at the same time. In addition to the eclipse, we had four sunspots to observe. The sunspots looked like two sets of snakebites. In both cases, the left fang was a little bigger than the right. The spots were not all that large, but they were obvious enough to make the afternoon just that much more enjoyable. I shot up a 36-exposure roll of ISO 200 print film through the C-8. Exposures (1/250 sec at f/10) were taken every five minutes, and the pictures of the eclipse turned out very well. This eclipse was not as dramatic as the 80+ % event in May 1994, but the rarity of these happenings makes any eclipse exciting. We achieved everything we set out to do, so one cannot ask for more. Additionally, we caught all of the action on film and videotape for a permanent record.

What's New?

After more than 40 years of marriage it is difficult for us to surprise each other anymore. However, Lynn came up with a present that did the trick. It was *The Observer's Guide to the Herschel 400* by S. J. Martens, 1997, 220 pages. It is a nicely organized loose-leaf book, and the deep sky objects therein take the observer a good step beyond the Messier Catalog. The author says you need magnitude 5.5 or darker skies and at least an eight-inch telescope to stand a chance at seeing most of the objects. Martens is not slavishly committed to RA in his sequence. It is doubtful that anyone is going to turn the Herschel 400 into a one-night marathon. Rather, he employs what he calls the "Next-Available-Herschel-in-the-Area" approach. This makes for a nice flow by minimizing big sweeps in RA and declination. Also, many of the objects in the sequence serve as springboards to other objects, not necessarily among the 400. Another handy feature is a chart showing the midnight culmination dates for the Herschel 400 constellations. When planning a night out, one can take a quick look at the culmination chart to see which constellations will be highest in the sky for a given time of year.

Sky charts are very basic and show stars down to sixth magnitude. Constellations are outlined with dotted lines. This has always been a big help for me. There are no "X marks the spot" notations for any of the objects. You need an atlas such as *Uranometria* or *Sky Atlas 2,000* to aid in the search and identification. That might be a bit cumbersome, but time will tell. The objects are listed by constellation, and there are only four or five objects per page. This makes for an uncluttered and easy-to-use look, especially in the dark. The appropriate sky chart is always shown on the opposite page no matter how many pages are required for the constellation. In other words, you don't have to flip pages back and forth to find a chart. Nice touch. In a given constellation, each object is listed by its NGC number, type object, magnitude, RA and Dec, and chart number for both *Uranometria* and SA2000. Next to that information are the directions. Example: from B Cas go 1.1° N and 2.6° E to NGC 129. There is also a box for observing notes for each object.

A couple of issues ago, I wrote about looking at some of the lesser-known clusters in Cassiopeia. Just for fun, I riffled through the guide and my observing journal to see if any were listed. Sure enough, five of the open clusters I mentioned in the article were part of the 400 list. I'm sure there are scores of others in the 400 list that I have observed, but they were the easy ones. Many of the others are going to be a whale of a challenge, especially those 11th to 13th magnitude galaxies in the middle of nowhere. To find a lot of these objects, it seems that an equatorial mounted scope will be a must. Sometimes the directions call for leaps of many degrees, which can be very tricky with a Dobsonian. It sounds so easy to say "go six degrees north". However, north usually is a weird diagonal across the sky, which drives Dob users up the wall. Should be great fun.

If anyone is interested in getting a copy, here's the scoop: $22.95 (S&H incl.) Send to S.J. Martens, c/o Saberstar Productions, 4343 16th St., Suite 102, Moline, IL 61265. E-mail : saber@revealed.net. You can check his ad on page 18 of your February 1998 issue of *Reflector*.

I'll be joining the Medicare crowd this summer, and when you get older, you need to work smarter. So, I cranked out sort of a rolling platform for the 13-inch telescope. It is similar to those flat dollies used by furniture movers. It is nothing fancy, but now I can roll the scope out of the garage, plug in an eyepiece, and start observing in about a minute. It's axiomatic that ease of movement and setup of a telescope is directly proportional to the use the instrument gets. We shall see.

President's Message

(Continued from page 1)

the night sky.

As I mentioned at the last general meeting, the board is initiating an effort to develop a "Five Year Plan" for your club. We want to focus on what NOVAC should look like and be doing in 2003. There are many issues to be discussed (observing sites, public programs, meeting space, new members, just to name a few) in order to develop a plan that will meet the needs of the club out to 2003 and beyond. In order that we hear our members' thoughts and ideas, I would like to ask any member who would like to provide input to this process to please contact one of the Board members.

// tilly

For Sale

I have a Meade 16-inch Dobsonian that I would like to sell.

I paid $1,000 plus $300 shipping. I'm asking $750 for the scope. And, it comes with three Meade eyepieces: (9mm, 12mm, and 25mm).

Dave Edelschick
14602 Danville Rd.
Dale City, VA 22193
703-670-5027

Found: Green Parka

Found: Green parka at a NOVAC observing site. If it's yours, please contact Jon Stewart-Taylor at (703) 724-2460 or via e-mail: jcst@tripod.net

For Sale

Small reflector. Handy, easy to use, 3" f/6 Newtonian (reflector) telescope (only 22" long). Edmund Scientific mirror (gives good quality images). Lightweight, high-tech tube (4 13 oz. Folgers coffee cans soldered together and sprayed black). Comes with tripod and two 1 1/4" eyepieces (low power = all of Pleiades, high power = entire Moon). $65.

John Avellone (703)-768-8086

Editor's Note

Elliott Fein

New in the "Notices" section of the newsletter: latitudes and longitudes for NOVAC observing sites.

Please keep those articles coming in!

And a reminder, the 10th of the month preceding publication is the cut-off: Material that I receive after the 10th will appear in a later newsletter. Copy (in ASCII, please) for the July/August issue must be in my hands by June 10. Copy received on June 11 or later will not make it into the July/August issue.

NOVAC 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
April 15	6:32 AM	7:45 PM
May 20	5:52 AM	8:18 PM
June 17	5:43 AM	8:36 PM
July 15	5:55 AM	8:33 PM

The Moon

Last Quarter	New Moon	First Quarter	Full Moon
April 19	April 26	May 3	May 11
May 19	May 25	June 1	June 10
June 17	June 23	July 1	July 9
July 16	July 23	July 31	

Events

May 4	Mercury at greatest elongation
May 5	Eta-Aquarid meteor shower peaks, active April 19 to May 28
May 12	Mars-Sun conjunction (on other side of Sun)
May 12	Mercury passes within 1° south of Saturn (will be 5° above the horizon at sunrise)
May 28	Saturn lies ?° east of Venus (from S&T)
June 10	Mercury at superior conjunction (from Espenak)
June 14	Earliest sunrise of the year (from S&T)
June 17	Earliest morning twilight (from S&T)
June 21	Summer Solstice (from Espenak)
June 24	Latest twilight (from S&T)
June 27	Latest sunset (from S&T)
July 16	Mercury at greatest elongation: 26.7?E (from Espenak)
July 23	Neptune at opposition (from Espenak)
July 28	Southern delta-Aquarids ZHR=20, active July 12 to Aug 19 (from IMO)

The Planets

April 15	**Magnitude**	**Rises/Sets**
Mercury	2.6	rises 5:56 AM
Venus	-4.2	rises 4:43 AM
easy to see just before sunrise		
Mars	1.3	W, 5*
Jupiter	-2.1	rises 5:04 AM
closing in on Venus		
Saturn	1.7	rises 6:40 AM

May 20	**Magnitude**	**Rises/Sets**
Mercury	-0.3	rises 5:01 AM
Venus	-4.0	rises 4:09 AM
Mars	1.4	rises 5:47 AM
Jupiter	-2.3	rises 3:03 AM
Saturn	1.9	rises 4:33 AM

June 17	**Magnitude**	**Rises/Sets**
Mercury	-1.3	WNW, 7*
Venus	-3.9	rises 3:47 AM
Mars	1.5	rises 5:06 AM
Jupiter	-2.5	rises 1:22 AM
Saturn	2.0	rises 2:51 AM

July 15	**Magnitude**	**Rises/Sets**
Mercury	0.4	W, 15*
Venus	-3.9	rises 3:53 AM
Mars	1.6	rises 4:35 AM
Jupiter	-2.7	rises 11:32 PM
Saturn	1.9	rises 1:07 AM

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

Jupiter Eclipse Events on Club Observing Nights

May 30	4:33 AM	Europa eclipse starts (S -12 J 122 23)
June 21	2:31 AM	Io eclipse starts (S -25 J 113 16)
June 28	4:25 AM	Io eclipse starts (S -13 J 143 39)
July 26	1:15 AM	Europa eclipse starts (S -32 J 124 26)

References for Jeff Stetekluh's Observing Report:
Galilean moon events are calculated using his software that is based on algorithms from the book *Astronomical Algorithms* by Jean Meeus, 1991. This includes Bretagnon's and Francou's VSOP87 planetary theory and Lieske's theory E2 of the satellites. Sun and Moon rise and set times are calculated using software he converted to the C language from the basic program SESSION.BAS. SESSION.BAS is available through Compuserve and is by Michael A. Covington, 1984 and revised by Leonard Abbey, 1986. The Moon's phase values are calculated by software I adapted from lunisolar.c by John D. Ramsdell, May 1990. Lunisolar.c is available on the Internet.

