

NOVAC

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Stellafane 2000

Bill Burton

What is Stellafane? It is a convention of amateur astronomers held every year near Springfield, Vermont, and is the oldest and largest star party in the country. Stellafane was started in 1926 by Russell Porter and his friends, precision machinists from Springfield and amateur telescope makers, who were largely responsible for making close-up views of the heavens available to everyone, thereby founding modern amateur astronomy. The main event that Stellafane is centered around is the display and judging of home-made telescopes, continuing Porter's proud tradition into this, the 65th year that Stellafane has been held.

Stellafane 2000 started for me early Friday morning at the Tree Farm campground, outside of Springfield, where I had pitched a tent at the edge of a grassy field after a 12-hour drive from Virginia (my car was the slowest one on the road). I went for a four-mile run through the



Four telescopes by John Avellone (L to R): a 2" f/20 off-axis refractor, a radio telescope, a 4" f/22 refractor, and the infamous 4" f/4 Astrocan

countryside, and then broke camp and headed for Springfield. After picking up the traditional cup of coffee at McDonald's, I headed up Breezy Hill and arrived at the entrance by 8:30, where a line of about 20 cars was already waiting for the 9 AM opening. Everyone was vying for the choicest camping spots on the few areas of level ground on Breezy Hill, where hundreds of people would pitch tents and over 2000 would ultimately gather. After registering I got a good spot deep under the pines at "Fern Grotto", where few ferns have survived the annual onslaught. A few feet away fellow NOVAC member Kevin Jones was erecting his tent, but, curiously, I hardly saw him or his parents (including past-president Brenda "Clem" Jones), again that weekend.

The day started muggy and cloudy, but by noon the clouds were breaking up, and I headed up to the open field just below McGregor Observatory, which houses the Schupmann Telescope, with its unusual, 13-inch f/16 unobstructed-optics design. The horseshoe-pitching contest was going on, but I instead headed for the solar setup of John Vogt. He had an AstroPhysics 6" f/7 Starfire with a Daystar hydrogen-alpha filter, powered by a new, sleek-looking astronomical battery. The telescope was focused on one quadrant of the sun, where several prominences arced off the limb like miniature thunderheads, and more prominences away from the limb stretched out towards the observer. The chromosphere was also clearly visible as a thin translucent layer of flame just above the opaque photosphere--the last time I had seen it was the last split-second of totality during the 1998 solar eclipse on Aruba. With all this visual display, the sunspots were hardly noticeable.

I set up near John's scope my tripod-mounted Miyauchi 20x100 binoculars with solar filters, which provided a nice wide-field view of the spotted sun and a counterpoint to the h-alpha view. Two people said it was the best view of the sun they'd ever had. A Stellafane regular from New York brought out his Miyauchis, as he does every year, and then we were joined by two other owners, making probably the largest gathering in the United States of people who possess this rare instrument. A few feet away,

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NOVA Star Party

Pete Johnson

It's that time again. NOVAC will be holding its largest event of the year, the NOVA Star party, on September 30 from 3pm to 11pm. **It is currently scheduled to be held at C.M. Crockett Park. However, park staffing difficulties may force us to move to Mickie Gordon Park. Check www.novac.com for information as the date approaches.** All members are urged to attend and bring their scopes. History has shown that, given good weather, the turnout is excellent.

In addition to the normal walking around and observing activities, we have structured activities such as lectures, slide shows, and observing stations for each type of object: planets, nebulae, galaxies, etc. We need volunteers to man these stations and do presentations. Please volunteer—it's great fun.

If you would like to volunteer, please contact Jeff Cook at nova@cookstudios.com. Watch for Star Party information on the novac.com web page for additional details. I hope to see you all there.

Publish Your Photos in the Newsletter

Michael Mills

Do you have some astrophotos that you would like to share? How about some images from the last star party you attended? Or maybe a picture of that telescope-making project you just completed? If you would like to see your photographs in print, send a high-resolution digital image to the editor at mjmills@fpcc.net.

While you're at it, why not write an article to go along with your pictures? Describe your astrophotography methods and equipment, tell us about the star party, or explain the design of your new home-made telescope. All submissions are welcome. Send articles, questions, or comments via e-mail to mjmills@fpcc.net. Typed or handwritten articles can be mailed to Michael Mills, 5001 Ridgewood Rd, Alexandria, VA 22312.

What's Up?

Al Schumann

Now let's see, where was I? Oh, yes, I was telling you about my tour of the moon. We left off just after the first quarter.

On Day 8, I found the Straight Wall, but only after a false start. At first, I was drawn to Alphonsus and Arzachel. At one spot, the walls of their craters seem to merge and give the appearance of a straight line. I thought I had gone to my target right off the bat. However, it didn't square with the map. The real Straight Wall runs on about the same angle, but it's in a fairly smooth area of Mare Nubium. Also, two distinctive craters flank the wall; Birt on the west, and Thebit on the east. After another look, I found it for sure. It is more obvious than I thought it would be. However, timing is everything. Without the right sun angle and shadows, you're screwed. You have one night to see it, and that's it. For kicks, I went back a month later and found it again. Like everything else in astronomy, it's very easy once you know when and where to look. Fortunately, the September issue of *Sky & Telescope* has a Lunar Notebook article that features this very area. The author also refers to the Straight Wall as Huygen's Sword, and, sure enough, that's what it looks like. But the thing that really caught my eye in the photos was a small rille just west of and paralleling the Straight Wall. One end of the rille is right next to Birt. I did not see it during my tour, but I was not looking for anything over there. I need to go back. It is said to be a challenging feature to see. I'll check it out.

Moving on, there is a little strip of high ground separating Mare Nubium from Mare Cognitum. If you follow that strip to the north, you come to an old, shallow crater named Fra Maura.

Apollo 14 landed just north of that crater. Apollo 12 was not far away, but it was still on the dark side of the terminator. Further to the north, Copernicus was just coming into view. Only one wall of the crater was illuminated, and for the rest of the evening I kept coming back to watch the sunlight slowly creep down the crater wall and begin to spread over the floor. Cool! At high power it is quite a sight, but it is tough tracking with a Dobsonian. Seems as if the movement is always either too little or too much. There is a sizable pile of ejecta on the east side of the crater. I called it The Elephant Poop. There is a nice crater, Eratosthenes, at the western end of the Apennines Mts. It was certainly worth a look. Then I went further north and gazed at craters Archimedes and Plato. I saw the Spitzbergen Mountains, located a short way from Archimedes. It was a very nice night.

Lunar Day 9. After last night I was so confident I decided to go with only the 13-inch telescope. Let's go directly to the high powered big gun. I am Man. Hear my cannon roar. I got lost immediately. Didn't know where I was, where I was going, or what I was looking at. There was a dull pop instead of a roar, so I set up the Astroscan without delay. The moral: When you have a good routine established, don't change it. Anyhow, the waxing gibbous moon was really getting bright. Many features that were so prominent before are washed out and lack detail under the glare of the sun. The big pile of Elephant Poop was barely noticeable at Copernicus. The Straight Wall is no longer visible. I was able to find the approximate location of the Apollo 12 landing. To do so I followed a row of three craters southwest from Copernicus and then edged eastward. There are

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President's Message

Pete Johnson

I've been getting a lot of questions about the status of our Crockett park observing agreement. Well, as of this writing we are waiting for the county park authority to review and approve the agreement. Once approved, Tilly Smith has volunteered to manage the park and coordinate the session supervisors required by the new agreement. Hopefully, all will be in place by early September.

Now, looking to the future, Crockett park is degenerating as a useful observing site. Light pollution has taken most of the sky and a new housing development on the road leading to the park will make matters much worse once they become occupied. It is clear that the sun is setting on Crockett as our major public viewing location. For that reason the NOVAC board has voted to move the 2001 NOVA star party to Franklin Farms Park near Leesburg. We will also try to negotiate an observing agreement for Franklin, making it a regular observing site. So, watch for upcoming announcements about new observing sites and keep looking up.

The Star Party may move to
Mickie Gordon Park!
See Page 1 and watch
www.novac.com for an-
ouncements

Society of Amateur Radio Astronomers 2000 Conference

John Avellone

The SARA - 2000 conference was held at the National Radio Astronomy Observatory, Greenbank, West Virginia, on 16 - 19 July. SARA is an interesting group. It has about as many members, worldwide, as NOVAC does locally. Of these, about 50 participated in the conference. My impression is that amateur radio astronomy is about where amateur optical astronomy was in the 1920's, as exemplified by Stel-lafane of that period.

Apart from the organizational business sessions (Tom Crowley was elected president), about 15 technical reports, project updates, and pleas for help were presented. The subjects ranged from low-noise amplifier design, meteor detection, distributed data processing, new software, X-Ray/VLF correlation, to pulsar detection. The plea for help came from a field biologist who

was trying to gauge the level of solar ultraviolet radiation from indirect radio measure of the ionosphere. This in order to estimate the persistence of the brucellosis pathogen (affects buffalo & cattle) in the soil around Yellowstone National Park.

The best updates were given by Jim Thieman, on the RADIO JOVE project (similar to the presentation he gave NOVAC), and by Don Cline, president of PARI. The Pisgah Astronomical Research Institute (PARI) is a not-for-profit public foundation organized to provide research access to optical and radio astronomy. They have taken over a former NASA satellite tracking station (with five radio telescopes and one automated optical telescope) located on 200 acres in the Pisgah National Forest in SW North Carolina. Might be an interesting place to visit. Should have dark skies!

Other activities at the conference included a tour of the almost-complete GBH telescope (largest movable dish in the world) and evening use, by SARA members, of two small radio telescopes: the 40-foot antenna, and a 75-foot

long horn antenna for 1420 MHz. You can see these, and all the other telescopes, on any public tour of the NRAO. The facility is in a very scenic rural setting, about 4 hours from DC and only 30 miles south of Spruce Knob.

Some of the SARA participants were old-hands with vast technical proficiency, some were science teachers working out better ways to present the subject, some were vendors offering essential equipment and literature, and some were just beginning amateurs like me. All were friendly. The one thing that stuck me as "most different" from optical astronomy was that most of the radio astronomers build the detection components and computer interfaces first, and got around to building the actual antenna last! Sort of like having to build a brain and eye before you grind your mirror?