Get CCD Field Experience!

Craig Tupper

The NOVAC club scope CCD project is ready for prime time. I will bring the club's 8" classical Cassegrain and Losmandy G-11 mount, along with my own ST-7 CCD, and laptop to Crockett Park on the first promising (weather-wise) scheduled observing night of each lunar cycle. Any member interested in CCD's can come to learn the basics, and take home a raw image on an IBM disk with software for processing at home.

Occasionally, I may be unable to make an appearance on the first good night. Also, if I have already held a session, say on the first scheduled Friday of a cycle, I may or may not show up the next night (or next weekend). In other words, I'm committed to being there once a month if possible, but may do better than that. If you want to know whether I'll be there, check my web page at www.erols.com/ctupper, send an e-mail to ctupper@erols.com, or give me a call at (301) 773-4386.

Observing in Montgomery County Maryland

David Bonnell

Just some comments from a relative newcomer, observing on *Friday* night (3/27/98) at Maryland's Little Bennett Regional Park (LBRP). Knowing I would miss what weather predictions indicated would be a dynamite *Saturday* night for Messier Marathoning, I put out a call to the suburban MD observing group about going to LBRP Friday. Dale Kiesewetter and I were the die-hards for a night with marginal sky clarity. In fact, I managed to be late, not arriving until about 7:15. Just before that, the sky looked almost totally socked in, but miraculously began to clear toward the west. Where the sky was clear, it was wonderfully transparent, and steady. For the first time, I could actually see Canis Major as a leaping dog at the heels of Orion. Absolutely stunning. The sky was perhaps as much as 40% clear in wide swatches for most of the evening. Not a Messier Marathon Night (but I'm really not yet ready for that, anyway).

After setting up, I went to work on the Messier objects at the low end of Canis Major, and vicinity. My Magellan II calibration (10" LX50) was shaky, as seems to happen too often, But, starting with M41, I was able to star hop around and, by SYNCing on each object, eventually Magellan began to close on being useful. Dale (with his 8" Celestron) and I swapped views. He has a 32-mm Televue Plossl, which seemed brighter than my 32 mm Meade Super Plossl 4000 (the 1-1/4" EP). We swapped, and trying first one, then the other, the difference seemed to be negligible. My notes suggest that the eye relief of the Televue EP is better.

M93 was next. I set up on it with the TelRad. It was about one TelRad field up and to the left (N & E) of Canis Major's hindquarters, and it was visible (just) in my 8x50 finder as a faint puff. (These Meade finders are surprisingly poor, both in brightness, FOV, eye relief, and awkward, to boot. I think that maybe it's time to consider a better tool). The good 7x50's I use clearly have a big edge! At 50x (32 mm into 250 mm at f/6.3) M93 was still very faint and jewel-like. I thought there might be some nebulosity, so went to higher power. At 105x, there was granularity throughout the cluster, hinting at many unresolved stars that had given the impression of nebulosity at 50x. The clarity and steadiness of viewing made this a special gem. The web photos do not do this one justice. It is a bit more difficult to find, but worth the effort.

Dale mentioned that he was having trouble with M50, and I moved there to check. Sure enough, darn faint, given that the finder/binoc image is viewable - what we both found looked too faint and disorganized, but that's what you get from looking at overexposed images for comparison. It is possible that haze was washing out this object.

Then on to M46-47. I have found M47 several times with binoculars, but have never been sure about M46. M47 was an easy finder-object with a distinctive pattern of bright stars. M47 is a bright, beautiful, spectacular object. I just swept the scope to find M46 - another really dim item, but as I watched it, it seemed to take on an almost pinwheel shape. There are two PNs in it, and NGC 2438, at Mag 10, should have been the easier object, but as I switched to higher power, that part of the sky clouded over. Rats!

About 10 p.m., Ralph Kantrowitz came by from the Black Hills Regional Park public observing event I had passed on. It had been more than two months since the sky, my telescope, and I had got together. I'd been out to the last two public events, and felt I could skip this one in favor of learning more myself.

Ralph had his homemade 6" Newtonian (with a homemade finder) up on a German mount on a homemade tripod. He was in business in 10 minutes! One of the first objects (given the sky) he went for, was M51. There is a finder "trick" that lets one put the scope right on it - you have to find the "barn" (a pattern of a square of stars with a "roof" of one more star) and narrow triangle sight picture about one finder field off Alcaid. Ralph's homemade finder was much brighter than my similar aperture Meade, more like the 7x50 binoculars! A good thing too, as I needed the view from his finder to learn what to look for in my rig. Unlikely that the Magellan was going to put that faint object in view. In Ralph's Newtonian, M51 was an object for averted vision, but one could just see both knots. In my 10", the view was clearly easier. While Ralph hunted other objects (the Owl, M67? . . .) I waited for the next wave of clouds to pass so I could apply higher power. At 105x, I could even see hints of the structure around one knot, but no hint of the bridge.

On to Leo, and M65-66. There is a finder trick there, too. When you're in the right area, look for a sort of reverse sickle with a right-angle handle, about 2° below theta Leo. Target the apex star in the right angle, and both M65 and 66 will be in the field. We were easily able to see the position angle of M65. M66 was tougher, as it is near a field star, making averted vision viewing harder.

By this time, the sky began to deteriorate, badly, and became fully overcast. Ralph took a couple of opportunities to spot doubles, but it became clear it was a wrap, by midnight. It was very nice on such a night to be less than 1/2 hour from home, when the sky finally bagged it. Weather predictions had suggested that the night could continue to clear, or there could be a state-sized cloudbank pass over before the sky finally cleared. Because of the closeness of the site, we could afford to gamble, and to quit after waiting a half-hour of so.

In spite of having to hunt through clouds, it was a very enjoyable night — we learned a little more and saw some great sights. No marathon, just an opportunity to find and get to know some nice deep sky objects. It took some of the sting off not being able to go out Saturday - when the sky was really clear, or was it? I tried binoculars in my front yard late Saturday night, and even though the sky looked clear, I couldn't find M35 with the binoculars, which is normally pretty easy. Maybe some high haze? There did seem to be a hint of haze, but I was probably just blind and looking in the wrong place — bright street lights will do that.

Working with Ralph Friday night was a delight. He has a lot of experience, and is more than willing to share it. And, as one develops these skills further, the sky becomes a better-known friend. There are many good things to say about GO-TO and digital setting circles, but somehow, technology doesn't seem to make the task of *learning* the sky any easier, and may even make it harder. Both views have their place, and I think the well-rounded amateur will use both approaches.

To prove that point, I went into my (getting worse-light-polluted all the time) Germantown backyard on Monday night, clear and breezy. My Magellan II alignment was worse than usual, so I was mostly forced to find by hand, with Magellan just getting me in the neighborhood (with Mag 3+ skies, the TelRad isn't nearly enough help). It was too late by the time family things settled to work the West (M35, 37, ... were all in the trees). I started again with M41, but even there, the neighbors's house became a problem. LBRP may be a horse park, but wide flat Southern horizons do have their advantages. Unfortunately, digital setting circles really don't tell you what is obscured by the surroundings - better to use sky knowledge. Picked up M65, 66 again, even easier than Friday night. Looked for NGC 3628, only a few 10th's mag dimmer, but not a prayer - it takes a bright knot to make galaxies visible in high light pollution. On to M95-96, but by a roundabout route. I started with M44 - barely naked eye in my light pollution, but bright in finder and binocs. The densest part just fits in my ~0.6° 50x telescope FOV. I swept South about 8°, West about 2°, looking for a line of 2 bright stars, one brighter than the other, pointing to a faint triangle. Just between, the finder showed a smudge, perhaps just the two brightest stars of M67. In the scope, M67 looks like an opening flower, or a faint firework bursting from a point, very faint, but certainly distinctive. One I had the scope and finder image, I could use the same guides to find M67 with binoculars.