Here are some web sites for further information:

NRAO: <http://www.nrao.edu>

SARA: <http://www.bambi.net/sara.html>

Radio Jove: <http://radiojove.gsfc.nasa.gov>

PARI: <http://www.pari.edu>

Stellafane

(Continued from page 1)

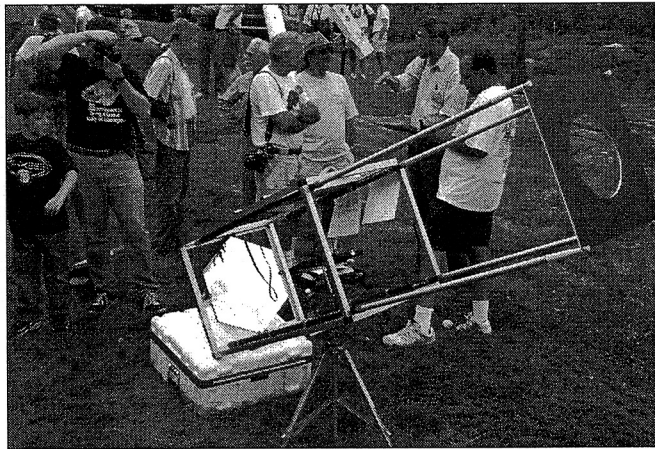
Al Nagler was demonstrating his latest combo of fast-focus refractor, binocular viewer, and namesake eyepieces. Before I left, the New York friend generously gave me his old heavy-duty Bogen tripod quick-release mechanism, which will make my setup much easier in the future.

In late afternoon I bought dinner at the mess tent and joined John Stewart and his wife Bobby and friend Cathy for dinner at their tent, along with Gerry Wolczanski. After the best adult conversation I have had in a long time, I had to tear myself away and prepare for a talk at the Friday Night tent talks, held under the huge striped party tent nearby. Although the weekend forecast had never been particularly optimistic, the skies were starting to look pretty promising.

The tent had held mirror-making demonstrations all afternoon, which I did not attend, but the Friday night talks were the first major event of the weekend, and the tent was packed as usual. In a perhaps unique tradition, anyone can give a presentation at this gathering as long as they give MC "Big Bob" Morse advance notice and stay within the strict 10-minute time limit. The audience includes some of the most knowledgeable amateur astronomers in the northeastern U.S., and usually a Sky and Telescope editor or two. I had spoken here in previous years on Project Orion and counting Perseid meteors; this year I had a talk with viewgraphs on NOVAC's new light-pollution mapping project.

The Friday night talks seem to improve every year. There was one on video astronomy for handicapped observers, a homemade observatory, some stunning wide-field astrophotos of constellations and aurorae, first-light pictures from some new big telescope, and an IDA update by Bob Gent. My talk went fine, although I came dangerously close to the shepherd's crook, running right up to Big Bob's time limit.

The highlight of the evening, however, was the presentation on lightweight mirrors by NASA's Peter Chen, who has given talks on his research twice at NOVAC meetings. After a rocky start where he acclimated to the decidedly un-auditorium like setting, Peter got the measure of the crowd and found his speaker's stride. He convinced us of the profound impact these mirrors would someday have on astronomy, while lacing his talk with subtle touches of humor. A photo of two young girls easily holding up a 24-inch mirror was most compelling. The audience of amateur telescope makers loved it, and gave him a rousing cheer at the end of his talk. NOVAC'ers take note: not far away in Maryland, Peter Chen is riding the crest of a new wave in ATM, and we should position the club



Peter Chen's lightweight-mirror Dobsonian. Note the heavy-duty mount.

to surf right along with him!

Miracle of miracles: amidst the cloudiest New England summer in recent memory, it was clear Friday night. After the talks I went up again to the hillside below the observatory, which was now crowded with telescopes of every shape and size. (I never set up my own telescope at night at Stellafane). Like the central massive object in a cluster of galaxies, John Vogt's 32-inch Dobsonian rose above the surrounding group of telescopes, which included several in the 20 to 25-inch range. I meandered from scope to scope like a rogue star, taking in views of the major Messier objects like I never usually see them, and occasionally more obscure objects like the Cat's Eye Nebula, a glowing green planetary with a gem-like central star. Early Perseid meteors streaked across the Milky Way, rewarding those standing in line at the big scopes and not yet at the eyepiece. The Schup-

mann telescope, unfortunately, had started to dew up by the time I got to it, and that was the beginning of the end: clouds slowly moved in from the south, and closed down the sky by 1:30. But it was enough: a taste of Stellafane at its finest. I walked back to my tent in the dark.

The next day would begin soon enough: the famous Stellafane swap meet, scheduled every year to start at 7 AM, but in fact a bustling bazaar in the light of a New England dawn at 5 AM. I set up my own table in the designated area to sell a few things: my wife's mint-condition Bell & Howell cube-style slide projector (yours for \$175!), a Bolex Super-8 movie camera (\$50), and a couple of ailing SLR cameras (\$5??). I also handed out fliers on the

light-pollution mapping project, following up on my talk of the night before. Other tables had every imaginable astronomical item, from lenses to metal fixtures to motors to finished telescopes, books and magazines. Four hours later, at 9 AM, I had sold the projector for \$100, declared victory, taken down the table, and spent \$50 on a Chinon camera to replace my old dead Pentax. At the food tent I took sinful pleasure in eating two eggs over easy with hash browns, and washed them down with black coffee. The day had begun.

The spiritual core of Stellafane resides not where most of the events and hustle and bustle of the crowd occurs, at "Stellafane East", but a short walk away on the other knob of Breezy Hill, around the fabled pink clubhouse and Porter Turret Telescope. For many years before its expansion, all of the events of Stellafane were held here, on land now declared a National His-



A view of Breezy Hill, including the pink clubhouse, Porter Turret telescope, homemade scopes, and Stellafaners.

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Upcoming NOVAC Meeting Programs

Craig Tupper

September 10

The Next Generation Space Telescope -- NGST

NGST is being planned as NASA's next big telescope in space, the follow-on to the Hubble Space Telescope. Scheduled for launch around 2009, just before the end of HST's planned lifetime, NGST is envisioned as an infrared telescope with a lightweight deployable (fold-up) primary mirror, about eight meters in aperture (HST is only 2.4 meters). NGST will study the earliest objects to form in the universe, as no other telescope can. Our speaker will be a scientist from Goddard Space Flight Center who is currently working on the project.

October 8

Tinkering with Telescopes

NOVAC has many members who enjoy making their own equipment, whether building complete telescopes or just tweaking commercial parts. All NOVAC ATM's (amateur telescope makers) should bring along at least one project to display and discuss. The program will consist of wandering around and talking to the builder of whatever equipment interests you. Those who bring projects will also have time to wander around and talk to others. Get ideas for your own projects, or (for beginners) simply learn the basics about equipment. Beginners can use this as a primer for the November meeting, when Tom Dietz will discuss buying a telescope.

November 12

Buying a Telescope

Tom Dietz, NOVAC

Just in time for the holidays, come hear what Ironman Tom has to say about purchasing a telescope, particularly for the first time or as a gift. There are a bewildering array of telescopes out there, and Tom will help you navigate the maze and make a wise choice, no matter what your budget. Lots of other NOVAC regulars will be there to make sure Tom gets it right, or just to be argumentative. Even if you've never been to a NOVAC meeting before, come on by for one of our liveliest, and most popular, topics, which has become a yearly feature.

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

for the latest info prior to the meeting.

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

Come share and learn about YOUR favorite topic!

NOVAC Public Outreach Programs

Ed Witkowski

<u>Date</u>	<u>Place</u>	<u>Group</u>	<u>Theme</u>
8/30/2000	Eleanor Lawrence Park	Fairfax Parks	General Stargazing
9/21/2000	PineKirk Presbyterian Church (Hoadly Road and PW Parkway)	PineKirk Presbyterian Church Nature Series	General Stargazing and Telescopes
9/23/2000	Sky Meadows State Park	NASM/Einstein Planetarium	General Stargazing
9/29/2000	Crockett Park	NOVAC Star Party	Everything related to astronomy
10/21/2000	Sky Meadows State Park	NASM/Einstein Planetarium	General Stargazing
11/18/2000	Mickie Gordon Park	Loudoun County Parks	General Stargazing
12/14/2000	Franklin Park	Loudoun County Parks	General Stargazing

Please let the people at the gates at the November and December events know that you are with NOVAC for free admission. Admission to the Sky Meadows events is \$3 per car, but this fee is waived if you bring a telescope to share.

If you have any questions, please contact Ed Witkowski at edwski@erols.com

New Members - June 21 through August 25

Kevin Brown

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WELCOME!

Highlights of NOVAC Meetings



July 9 NOVAC GENERAL MEETING

19:00 Pete Johnson, President, called the meeting to order. The prospective and new members introduced themselves.

Pete Johnson gave a recap of the NOVAC Picnic that was held at Crockett Park on June 27.

Pete Johnson led a discussion concerning the new observing agreement negotiations with Crockett Park. The use of Crockett as a regular NOVAC observing site is suspended until this agreement is finalized.

Pete Johnson encouraged all NOVAC members to subscribe to the e-mail list since this has become the primary means of communication amongst club members.

Pete Johnson discussed a potential new observing site near Rixeyville.

Ed Witkowski listed the upcoming public out-

reach events.

Ian Keith gave the sky tour.

For the main program Dr. Jim Thieman spoke about the Radio JOVE project.

Pete adjourned the meeting at 20:00

There were approximately 51 in attendance.

Submitted by Kevin Brown, Secretary

August 13 NOVAC GENERAL MEETING

19:00 Pete Johnson, President, called the meeting to order. The prospective and new members introduced themselves.

Pete Johnson listed the upcoming star parties and astronomy events in the region including the NOVAC Star Party to be held September 30 at Crockett Park.

Bob Parks briefed the membership on he and John Nusbaum's efforts to get a Fairfax County

lighting ordinance.