Now, moving due west, ~30°, is M95-96 - there are no landmarks, but the move is essentially pure RA movement. M96 is easy to spot

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Binoculars for Astronomy

Bob L'Hommedieu

[Based on a talk given at a NOVAC General Meeting]

Binoculars are an excellent choice for observing the heavens, and are especially helpful for beginning observers. The most common size used for scanning the heavens is 7 x 50. There are much larger sizes available, but 7 x 50 binoculars are the most commonly available and most comfortable to use. I will try to explain what to look for in a pair of binoculars and how to shop for a pair. We will start with binocular features and then how to test them.

1. Size - Binoculars are labeled by magnification and size of the objective lens. For example, 7 x 50 means the binoculars have 7 power magnification and the front lens is 50 mm in diameter.

2. Field of View - Binoculars are low power instruments for scanning the sky. The wider the field of view the better. Within a given size (50 mm for example), the higher the magnification, the smaller the field of view. 7 x 50 binoculars have a wider field of view than 10 x 50 binoculars. Field is marked on the binocular as either degrees or as feet at 1,000 yards. To convert feet at 1,000 yards to degrees, divide by 52.5. For example, 7 degrees field of view = 367.5 feet at 1,000 yards.

3. Exit pupil - If you hold a pair of binoculars at arm's length with the front lens (an objective lens) pointed at a bright light and the eyepieces facing you, there will be a circle of light visible in the eyepieces. This is the "exit pupil." Within a given size of binoculars (e.g., 50 mm), the bigger the exit pupil, the brighter the image you will see. The exit pupil will be equal to the objective lens diameter divided by the magnification. Example: Seven x 50 = exit pupils of 7, 10 x 50 = exit pupils of five. Brightness of the image depends on many other factors, so this is best used to compare binoculars of the same size and brand, but different magnification.

4. Eye relief - The image of the object you are observing comes to focus just outside the eyepieces and then enters your eye. The farther the image comes to focus behind the eyepieces, the more comfortable the viewing will be. This is especially important if you wear glasses.

5. Alignment - The binocular is really two small telescopes held together so you can look through one with each eye. It is very important that these two telescopes are aligned with each other, or each eye will be looking at slightly different images and your brain will have to merge them. This will cause strain, headache, and can even make you dizzy.

6. Focusing - To make the binoculars focus on an object, the eyepieces have to move in and out slightly. Focusing mechanisms should be smooth and precise. The most accurate focusers usually have a small wheel that you turn, between the barrels of the binoculars. Avoid zoom binoculars, as these are generally poor choices.

7. Anti-reflection coatings - The light entering a pair of binoculars is reflected away from the front lens by the glass, to some degree. Internal reflections within the optic system of the binoculars can also waste a lot of the light that enters the front lens. Coatings have been developed to minimize these reflections. It is important that binoculars have optical coatings, and the better models have multiple optical coatings.

8. Prisms - Binoculars employ prisms to bend the path of light as it travels through the instrument. This makes the binocular shorter and more compact, which makes them more comfortable to hold and to carry around. Prisms come in two kinds, Porro prisms and roof prisms. Porro prisms are better and cheaper than roof prisms, for astronomy. Roof prism binoculars have straight barrels, and Porro-prism binoculars have the familiar crooked barrels. Prisms are commonly made of two types of glass: BAK 4 and BK-7. BAK is optically much better.

9. Diopter adjustment - Binoculars can be adjusted to each user's particular vision using the diopter adjustment located on one of the eyepieces, usually the right. There is usually an index mark with a scale. With the lens covers on the opposite objective lens, look through the binoculars and focus on an object 50 - 100 yards away, then turn the diopter adjustment to provide the clearest view.

Observing in Montgomery County Maryland

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(well, for a faint object in bright skies). M95 is much tougher, hard to see its glow for the close field star. M105 is just a degree above M96, so almost pure dec motion here. At Mag 9.3, it looks almost stellar - had to go to higher power to be sure. My notes say that this object had the "look and feel of a tiny distant globular." Speaking of globulars, M53 is not too far away. This little guy is not one of your spectacular globulars, but a nice view, and a tough gent to find. The finder pattern to look for is a tight little line of stars with two brighter ones above and below. With binoculars, there is just nothing to aim for, at first, but there is an "association," Mel 111, that just jumps out at you, slightly north of the "galaxies" field west of Leo's hindquarters. It was at the zenith about midnight.

Swinging down about 10° and East, a clear pattern can be seen: there is a little run of stars with two at one end making a tail, with a brighter star above and below, roughly N-S (careful, there are two similar patterns, the lower left one is correct). Sight halfway between the brighter stars just above the run of stars, and M53 becomes visible as just a faint "star" in binoculars. But M53 is on the tougher Messier binocular list. Not too shabby for Mag 3 skies! Was able to confirm with my 'scope.

I find it to be a real treat to work back and forth between using binoculars and my scope. There are many more times when I can go out for a short while and look with binoculars, so it's good to use that time to work out ways to find stuff with finder and scope. It's this process, that I hope eventually leads to results like Craig Tupper bagging 108 Messiers last weekend with nary an electronic aid.

Well, at least now we can't complain as much about skies - we've had several clear nights in a row with the dark of the moon. Must be something to *sacrifices* (I guess we have to thank Bill Jensen? Something had to be done!).

<<<<<<<< >>>>>>>>>>>>

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Return to The Shadow

Bill Burton

I have lived a fortunate life, and astronomy has been a big part of it. Why, just in the past few years I have witnessed two great comets, another comet crashing into Jupiter, lunar eclipses, all-night meteor showers, splendid planetary displays, and the glittering Milky Way in the inky blackness of mountain skies.

In fact, there's been only one source of disappointment: it occurred on a hillside in Goldendale, Washington in 1979. My friends and I and hundreds of other astronomers were waiting for the Moon's shadow to fall on us. Alas, in the final seconds before second contact, fast-moving stratocumulus clouds moved in and covered the Sun. We were left with nothing but darkness! I let out a cry and fell on my knees, overwhelmed: not only was the Sun being taken away from me, I was also being prevented from seeing why, and it made me feel powerless. Adding to the agony was the fact that you could see that it was clear a mile away, and people were enjoying the whole show.

Perversely, as soon as the shadow had passed, the clouds broke up, and it became sunny again. We all put on brave smiles and told each other it was still a good experience, but I was deeply disturbed, and had to put the whole experience out of my mind. I also knew there was really only one way to heal this psychic wound, and that was to return, some day, to the path of totality.

That opportunity appeared years later, when eclipse-chaser Sandy Sanders mentioned in a NOVAC meeting that the path of totality in February 1998 would cross several islands in the Caribbean. The date was 19 years to the day after that eclipse in Goldendale. A desert island in the Caribbean in February — this sounded like a sure thing! After quickly shopping around, my wife and I chose Gayety Travel, out of Brooklyn, and booked a three-day package trip to Aruba, almost two years in advance. It was relatively economical and short in duration, for we knew we'd have to leave our two young children at home. Many months passed, baby-sitting arrangements with grandparents were made, and finally the trip loomed, only weeks away.

Would El Niño, the weather pattern that was causing havoc all over the world this winter, threaten our eclipse? In fact, it was producing drier than usual conditions for Aruba and neighboring islands, easing my worries. But I still slept poorly, tossing and turning at night. Here we were spending thousands of dollars and making elaborate childcare arrangements, all on the premise that a certain patch of sky would be free of clouds at a certain time. This was lunacy!

Finally the day came to leave. We hugged our kids goodbye in the predawn darkness, and many hours later arrived on the island, the day before the eclipse. A blast of solar radiation greeted us as we stepped off the plane onto the tarmac, reminding us that we were at only 12° north latitude. It was mid-afternoon, puffy white cumuli dotted the sky, and a northeasterly trade wind was blowing. We passed a desolate, cactus-covered landscape as we rode the bus from the airport.

This was Aruba, and we were staying at the Wyndham, one of the plushest resorts on the island. Smiling hotel clerks in the lobby beckoned to us across a gleaming ceramic tile floor. The doors in back opened out onto a large veranda with fancy swimming pool, open-air bar and restaurant, and a reggae band tuning up for its daily afternoon gig. Emerald-green parrots squawked and flitted from palm tree to palm tree, while grotesquely beautiful iguanas skittered across the patio stones. Beyond all this lay a glittering white beach and the Caribbean. Laurel and I wandered around in a daze, trying to take it all in and shaking our heads in amazement: we were just amateur astronomers — what did we do to deserve this?

After a leisurely dinner on the veranda that evening, we connected up with the rest of the group of forty-five from Gayety Travel.