Pete Johnson gave a status on the observing agreement negotiations with Crockett Park. NOVAC has presented our Fauquier County board POC with a revised observing agreement proposal, which will be presented at their next meeting in early September.

Pete Johnson informed the membership that the NOVAC board has decided to pursue adding Franklin Park and the Rixeyville "buffalo ranch" as official NOVAC observing sites.

Ed Witkowski listed the upcoming public outreach events.

Craig Tupper listed the upcoming general meeting programs.

Craig Tupper gave the sky tour.

For the main program, NOVAC member Ed Witkowski gave a talk about star clusters.

Pete adjourned the meeting at 20:00

There were approximately 36 in attendance.

Submitted by Kevin Brown, Secretary

National Capital Astronomers Meetings

Elliot Fein

The September meeting of the National Capital Astronomers (NCA) will feature Steve Robinson, who will speak about Gamma Ray Bursts. The meeting will be held in the Lipsett Auditorium in Building 10 (Clinical Center) of the National Institutes of Health in Bethesda, MD on September 9 at 7:30 PM. The NCA Home Page: <http://capitlastronomers.org>

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no conspicuous landmarks in the area, but I

What's Up?

think I came pretty close. While in the vicinity, I looked at the Ural and Rhiphaeus mountain ranges. Next came the most stunning sight in the whole lunar exercise. I looked in the northwest at the Jura Mountains and saw a huge dark arc. It gave the illusion of the entrance to an enormous cave. The Sinus Iridium, which looks like an old lava filled crater, was illuminated, but the shadow cast by the mountain ridge was extraordinary. Remember, nine days after the new moon. Check it out.

Lunar Day 10. That great sight from last night is no more. With full sunlight on the Jura Mts. it has become just another routine crater. I took another look at the Ural/Rhiphaeus/Harbinger Mountains just for the practice of finding them. I noted that with the moon bathed in bright light, the rays of Tycho have come into full bloom. I then caught a glimpse of the crater,

Kepler, in the middle of Oceanus Procellarum. Only a few days remain until the full moon.

Lunar Day 11. I had a nice view of Kepler. Aristarchus also showed up well. There was a lot of shadow around Schroter's Valley, but I wasn't sure of just what I was looking at. I could not differentiate between the valley and the hills. I'll have to get in there again.

Clouds and rain wiped out the next few nights. Full moon came and went, so if I want to view the last sliver of moon, it will have to wait until another time. If I choose to go through the whole sequence again, I'm going to cover my big chart with clear plastic and use a grease pencil to mark the terminator each night. Also, I can circle the features I want to look at and check them off as they are seen. Neither my recollection nor my notes are quite good enough when I try to reconstruct the evening's activities. I found myself guessing where the terminator was across the moon's surface.

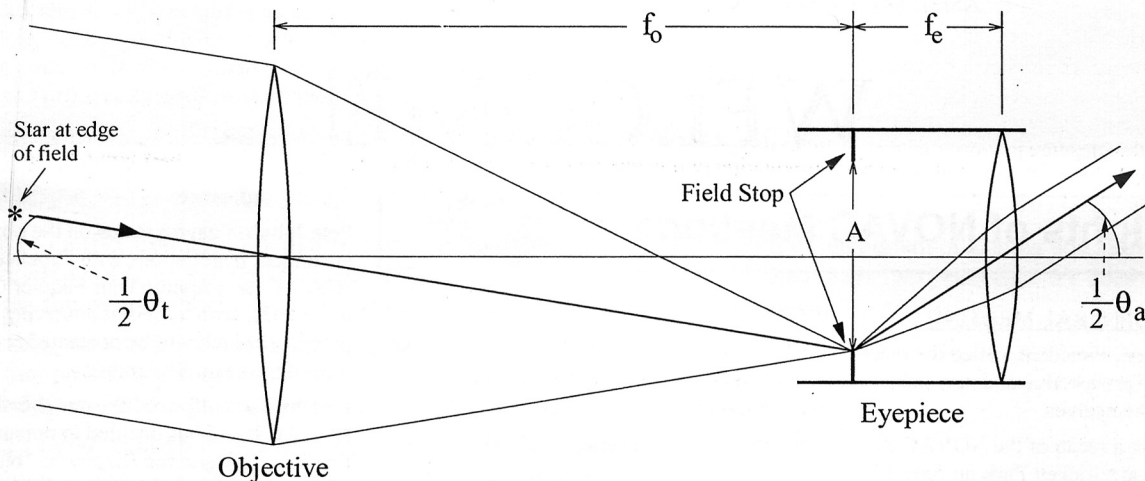
Grease pencil or some kind of marker would

make identification a lot easier and more precise. After reading my notes, I know I have swayed back and forth across the terminator at times. However, the exercise was great fun, and I may well do it again. Next time, I'll concentrate on shadows in and around craters and drop the Apollo landing sites.

I was devastated to read that you might lose Crockett Park as an observing site. Even though it is not as dark as it once was, it's certainly the place to handle a crowd. People have a way of protecting their little fiefdoms, don't they? Ironically, the park right up the road from me has recently been opened to the public. Further, the county has no problem with setting up telescopes in the same area where I had been ejected some months ago. Finally, our little Skywatcher's club has a reasonably dark site within easy driving distance.

Derivation #3: Field of View

Michael Mills



The **true field of view** (TFOV) of a telescope/eyepiece combination, denoted by θ_t in the diagram, is the actual size of the small patch of sky that is visible in the eyepiece. It is determined by the focal length of the telescope and the diameter of the eyepiece's field stop, and can be calculated by a simple one-ray trace as shown in the diagram. For a telescope with focal length f_o and eyepiece with field stop diameter A , we get: $\theta_t = 2 \arctan(A/2f_o)$. This is exact for all telescopes and all eyepieces. It can be simplified to $\theta_t = A/f_o$ (θ_t in radians) when the small angle approximation $\arctan(\theta) \approx \theta$ is applied (for $\theta < 0.1$ radian). To convert radians into degrees, multiply by $180/\pi \approx 57.3$. Note that the focal length of the eyepiece, and thus magnification, does not come into the formula for the TFOV.

The **apparent field of view** (AFOV) is the magnified angular diameter of the image as it enters the observer's eye. It is labeled θ_a in the diagram. As discussed in *Derivation #1*, magnification can be defined as $M = \theta_a/\theta_t$ when distortion is negligible. Rearranging this to solve for θ_a gives:

$$\theta_a = M\theta_t = \frac{f_o}{f_e} \frac{A}{f_o} = \frac{A}{f_e}$$

Thus, the AFOV is a function of the eyepiece alone. This gives a pretty good approximation to the AFOV for any eyepiece. However, finding the exact AFOV for a complex eyepiece design requires a full ray trace.

Stellafane

(Continued from page 3)

toric Landmark for its role in developing modern astronomy. Now this rocky hillside is reserved solely for the display of homemade telescopes, and Saturday is when they are judged and awards given. By mid-morning I was over there, camera in hand, wandering among the scopes and marveling at their beauty and innovative designs. This year the split-ring design was popular, resulting in miniature variations on the 200-inch Hale on Mt. Palomar. Homemade versions of a Schiefspiegler telescope, a spectroscope, and a brass orrery were also among the entries. Peter Chen and a grad student had a 24-inch dob on display with one of his unfinished lightweight mirrors, which drew a steady crowd. Over on a rocky ledge at one end of the field, John Avellone represented NOVAC with his incomparable Astrocan Newtonian telescope, as well as a homemade refractor and the only radio-astronomy entry this year, an antenna designed to pick up emissions from Jupiter.

I hustled back to Stellafane East to catch a couple of the afternoon talks under the tent, including Bob Gent's inspiring talk on the progress we are making in reducing light pollution. He was followed by Maurizio di Sciuolo, one of the great planetary imagers from Florida and a Don Parker protege, who showed us step-by-step how to take high-resolution CCD images of the planets, illustrated with some jaw-dropping examples of his technique. Two technical ATM talks were to follow, but I opted for another pleasure denied at home: the afternoon nap.

Late Saturday afternoon brings another Stellafane tradition, the chicken dinner. Capturing photons late at night burns a lot of calories, and there is no better antidote than a paper plate sagging under the weight of barbecued chicken, roasted corn on the cob, baked beans, and strawberry shortcake. Gerry and I again joined the Stewarts in their tent, and we watched the clouds thicken overhead in advance of the Saturday evening program. A gentle rain started to fall, guaranteeing that for the first time in my many-year attendance, the program would not be held in the natural outdoor amphitheater, but under the same tent I had already spent so much time in. I went over early to get a good seat, not only for a good view of the speakers but easy access to the stage--with an unprecedented 12 tickets purchased this year, I was sure to win one of the raffle prizes, which include thousands of dollars' worth of books and Nagler eyepieces.

As it always does, the Saturday evening program started with prizes for the youngest and oldest attendees, the farthest traveled and, this year, the people with the longest RV. Then the telescope-making awards (what, nothing for the Astrocan??), followed by the raffle (since you had to ask, no), and finally, the traditional



One of the entries: a beautiful, hand-carved telescope.

"Shadowgram". This talk was originally intended to bridge the time between dusk and dark, when viewing began, and for many years was given by the late Walter Scott Houston. Now it is followed by a keynote talk by some semi-famous figure in astronomy, but certainly has not lost its luster, since the Shadowgram speaker is now David Levy. I saw Levy's first presentation of this talk two years ago, and the solar eclipse kept him away last year (I was absent as well for other reasons). Under the tent, now drumming loudly from the downpour outside, Levy warned to his audience and took on the fervor of an old time preacher, extolling the sublime beauty of amateur astronomy, the uniqueness of Stellafane, and the joys and virtues of bringing the night sky to others--particularly those less fortunate. His was a moving performance, and I was grateful for my ringside seat. The following talk, on the evolution of the design of the Hale telescope by Porter and others and given by the director of Griffith Observatory in Los Angeles, was potentially interesting but ultimately overlong and anticlimactic. After over an hour of this seemingly never-ending talk, I left in the rain and made my way to my own, thankfully still dry tent. A miserable sob from a nearby tent told me that someone else was not so lucky, and probably would be staying in a motel next year. There would be no viewing this second night, nor optical testing of entered telescopes--nothing but sufficient sleep for driving home the next day. Stellafane 2000 was over, but there would be other, clearer years ahead.