We went out next to the hotel to look at the night sky. At this latitude, the skies looking south are substantially different from those near Washington, D.C. Orion was straight overhead! While the more "serious" eclipse chasers in the big tour groups were inside, presumably doing final checks on their fancy equipment, we were enjoying the splendors of open clusters in Carina, Puppis, and Vela. The views of these clusters through my 20x100 binoculars were beautiful. Our primary goal was to see the Large Magellanic cloud, about 10° above the horizon, but this proved impossible due to the rather bad sky glow of Oranjestad a few miles to the south.

Despite the light pollution, there was a lot to observe and share through eyepieces, and friendships were soon made in the balmy night. After talking to another guy for a while in the darkness, he and I realized that we had met three years before at Stellafane, where he had let me use one of his scopes for several hours. We renewed our acquaintance, still without having seen each other face to face.

Laurel and I finally went to bed, with the unreasonable expectation of getting a good night's sleep before the big day. This proving futile, I got up at 2:30 A.M., went out on the balcony, and looked south. The Southern Cross was hanging in the sky, a twinkling emblem of the celestial delights denied northern observers. Alpha and Beta Centauri were to its left, and above, I could see the fuzzy glow of the globular cluster Omega Centauri. Yes, I tried to reassure myself, even if the unthinkable happens, and it's cloudy tomorrow, there's always this exotic night sky to explore. The thought was enough to return me to a fitful slumber.

Eclipse Day.

The lobby of the Wyndham was filled with anxious astronomers toting all manner of equipment, some wearing Aruba eclipse shirts, even though they had not yet seen totality. Rumors were flying through the assembled throng that ten thousand people would converge on the southern end of the island, nearest the midline of the shadow's path, and there would be huge traffic jams and not enough space to set up! The big groups were leaving at 9:45 A.M., even though first contact wasn't until 12:39. We left at the more leisurely hour of 10:30, climbing onto a chartered air-conditioned bus for the one-hour ride.

Europeans have inhabited Aruba for nearly 500 years, and indigenous peoples far longer. The island has served as a pirate hideaway, strategic military site, source of gold ore, and more recently, oil refining center and tourist Mecca. As we found on our ride down to the southern tip of the island, this crazy quilt of contrasting land uses in the sparsely vegetated, unforgiving desert environment has conspired to make parts of Aruba rather less attractive than the Caribbean paradise we were expecting. The late-morning clouds, meanwhile, were getting bigger and bigger, and the sunny patches less and less common. I was starting to think that at best we would glimpse totality through large puffy clouds, and viewed with growing alarm the thickening stratocumulus layer.

We reached the south end of the island without incident (the rumors were wrong), but by then it was clear that something had gone awry with this desert-island sky. It was overcast, and clouds moving in from the south stretched all the way to the southern horizon. We arrived at our destination, an empty parking lot near Rodgers Beach, stopped, and debated what to do. Our leader, Larry Gertstman monitored weather reports via radio. Larry tried to reassure us that the same weather pattern had occurred the day before, but that the sky had cleared by early afternoon.

Meanwhile, it had started to sprinkle! I argued that we should all pitch in and pay the bus driver for the whole afternoon to give us mobility, remembering how trapped I had felt on that hillside in 1979, no vehicle at hand, and totality visible a short distance away. No way was I getting off that bus! As the clouds continued to thicken, I kept thinking: all that money and effort, for this! I swore I would never go on another eclipse expedition again. The demons of Goldendale awakened from their 19-year slumber in my subconscious and grinned maliciously at me.

The weather reports came in: it was clouding up all over the island, eliminating mobility as an option. However, it was also clearing on the island of Curacao to the southeast, offering us a ray of hope. As Laurel and I finally descended

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Return to The Shadow

(Continued from page 6)

from the bus with our equipment, patches of blue sky had started to appear, further lifting our spirits. Our group walked over to the designated site near the beach, and began setting up, while the blue patches continued to grow in size. It looked, finally, like we might win this one after all!

The eclipse setting was rather bizarre, and seemed strangely representative of Aruba as a whole. Facing westward, in the direction of the ocean and the oncoming shadow, we had at our backs a row of apparently abandoned white adobe buildings, to our left a strange rusted structure, twelve feet tall, that looked like an outsized telescope mount, to our right about five miles up the coast, an enormous oil refinery, and in front of us, on a stretch of beach grass between us and the beach, two collapsed uplink satellite dishes that looked like giant wilted flowers. The whole effect was post-Armageddon — perhaps appropriately, since the world as we knew it was about to end.

Laurel and I set up next to Bob and Barbara, eclipse veterans we had met the night before, who followed a doctrine of relative simplicity: pairs of 10x50 binoculars with solar filters and a tripod-mounted camera with telephoto lens, which contrasted with the elaborate setups of some other group members. We had brought tripod-mounted 20x100 binoculars with screw-on solar filters, plus a pair of 10x40 binoculars, a 35mm camera with 50 mm lens, and a video camera. The skies continued to clear. At last, our view through filters revealed a small bite out of the Sun: the show had begun!

When you know you're going to see a total solar eclipse, as we were now confident of doing, the partial phases assume the role of mere prelude. We watched as the curved black limb of the Moon slowly swallowed up two pairs of sunspots on the Sun's face. About a half hour before totality, Bob pointed that I had taken off my sunglasses (I hadn't even noticed) and could see comfortably without them in the midday tropical Sun. A cool breeze tingled my skin.

While sunlight was lessening imperceptibly in intensity, it changed noticeably in hue, and a half-hour before totality had acquired a watery-brown tint. To witness such a change, with no clouds in evidence, was a fascinating experience. The dimming and browning continued as the solar crescent became thinner and thinner, and at ten minutes before totality, it began to accelerate.

The sky steadily darkened into a deep blue, and suddenly Venus was visible in the west. The Sun was now the merest sliver. With a minute to go before totality, an indistinct dark horizontal band appeared in the haze over the western horizon: this was the approaching shadow of the Moon. The band slowly grew into a curtain, expanding upwards towards the Sun. Then the light coming from the Sun started to shimmer and turn electric-white in color. I could see a blinding spot of light and next to it, barely visible in the glare, the entire limb of the Moon outlined in white: the diamond-ring! Then the shimmering light retracted and the dark curtain rose up, to finally envelop the Sun.

Totality!

Accompanied by a chorus of cries and shouts, the black disk of the Moon, surrounded by the diaphanous corona of the Sun, hung in the sky. The display was so tiny, a thumb held at arm's length could blot it out. But it was not alone: on either side, at 10 and 5 o'clock, I could see Mercury and Jupiter. This deity that we had come to worship was attended by two angels! I gazed at the spectacle naked eye, filmed it on video, and looked at it through 10x40 binoculars, awe-struck.

As eclipse veterans have said before, the solar corona was far more subtle than any photograph can convey, showing delicate detail in its veil-like streamers, translucent against the blue-black sky. The corona had a distinct bipolar structure, with short fan-like tufts that emanated from the polar regions of the Sun, contrasting with the long, flame-like equatorial streamers. It was clearly tracing the Sun's magnetic field, and a coronal loop at the boundary of the polar and equatorial regions showed where the magnetic field lines were curving back upon themselves. The corona seemed alive, shifting subtly with the movement of the Moon across the Sun's face. Topping it all off, on the upper limb of the eclipsed Sun, was a large pink prominence.

It was time for a view through the 20x100's. I aimed and looked, aimed and looked, but no eclipse appeared in the eyepieces, even though I was very experienced handling these binoculars. With a minute to go in totality, I finally realized that the solar filters were still on. I hastily screwed them off, and got the most glorious view of all: a total solar eclipse framed in a razor-sharp 2.5-degree field at 20X. The coronal detail was fantastic — there was so much to look at! But all too soon, my watch alarm went off, signaling a few seconds left in totality. I looked one more time through the big binos, and watched the brilliant white disk of the Sun's chromosphere, adorned with three prominences, emerge from the black lunar limb. Immediately below the thin chromosphere lay the photosphere and totality's end. I pulled away just in time as a blinding flash burst forth from the Moon's edge: the show was over. Applause broke out among the assembled throng. We had done it!

The partial phase of the eclipse began running in reverse, but now just an anticlimax. The light was increasing again. We didn't care about partiality anymore, we were just tearing down our equipment, and basking in the afterglow of this glorious experience. We retreated from the beach carrying our exposed negatives and videotape, while mentally hoisting aloft

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Book Review: *The Year Round – Messier Marathon Field Guide*, by Harvard Pennington.

Bill Jensen

Just buy it.

Okay, so that is not really an acceptable book review. But the knock off of the Nike theme seems appropriate here.