(All photos for this article are by the author.)

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cbresnan@msn.com

Savage (Paul McCray) 703-729-0596
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Arlington Planetarium 703 358-6070

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**Northern Virginia Astronomy Club
Statement of Cash Received and Disbursed**

For the period January 1, 2000 through August 1, 2000

CASH RECEIVED:

Membership Dues:

Regular and Additional:

Renewals	\$2,646.00	
New Members	1,410.00	
Patron-New Member	100.00	\$4,156.00
Interest Income		198.69
Library Book Sales		15.00
Dept. Store Telescope Making Kits		385.00
Donation		4.00
Kalmbach Book Discount		0.00
Total Cash Received		\$4,758.69

CASH DISBURSED:

Newsletter:

Printing & Assembly	969.40	
Postage	417.20	
Software for Newsletter	94.98	1,868.10

Astronomical League

Astronomical League Dues		1,300.00
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Observing Site Expenses:

NOVAC Picnic:

Picnic Permit	0.00	
Baroque Food & Supplies	233.05	
Invitation-Printing & Post	97.47	330.52

Observing Site Improvements:

Savage Farm

Porta-Jon Rental	512.05	512.05
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Webpage Hosting Service		270.00
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NOVAC's ATM Group:

Dept. Store Telescope Making Kits-Resale	550.00	
International Dark-Sky Association (IDA)	100.00	
Hotline Expense	90.00	

Administrative:

Printing -

Membership Applications	0.00	
Printing - Administrative	114.87	
Postage	145.53	
Supplies	183.93	
Check Printing Charges	14.25	
State Corp. Filings Copies	10.50	
Bank Service Charges	18.00	487.08

Total Cash Disbursed		<u>5,507.75</u>
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DEFICIT OF CASH RECEIVED OVER CASH DISBURSED (749.06)

Cash at beginning of period: 10,820.25

CASH AT END OF PERIOD 10,071.19

Cash At End Of Period

Checks Received, Undeposited	0.00	
Checking Account	1,093.47	
Savings Account	2,370.72	
Certificate of Deposit Due 1/5/2001	2,802.79	
Certificate of Deposit Due 11/2/2000	2,161.32	
Certificate of Deposit Due 5/2/2001	1,642.89	<u>10,071.19</u>

Respectfully submitted,

/s/

Pedro Martinez,
Treasurer

Jeff's Observing Report

Jeff Stetekluh

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

Jupiter Eclipse Events on Principle Club Observing Nights

Sep 29 11:18 PM Io Eclipse Start (S -47 J 81 15)
 Oct 21 5:01 AM Io Eclipse Start (S -28 J 236 66)
 Oct 22 11:30 PM Io Eclipse Start (S -57 J 97 35)
 Oct 28 6:55 AM Io Eclipse Start (S -8 J 273 40)
 Oct 30 12:24 AM Io Eclipse Start (S -64 J 129 62)

The Sun

Sep 10 rises at 6:46 AM, sets at 7:24 PM
 Oct 8 rises at 7:11 AM, sets at 6:40 PM
 Nov 12 rises at 6:48 AM, sets at 4:57 PM

The Moon

Sep 13 Full Moon
 Sep 20 Last Quarter
 Sep 27 New Moon
 Oct 5 First Quarter
 Oct 13 Full Moon
 Oct 20 Last Quarter
 Oct 27 New Moon

Events

Sep 22 Autumnal Equinox (from Espenak)
 Sep 22 Equinox (autumn begins) (from AM)
 Oct 6 Mercury at Greatest Elong: 25.5°E (from Espenak)
 Oct 21 Orionids ZHR=20, active Oct 02 to Nov 07 (from IMO)
 Oct 29 EST starts
 Oct 29 Mercury at Inferior Conjunction (from Espenak)

The Planets

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

Sep 10	Rises	Transits	Sets	Mag	Diam	Notes
Mercury	8:06 AM	2:05 PM	8:03 PM	-0.4	5.1"	W, 7*
Venus	8:48 AM	2:37 PM	8:25 PM	-3.9	11.1"	WSW, 11*
Mars	4:54 AM	11:43 AM	6:32 PM	1.8	3.7"	
Jupiter	11:07 PM	6:26 AM	1:41 PM	-2.5	41.2"	
Saturn	10:39 PM	5:47 AM	12:50 PM	2.2	18.9"	
Oct 8	Rises	Transits	Sets	Mag	Diam	Notes
Mercury	9:25 AM	2:28 PM	7:30 PM	0.1	7.1"	WSW, 8*
Venus	9:51 AM	2:56 PM	8:00 PM	-3.9	12.3"	SW, 13*
Mars	4:32 AM	11:00 AM	5:27 PM	1.8	3.9"	
Saturn	8:47 PM	3:54 AM	10:57 AM	2.0	19.7"	

References for Jeff Stetekluh's Observing Report

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

Fairfax County Light Pollution Zoning Reform

This is an appeal to Fairfax County residents. In our fight against light pollution we have good news. It turns out that the Fairfax County Board of Supervisors (BOS) has already sent a request to the Department of Planning and Zoning (DPZ) to study the issue of light pollution and develop a new ordinance. However this was done two years ago and it has been sitting on the back burner since then. According to DPZ there has been no pressure from the BOS to go forward on the study, so only the "squeaky wheels" are getting grease.