I got an early sampling of this book at VAAS 97, and anticipated the release by Willmann-Bell of this terrific book. Perry Remaklus has gathered the unfinished symphony by the late Mr. Pennington, and orchestrated a masterpiece for the novice or even advanced amateur who wants to view as many Messier objects as possible during one night. Although Messier marathons are traditionally associated with late March - early April period, due to the visibility of all the objects during one evening, this book points out that you will be able to find at least 90 objects and often more any night of the year. And one does not begin a race without some training, so a summer sprint is worthwhile. Probably the most important point in this book is "In this competitive world, a race in which everybody is a winner might seem a little strange. But if this is indeed a race, it is a race against the clock, and everybody who enters can be a winner. So with that spirit, the intent is to help the reader accomplish viewing as many Messier objects in the short time span of one night.

Pennington's book begins with these goals of personal accomplishment and fun, which dovetails nicely with my own focus on amateur astronomy. The first chapters touch on Messier himself, the gathering of the list and its variations, and the planning process necessary for your own observing run. He goes further into a detailed explanation of learning the night sky, finder methodology (depending upon the equipment used), and more importantly, tips on alignment of finders and optical components. Next, he describes the different types of objects, and the relative difficulty in finding some of these objects, especially on a marathon night, when you may be attempting an object that is not conveniently placed at zenith.

But the meat of this book is the field guide concerning finding each object, organized as if you were observing them all on a single evening. Over 110 pages cover the entire list, with large charts chock full of data. Six pages alone give twilight, rising and setting

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Diamonds in the Sky

Barry Wolfe

My newly constructed 6" reflector [see "A Portable 6-Inch Telescope, NOVAC Newsletter, March/April 1998], my wife Jacki, and I arrived in Aruba late on the Monday prior to the Thursday eclipse. We immediately noticed not only the beautiful turquoise water and white sand beaches, but also the high (20-40 mph) and steady trade winds, each of which the island is famous for.

Tuesday we used our rental car to scout the island for potential night-time observing sites, keeping in mind that we had to escape the light pollution of Oranjestad as well as the prevalent winds. The latter were really critical as the Teflon/Formica bearings on the Dobsonian mount combined with the nylon shroud used for a tube make the little scope a great weathervane. Finally, on the eastern, uninhabited side of the island, we found what looked like an old pirate castle, which turned out to be an abandoned gold smelting plant a hundred yards from the rugged coast. It had high stone walls that blocked the wind and no roof, with several levels inside.

That evening, I went to bed early and set my alarm for 1:30 a.m.. In the dark drive back to the "castle" I found myself lost several times. Stopping to consult a map proved to be a harrowing experience, as packs of dogs immediately congregated around the car and chased me away. It was clear that I needed to get completely away from civilization (and dogs).

Finally arriving at the site about 2:45, I climbed to the uppermost level and set up. The sky at zenith had a visual limiting magnitude of 6.5 with skyglow only to the west. Through a tumbled-down section of the south wall was a great southern exposure with Centaurus and Crux just culminating! These constellations were both new to me and proved to contain several beautiful gems. Omega Centauri, my main target, was visible to the naked eye as a dim star-like object. At 82x and a 1° field of view it filled more than half of the eyepiece with stars. For comparison, I looked at M13 and realized just how incredible Omega really is.

That evening, as well as Thursday evening, was filled with great objects like Centaurus A, whose dust lane was clearly visible; the nearby NGC4945, a cigar-shaped, edge-on spiral; and NGC4755 or K-Crux, the Jewel Box cluster. On Thursday evening I was introduced to a group of 'new', and quite dazzling, objects in the tail of Scorpius, NGC6231, H12, and NGC6227, which were all high in the south by 5 a.m. Sagittarius, Scutum and the summer Milky Way were up high enough to catch many of their great objects before the approach of morning twilight chased us out by about 6:15 each day. All in all, my new little homemade portable telescope performed beautifully, which made its year of construction seem like time well spent.

An additional memorable, and unique, moment came that Thursday night when I was looking through my companion's 80 mm refractor when, bang!, a meteor streaked through the field and its glowing, greenish trail lasted 3 - 4 seconds. It turned out that we saw several other meteors (not through the eyepiece) that night in the inky sky of the Caribbean.

Thursday dawned bright and beautiful and found a number of people already set up with cameras and telescopes for the upcoming eclipse, with totality scheduled to begin about 2:10. We set up around 10:30 in a protected (from the wind) courtyard at the Sonesta Hotel in downtown Oranjestad with several groups of photographers. There turned out to be a tension-filled prelude to the eclipse as by 12:30 heavy, dark clouds had covered the entire sky and a bit of rain was spattering down. Spirits were sinking.

By 1:00 it began clearing and a small bite was missing from the sun. By 1:20 the dark clouds returned (The crowd groaned!), but at 1:25 small breaks began to appear, and the bite now consumed about 30-40% of the sun. By 1:40 it seemed as if the clouds were breaking up but I noted in my log that this might be wishful thinking. By 1:50 there was lots of blue sky and about 70% of the sun was gone. Thin clouds reappeared at 2:00 and the sun was down to a sliver. At 2:04 a big blue patch of sky surrounded the sun but a fast-moving cloud covered it for a minute, clearing by 2:06 (The crowd cheered!). At 2:09 Bailey's beads appeared for a few seconds followed quickly by a beautiful diamond ring (Loud cheers!). Then totality plunged us into darkness.

Mercury and Jupiter, both about 3-4 degrees away, framed the sun. The milky white corona was very large and asymmetrical with long streamers coming out mainly to the east and west. In addition to the naked eye, we viewed it at 25x with 2 degrees of field and it filled the eyepiece. Great detail was seen in the streaming corona. One large and one small prominence could be seen in the chromosphere on the leading edge of the sun. The colors of the prominences were quite beautiful blending reddish orange and pink.

Seven hotel employees begged a view, and we gave them each about five seconds. We were thanked profusely afterwards. Near the end of totality, several prominences on the trailing edge of the sun became visible, displaying the same beautiful colors. The re-emergence of the second diamond ring came too quickly! The whole town seemed to be cheering and fireworks were going off. Although the clouds had threatened to hide the eclipse, in the end it all turned out wonderfully.

I was asked at a dinner two nights later, what my most memorable viewing experience had ever been, and it was easy to answer that the view of the totally eclipsed sun with its delicate corona and beautiful prominences was the clear winner.

Book Review

(Continued from page 7)

charts, showing large sections of the sky at the horizon in March, giving one a good starting point at the race in sections. But the wealth of detail on the sections that cover the objects is amazing. Right angle and straight though views of an 8x50 finder are plotted. Sketches through an eyepiece of the objects, descriptive narrative including historical notes, and even nearby "conflicts" that can easily be mistaken for the object being searched are presented. And the full page constellation zero power finder views are wonderful. They include the type of objects on the chart, the magnitude, the constellation (even if the chart for ease of finding uses a nearby constellation for reference) and the coordinates. The text is quite helpful in avoiding those "is this the right cluster" doubts.

In the Field — March Madness Fulfilled

The true test of a field guide is how it works under the stars. The clouds that dominated Northern Virginia since January prevented me from gearing up for the race until March 28. That night was worth the wait at Crockett Park. The weather, although windy enough to push my truss tube Dob like a sail, was warm and clear. In fact the breeze prevented dewing problems. About 50-60 fellow NOVAC members gathered for the rare evening. And Pennington's book allowed me, an advanced novice (!), to walk through many undiscovered countries in the sky with ease. For example, by using this book, I was able to obtain views through binoculars, a small Ranger refractor, and my Dob with confidence. Many of the charts I have used in the past gave much detail, but on a small page, making it difficult to translate to the eyepiece and sky. Yet with Pennington's book, I was able to know that I had nailed M65 and 66, not mistaken them for nearby NGC 3268. Likewise, also in Leo, M95, 96, and 105 were certainties, not confused with neighboring galaxies.

Yet, with all the large charts, good tips, and organization, I *only* observed 45 objects from twilight until 3:45 A.M., when my body started shutting down. Part of the problem was my leisurely pace (including sharing the eyepiece with some interested wandering folks, which is as much fun as the race) . Even some Starbuck's frappacino's and Keebler crackers could not keep the body going after a while. But prior to this book, the thought of observing 45 objects in one night (without Saggitarius) would have been daunting. Not so with this guide. Perhaps more caffeine, and a bit more time using this year-round tour guide and I will be ready to get Sirius (sorry, couldn't resist). More important, I left Crockett that night for the hour drive home with a huge smile on my face.

Except for navigating entirely through Virgo, I have previously seen many of the objects that I did not chart that night. I have to work

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Getting a Bang Out of the Moon

Marc DeFrancis

For Young Astronomers ages 8 and up

Everyone knows rocks don't float in the air. And if you were asked to name something that tends to rise up in the air or the water, a smart answer might be "bubbles." We shouldn't be surprised that ancient Greek scientists, after careful thought, decided that the Moon could not be made out of rock or any other solid stuff, but like an enormous bubble must be both perfectly round and perfectly smooth. For the next 2,000 years, this was about all anyone thought they knew about the Moon.

About the time the pilgrims landed in America, an Italian scientist named Galileo built the first useful telescope, and on a clear evening with a bright half-moon, pointed it upwards. Peering closely at the border between the Moon's light and dark halves, he immediately saw that the Greeks were wrong. The Moon was not smooth after all, and certainly it was no bubble.

Try this for yourself: take a thick-skinned orange, and in a closed room at night lit by only the bulb of a single lamp, hold the orange at arm's length and watch how the light strikes it. The orange's brightly-lit side and its dark side meet in a way that leaves a pretty straight, although fuzzy, line. Now take the orange, and with your fingernails, dig out a few deep pits in its skin. Hold it out again in the lamp's light. The craters you made will have shadows inside. Turn yourself slowly, so the orange is slowly revolving around you (the way the Moon goes around the Earth), and observe what happens to those crater shadows.

Galileo saw what you see. Without a telescope, the Moon looks smooth, but a closer view showed Galileo what he called "mountains." He could tell these must be real bumps on the surface, and not just different colored spots, because each had a shadow that changed length, night after night, as the Moon's light became fuller. Did you, too, see your crater shadows change their length on your orange?

Try this: with ordinary binoculars, look at the Moon when it is at the half-moon stage. Check the "edge" in the middle that divides the light and dark sides. Does it look like a smooth line, or a bumpy one?

Seeing what you can see through binoculars, Galileo became convinced the Moon must indeed be made of solid, most likely rocky, stuff. (Of course, now someone had to figure out why the rocky Moon had never fallen down. But that's another story . . .)

Most of the bumpy spots you and Galileo see on the Moon are the bumpy rims of craters. In Galileo's time, the idea that rocks flying through empty space crashed onto the Moon to cause these round pockmarks would have seemed ridiculous. After all, you have never seen such a rock hit the earth yourself, have you? And you have never seen a crater on Earth, either, other than a volcano crater, right?

Right. But if you've looked up at the night sky often enough, by now you've certainly seen a meteor or two — looking like sparks shooting across the blackness. Almost all of these rocky meteors burn up long before they can reach the ground. (Imagine the Apollo 13 capsule, reentering the atmosphere as it did, in that great movie, but without any heat shield!)

The Moon has no atmosphere at all, so what do you think happens to meteorites that cross its path? Wham! If you look again at the Moon, especially during a half-moon, check out the southern section (the top part of the Moon in binoculars) and you should see many round craters. Those pockmarks may look small from here, but remember that the Moon is 200,000 miles away. Several of the craters you can see are more than 50 miles from rim to rim — wider than Delaware.

You might wonder, did it take a meteorite 50 miles wide to make every 50-mile-wide crater? Or would a smaller meteorite do the trick? You can do an experiment to find the answer.

Try this: spread a two-inch layer of corn starch in a baking pan, and smooth it out. Sprinkle a very thin layer of cinnamon or cocoa powder on top of that. Now gather up a dozen baby-pea size pebbles, and drop them one at a time, from different heights, onto your new "lunar surface". Compare the effects. Take a good look at the size and shape of the craters you make — how do they compare with the size of your pebbles? When you're done, invite a friend to look at the craters you've made and ask her to guess which craters were made first, which last, which from high drops and which from low drops.

How about the earth? Have any meteors survived the "burn" in our atmosphere and hit our planet with a major bang? Find out for yourself by looking up the following in a good encyclopedia: Barringer Crater in Winslow, Arizona; Manicouagan Ring in Quebec, Canada; the mysterious blast of 1908 in Tunguska, Siberia. And remember: if you hear a high whistling sound, be ready to duck.

Book note: for historical photos and cool illustrations of impacts, check out *Comets, Asteroids, and Meteors* (Time-Life Books, 1990); for fine images of craters on other planets and moons, try *The Planets: Portraits of New Worlds*, by Nigel Henbest (Penguin, 1992).

Book Review

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on certain areas of the sky, but that helps as well — having some specific goals, with the knowledge that I have the tools to achieve them. Seeing a variety of objects increased my appreciation of the value of a marathon — appreciation of a cluster through binoculars, or the beauty of M4 and other globulars in a Dob's eyepiece in a short time frame. The other vague impression that I have to mention, from that March Madness night, is that even the constellations seemed to fall in place, to fit, by navigating the sky naked-eye with Pennington's help. That sense helps describe the overall confidence I have gained by this $20 investment. For the 11 other months, the Messier Marathon Field Guide truly lives up to its "Year-Round" name, by noting what chart sequence to use during each month. I only wish that it was more of a field guide by being laminated in a spiral bound volume, rather than the hardbound cover it sports. I believe other novices like me will appreciate the large charts, especially if you need glasses for viewing other charts. More advanced observers may find it useful for a run at all 110. Grab one and start the race too!

You can buy this guide from Willmann Bell by calling 804-320-7016. Check out a sample on the web site http://www.willbell.com

Return to the Shadow

(Continued from page 7)

the greatest trophy of all: our memories of a fantastic solar eclipse.

I won't describe the celebratory bus ride back, the post-eclipse party that night, our tour to the National Park of Aruba the next day, the snorkel trip the following morning. Better just to say that now every time I gaze upwards, it's with a wink and a nod, graced as I am with the knowledge of the sky's most intimate secret. For it had gone dark at midday, and I had looked directly toward the Sun and seen it surrounded by its family, and the Sun had smiled back at me.

Northern Virginia Astronomy Club
Statement of Cash Received and Disbursed
For the period January 1, 1997 through December 31, 1997

CASH RECEIVED:			
Membership Dues:			
Regular and Additional:			
Renewals	$3,198.00		
New Members	2,022.00		
Patron (New Member)	50.00		
Supporting (New Member)	100.00	$5,370.00	
Interest Income		290.50	
Hat Sales		85.00	
Astronomical League Book Sales		51.00	
Donation		21.37	
Answer Machine Sale		7.00	
Kalmbach Book Discount		5.70	
Total Cash Received			$5,830.57
CASH DISBURSED:			
Telescope Mount		1,800.00	
Newsletter:			
Printing & Assembly	780.53		
Postage	552.39	1,332.92	
Astronomical League			
Dues	703.00		
Astronomical League Books	136.80	839.80	
Library:			
Books	291.98		
Doors & Lock	13.72	305.70	
Observing Site Expenses:			
Portable Toilet	135.86		
Picnic Permit	45.00		
Lock	19.95		
Lumination	4.07	204.88	
Hotline Expense		145.77	
Publicity (Printing)		50.68	
Administrative:			
Liability Insurance	368.00		
Printing -			
Membership Applications	31.35		
Printing - Administrative	35.02		
Postage	245.33		
Supplies	142.23		
Flowers	36.85		
State Registration Fee	25.00		
Personal Property Tax	18.05		
Bank Service Charge	10.00	911.83	
Total Cash Disbursed			5,591.58
EXCESS OF CASH RECEIVED OVER CASH DISBURSED			238.99
Cash at beginning of period:			8,622.77
CASH AT END OF PERIOD			8,861.76
Cash At End Of Period			
Checking Account		1,323.89	
Savings Account		7,537.87	8,861.76

Respectfully submitted,

/s/

Pedro Martinez,
Treasurer (6/21/97 to Present)

1997 Audit Completed

On April 11, 1998, I met with club Treasurer Pedro Martinez to conduct an audit of NOVAC's 1997 finances. After a thorough examination of receipts, bills, bank statements, and other records, I am satisfied that NOVAC's financial position has been accurately reflected in the Treasurer's reports to the membership.

I am also satisfied that Pedro is doing a commendable job, fulfilling a large number of responsibilities. Thanks Pedro! --

Craig Tupper

Projected NOVAC Budget

Revenues		
Membership Dues		
Renewals Regular & Additional	$3,276.00	
New Members Regular & Additional	1,632.00	
Total for Membership		$4,908.00
Interest Income		325.00
Hat Sales		100.00
Astronomical League Book Sales		140.00
Total Revenues Expected		$5,473.00
Expenditures		
Newsletter		
Printing	$920.00	
Postage	595.00	
Total for Newsletter Expenditures		$1,615.00
Astronomical League		
Dues	$910.00	
Astronomical League Book Sales	140.00	
Total for Astronomical League		$1,050.00
Library		
Books	$100.00	
Binocular	150.00	
Total for Library		$ 250.00
Crockett Site Expenses		
Portable Toilet	$272.00	
Picnic Permit	45.00	
Lock	20.00	
Lumination	10.00	
Electrical Improvements	30.00	
Total for Crockett Site Expenses		$ 377.00
Slide Show Presentation Project		$ 200.00
International Darksky Association Membership		$ 100.00
Administrative		
Liability Insurance	$375.00	
Printing-Membership Applications	35.00	
Printing-Stationary	40.00	
Printing Administrative	65.00	
Postage	200.00	
Supplies	214.00	
State Registration Fee	25.00	
Personal Property Tax	17.00	
Bank Service Charge	10.00	
Total for Administrative Expenses		$ 981.00
Subtotal Expenditures		$4,573.00
New Projects		$ 900.00
Net Revenue		$ 0.00

Percentage of Expenditures Based on $18.00

	1998 Expected	1997 Actual
Newsletter	$ 5.45	$ 4.40
International Darksky Membership	$ 0.34	$ 0.00
Astronomical League	$ 3.07	$ 2.32
Administrative	$ 3.31	$ 3.01
Operations	$ 5.82	$ 8.27
Total	$18.00	$18.00

Pedro Martinez, Treasurer

Astronomers Needed for Cub Scout Camp in August

The following e-mail (abridged)was posted on the NOVAC listserver by Bill Burton

---

From: Sharon Wine <swine@mailrvan2.er.usgs.gov
Subject: Cub Scout Resident Camp
Bill,
Our Cub Scout Resident Camp is August 2-7, 1998. The theme this year is "Space Adventures". We are looking for exhibits and activities for the scouts dealing with space. I would like to know if someone from your Club would be willing to come to camp for an evening and do a presentation on the stars and different constellations. I was looking to schedule this on Monday evening (so in case of clouds/rain we can back it up to the next night or the first clear night).

The age group we will be dealing with is 2nd to 5th graders. Our camp is Camp Rock Enon located outside of Winchester, VA.

Please let me know as soon as possible if this can be arranged (for scheduling purposes). You can reach me at home at (540) 955-4746 [or swine@mailrvan2.er.usgs.gov].
Sharon

Ron Cook says "the more, the merrier", so give Sharon a call!

New Members Since Last Membership Directory, as of April 5, 1998

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(Continued on page 13)

New Members Since Last Membership Directory, as of April 5, 1998
Continued

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(Continued from page 12)

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Meeting Minutes

Ronald W. Cook

Minutes of the February General Meeting

Feb. 16, 1998

5:30 P.M. About eight gathered at the Santa Fe Restaurant in Arlington for pre-meeting social activities including dinner and discussion. The restaurant provided two different theme appetizer plates of nachos in appreciation of our patronage.

7:30 P.M. Tilly Smith called the meeting to order at the Arlington Planetarium, mentioning that he was two out of three.

About five new members introduced themselves.

Tilly Smith noted that parking was scarce owing to a basketball game. Brenda Jones drew attention to the underground parking garage.

Brent Archinal reiterated that there is a pre-meeting dinner and social function the Santa Fe in Arlington.

Jeff Cook is working on the Astronomy Day and NOVA Star Parties that are sponsored by NOVAC.

Jeff Stetekluh noted that "Observing Reports - Preliminary" are available for the rest of the year at the NOVAC web site.

John Stewart requested availability of the "calendar" file of combined astronomical events for use on his system. Jeff said a merged file is already in preparation. Some events like Mir are not predictable too far in advance.

Tom Deitz mentioned re-siting the C14 is no longer practicable for various reasons; however, he emphasized re-establishment of access to and utilization of Sky Meadows as a club-observing site.

John Avellone requested a land-use permit for club observing at the Richardville site. It was rejected by Gladfelter on grounds it would disturb indigenous personnel.

Pete Johnson discussed his adventures with our sister Astronomy Club in Moscow and its director. He recommended she buy native optical products.

Officers' reports:

Pete Johnson, VP discussed upcoming meetings

- o February Collimation - Pete Johnson
- o March Eclipse experiences
- o April Eyepieces - Al Boldt

others in the works

Ron Cook, Secretary

- o Noted that Pete Johnson finished his Master's degree
- o The DelMarva Stargazers Event April 24-26 at Tuckahoe St. Park
- o Thanks to those who showed up at NOVAC Educational Events.
- o Sign up your kids for the Mars Polar Explorer - Craig Tupper
- o Slides sets are available particularly for presentations:

  Mars Pathfinder pre-landing 25
  Mars Pathfinder post-landing 25
  Galileo pre-orbit 25
  USGS Mars from Viking 1 25
  USGS Mars from Viking 2 25

- o 6" dew and light shades for 80mm optics are available, free while they last.

Pedro Martinez, Treasurer.

- o He is looking for an auditor and is willing to train.

Tilly Smith has confirmed Crockett reservations and at least one of the nights, the Boy Scouts will be camping there and we might put on a special program for them.

Jeff Stetekluh went over the observing report, complete with a slide and list of upcoming events for the month.

Tom Dietz mentioned the possible return of David Malin, Anglo-Australia Observatory, for an encore show and talk at the Smithsonian possibly in April.

Craig Tupper did the Sky Tour emphasizing how the ecliptic and celestial equators look and the phenomena called "Precession."

Pete Johnson gave the talk "Collimating Telescopes" and passed around various optical devices used for that purpose.

Attendance: 53, of which 3 indicated that they were not members

Submitted by Ron Cook1998 Mar 11

Minutes of the March Board Meeting

The meeting was held at the Arlington Planetarium. There were crab dip, brownies, crackers, chips and eclipse cookies to munch on and liquid refreshments.

19:30 Tilly Smith called the meeting to order.

Tilly mentioned the possibility of the Falls Church Astronomy Club joining us at our meeting locations.

Upcoming Special Events were discussed:
March 21 – Boy Scouts at Crockett regular night.
March 25 - April 1 – Messier Marathon
May 02 – Astronomy Day

Tilly mentioned possible newspaper notices for the Astronomy Day event managed by Jeff Cook.

Sky Meadows was mentioned, but there seems to be no movement towards the club's acquisition of observing rights at this site.

The NOVAC Award Certificate for use at Science Fairs having participating NOVAC judges was present by Pete Johnson for discussion/evaluation by the board. Nice!

Bill Burton said judges were needed for the VA State Science Fair to be held April 18. He also said funding seems to be imminent for the Franklin Park Observatory and the project will go forward. NOVAC must decide on its role in the project if completed.

March 18 plans for the General Meeting "Eclipse Program":

Craig Tupper - island experience
Bill Burton - island experience
Bob Bunge - cruise ship experience
Al Schumann - yard experience

A semiannual membership directory is on track.

A special board meeting is to be scheduled for April with consultation with previous board members to try to develop a five-year plan for the club.

Officers' reports:

Pete Johnson, VP

Pending Meetings:

April - Al Boldt "Eyepieces"
May - Craig Tupper "CCD Astronomy"
June - Roger Firestone "Celestial Mechanics"
July - Jon Stewart-Taylor "Astronomy on the Internet"

Ron Cook

Stuck on slides in the VCR age.

Pedro Martinez, Jr.

Financial update through Mar for the next board meeting.

1997 Budget Final and 1998 Budget for newsletter.

Club road trips to other observing sites including camping was discussed.

Submitted by:
Ron Cook, Secretary

Dinner Before the Meetings

Brent A. Archinal

It looks like our dinner before the main meeting is finally getting popular! We had 18 people together for dinner in March, largest group yet, and as this is being written we expect about as many for the April dinner.

Anyway, this is your chance to meet fellow members, at a place other than our busy and crowded meetings or at someplace (not in the dark observing!) where you'll be able to recognize each other when you meet again. The next dates for dinner and the regular meeting are on Wednesdays, May 20 and June 17. If you've had dinner with us before we hope you can again, and if not, we look forward to seeing you there for the first time and a good long discussion of observing, astronomy in general, or whatever.

The place to meet is 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 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, 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, or around the long block (make two left turns) on Clarendon just before it ends by the restaurant. 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 will bring. So if you know you're coming or if you need a ride to the meeting and back to the metro, or just for more information or directions please give me a call (evenings) at 703-237-0201. You can also e-mail me at baa@casa.usno.navy.mil.

See you at dinner!

- Brent A. Archinal

Minutes of the March General Meeting

Ronald W. Cook

March 18

The meeting was held at the Arlington Planetarium

Announcements

Observing session this weekend of March 21 at Crockett is committed to a show for the Boy Scouts who will be camping there at the same time.

The Messier Marathon at Crockett will run for a week and members of the Falls Church Astronomy Club may also be there.

Astronomy Day at Crockett - a slide show is planned.

The ALCOR position has been taken by John Avellone, because Jim Fitzgerald lives too far away (Charlottsville area).

Bill Burton talked about the Fairfax Co. Science Fair judging by NOVAC members. April 18, Saturday, at the Thomas Jefferson is a state Science Fair and judges are needed.

A club down in Nagadoches, TX is going to conduct a light pollution survey of that area similar to the survey NOVAC conducted for this area.

The Franklin Park Observatory is proceeding at a rapid pace. Our club has to decide what its role is going to be at this facility. The facility is planned to be of high quality so that people will be anxious to use it. The final version of NOVAC's recommendations for the facility is available.

Jeff Cook and Kevin Brown are going to be managing the star parties. Kevin Brown will focus on Astronomy Day, while Jeff will concentrate on the NOVA Star Party. Ideas to make these events successful are sought.

Marc DeFrancis seeks help for an astronomy classroom for his son's elementary school. The theme is the weather of various planets.

Tilly Smith mentioned the creation of a "Five-year Plan" for the club and sought comments.

Messier Objects notebook-size sheets were brought and distributed.

Nicole Mastej said she was ready to take another Kalmbach book order: 1-4 32 % off, 5-9 35%, 10+ 40% off.

Pete Johnson mentioned a May 23, Thursday date for a Girl Scout astronomy session by the club, and seeks participants and equipment. Our sister club in Moscow gave laser pointers to members of the physics department at a university there, and they want to build a telescope of 150 mm. They also participate in science fairs.

Ron Cook mentioned a NOVAC seminar for a 4H club around April 13, as well as one for August 03 with the Boy Scouts. He demonstrated a simple solar filter design for 80 mm objectives. Three slide trays exist for use by members: Hubble, Galileo, Mars Pathfinder, and the Moon.

Pedro Martinez mentioned that he had found a long-sought auditor for the club books, that there were 34 new members so far this year, and the club total membership is about 335.

Tilly Smith mentioned pictures sent by Al Schumann, a founder of the club.

Jeff Stetekluh gave the Observing Report. Crockett would be reserved from March 25 to April 01 for the Messier Marathon. Daylight-Savings Time starts April 05.

Jon Stewart-Taylor gave the Sky Tour emphasizing currently visible objects. He reiterated the approach of the Messier Marathon time period for observing all the Messier objects in a single night.

The program was about the recent solar eclipse observations by club members.

Ray Pfaff passed around pictures he took.

Bob Bunge went on a cruise sponsored by the Astronomical League on the Carnival Cruise ship "Fascination" and had a slide show of same.

Bill Burton had a VCR tape he created complete with interviews of fellow astronomers.

Craig Tupper had a VCR tape of his experiences.

Al Schumann sent a VCR tape of his driveway/patio observations with a C8 and Edmund Astroscan as well as welder's mask filter and a pin hole.

Ronald W. Cook, Secretary,

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 $24.00 (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.

The treasurer will send the checks in 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. Nicole Mastej is coordinating the sales. If you are interested, please see her at a meeting, or call her at home (703) 435-8724 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 Available for Use

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.

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 1997

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

Observing at Parsells Field: any evening.

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: Any night that NOVAC observes at Crockett Park, the observing session will be open to the public. The gate will be locked and will not be unlocked unless a NOVAC member enters the park, at which time the gate should remain unlocked until 10 o'clock (or some other prearranged time), when the Assistant Park Manager will come out and ask members of 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 session. There is now a 2-week lead time requirement for permission to observe at Crockett Park on nights other than those listed on our schedule at the back of this newsletter. Gary Kwolek recommends that anyone interested in observing in that area on unscheduled nights drive out to the Crockett Park gatehouse, turn left and drive down to the cul-de-sac, where you can set up your telescope on the public road.

If any NOVAC member out observing at Crockett Park notices any member of the public violating park policy, he or she is requested 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. 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 the carelessness of one person.

Parsells Field: In addition to scheduled nights, NOVAC members may observe at Parsells field ANY evening, with no prior notice. See directions to Parsells Field, next page, for parking instructions. The usual

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(Continued from page 16)
NOVAC observing site rules apply: no loud noise, alcohol, or loose dogs, and pick up after yourself. We are guests of the Dulles Little League, and could have our access to this site revoked at any time if it is abused.

Savage Farm Site: The Savage Farm site is reserved for NOVAC use on the same nights as Crockett Park, plus all the major meteor showers. For non-scheduled observing sessions, call 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. 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.

Nichlason Site: The same rules apply as for the Savage Farm Site, except that in seeking permission to use the site for non-scheduled observing, call Smokey Jacobs (Northern Virginia Regional Park Authority) at 703 250-9124 and follow the same procedure as with the Savage Farm site.

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.

Parsells Field: (Steve Blake/Ron Cook) From the Northern Virginia area go West on the Dulles Toll Road until you reach Route 28. Go North on Rt. 28 for 2.8 miles to Route 625, Waxpool Road. (You may also take Route 7 West to 28, then go South to Waxpool.) Turn left (West) onto Waxpool Road (Route 28), and go 1.8 miles to the Waxpool/Farmwell intersection. (The intersection has a small sign on the right pointing the way to the Broadlands development on the left.) Turn left onto Route 625, Waxpool Road (!), heading towards the Broadlands and go 1.6 miles to the Waxpool/Ryan/Shelhorne intersection. Continue straight on Waxpool, through the more developed part of the Broadlands on the right, for about 1.4 miles watching for a left turn onto Waxpool Road (!!) which is a gravel road. Once on gravel go only about 200 yards straight ahead. You will pass a sign showing kids on a seesaw. Parsells field is right where the road turns right. As you round the turn, go into the gravel parking area instead of completing the turn. Note: there are no signs marking the field at this time.

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.

Nichlason Site: I-66 to Rt. 7100 (Fairfax County Parkway) south to Ox Road (Rt. 123) south to second right on Chapel Road to immediate left onto Wolf Run Shoals Road (Rt. 610). Continue on Wolf Run Shoals Road (watch signs carefully at twists and turns in the road) for 3.9 miles to the site. It is immediately after a yellow house with a white picket fence on the right. The Nichlason Site is on the left marked by "Wildlife Sanctuary" signs on utility poles. After the third "Wildlife", sign there is a dirt/gravel lane into the site.

From the Springfield/Burke area: go north on the Fairfax County Parkway (Rt. 7100) to left onto Burke Lake Road. Burke Lake Road becomes Clifton Road just after the intersection with Rt. 123. Continuing on Clifton Road, turn left at the Citgo station onto Wolf Run Shoals Road. Follow Wolf Run Shoals Road as above to the site.

Site Locations

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

- Savage: 39 ° 04.7' N; 77 ° 51.7' W
- Parsells: 39° 01' N, 77° 32' W
- Crockett: 38° 37' N; 77° 43' W
- Nichlason: 38° 44' N; 77° 21' W
- Big Meadows: 38°32' N, 78°26' 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., June 10 for the July/August newsletter

1998 NOVAC Observing Schedule

C. M. Crockett Park

May 2 (Astronomy Day), 5 (Eta-Aquarids meteor shower), 22, 23, 29, 30
June 19, 20 (Picnic), 26, 27
July 17, 18, 24, 25
August 12 (Perseids meteor shower), 14, 15, 21, 22
September 11, 12, 18, 19, 25, 26 (NOVA Star Party)
October 16, 17, 21 (Orionid meteor shower), 23, 24
November 13, 14, 17 (Leonid meteor shower), 20, 21
December 11, 12, 13 (Geminid meteor shower), 18, 19, 22 (Ursid meteor shower)

Savage Farm & Nichlason Site

May 5 (Eta-Aquarids meteor shower), 22, 23, 24, 29, 30, 31
June 19, 20, 21, 26, 27, 28
July 17, 18, 19, 24, 25, 26
August 12 (Perseids meteor shower), 14, 15, 16, 21, 22, 23
September 11, 12, 13, 18, 19, 20, 25, 26, 27
October. 16, 17, 18, 21 (Orionid meteor shower), 23, 24, 25
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)

NOVAC

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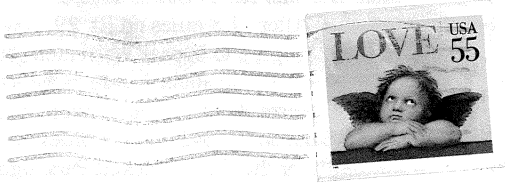

Inside:
·For Young Astronomers
·Observing in Maryland
·Eclipse Report

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