We urgently need all Fairfax County residents to contact their BOS representative and Chairman Hanley to express their concern on the issue. Specifically we are trying to get the BOS to issue a deadline to DPZ for returning a draft ordinance. Please phone, write, fax or email and the sooner the better. You can use the attached letter and send it to your Supervisor and Chairman Hanley or email me (bob@innovisionmm.com) for an electronic version of the letter so you can e-mail them. It will only take a few minutes to let your wishes be known. And the little push we do today will pay off in a comprehensive outdoor lighting ordinance that will help the fight against light pollution.

We need lots of people to take a few minutes to write the BOS, so that they will realize that light pollution zoning reform has broad community support. In short we need to make light pollution a "squeaky wheel" before it will get the attention it deserves. The longer we wait, the more McDonalds restaurants we will see retrofitted with new ultra bright parking lots and roof lighting.

So organize all your friends to write letters today. Personalized letters are best, but the attached letter will send the message. We are also looking for residents from other counties in Maryland and Virginia to take the fight to their local governments. We will meet with you to share strategies/information and attend meetings with you and your representatives if desired.

Thanks,
Bob Parks

Here's a list of the BOS and their e-mail addresses. Send a copy to your Supervisor or all. You can get their mail addresses from the Fairfax County BOS web site: <http://www.co.fairfax.va.us/gov/bos/>

Catherine Hudgins <hntrmill@co.fairfax.va.us>

Dana Kauffman <leedist@co.fairfax.va.us>

Elaine McConnell <springfield@co.fairfax.va.us>

Gerald Connolly <provdist@co.fairfax.va.us>

Gerald W. Hyland <mtvernon@co.fairfax.va.us>

Penelope Gross <mason@co.fairfax.va.us>

Stuart Mendelsohn <stuart.mendelsohn@co.fairfax.va.us>

Sharon Bulova <braddock@co.fairfax.va.us>

Michael R. Frey <sully@co.fairfax.va.us>

Also send an e-mail to BOS Chairman Kate Hanley. Here's the Chairman's feedback page:
<http://www.co.fairfax.va.us/gov/bos/chair/feedback.htm>

.....DETACH AND MAIL.....

Dear Supervisor,

As a citizen of Fairfax County, I ask that you set a deadline of January 1, 2001 for the Department of Zoning and Planning to return to you the revised outdoor lighting ordinance that was requested by the Board of Supervisors two years ago. We need a plan now for improving the future of nighttime outdoor lighting in our community.

- o The increasing opaque glow in our night sky is evidence of energy wasted needlessly.
- o Lighting that produces glare in our 'line-of-sight' is blinding and a safety hazard!
- o Unshielded or excessive lighting intrudes into nearby homes, yards and natural areas.

Please design a plan to discourage public outdoor lighting that:

1. Shines light upward into the sky, where it serves no useful purpose.
2. Creates glare in our 'line-of-sight', or intrudes into private properties/natural areas.
3. Is excessively bright, exceeding recognized industry recommendations (*IESNA).
4. Stays on at full intensity even when the facility is not in use, with the exception of required security lighting.

'Full cutoff & shielded lighting fixtures are now offered by all major lighting manufacturers. These fixtures efficiently distribute light downward without glare, and control the spill of light into the neighboring properties and the night sky.

Through these improvements we can improve nighttime visibility & public safety, conserve energy, be good neighbors and regain our disappearing view of the universe. Please act now.

Thank you,

Signed _____
Address _____

For information, contact: The International Dark-Sky Association, 3225 N. First Ave., Tucson, AZ 85719-2103,
Phone: 520-293-3198, or visit the International Dark-Sky Association (IDA) website www.darksky.org

*IESNA The Illuminating Engineering Society of North America, phone: 212-248-5000, website www.iesna.org

Upcoming Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
27 •Observing at all sites	28	29 NEW MOON	30	31	1 •Observing at all sites •Black Forest Star Party	2 •Observing at all sites •Black Forest Star Party
3 •Observing at all sites •Black Forest Star Party	4 •Black Forest Star Party	5	6 •Board Meeting	7	8	9
10 •General Meeting 7 pm @ GMU	11	12	13 FULL MOON	14	15	16
17 •ATM SIG Meeting	18	19	20	21	22 •Astronomical League Mid-East Region Meeting	23 •NASM/Sky Meadows •Astronomical League Mid-East Region Meeting
24 •Astronomical League Mid-East Region Meeting	25	26	27 NEW MOON	28	29 •Observing at all sites •Hidden Hollow Convention	30 •NOVAC Star Party •Hidden Hollow Convention
1 •Observing at all sites	2	3	4 •Board Meeting	5	6	7
8 •General Meeting 7 pm @ GMU	9	10	11	12	13 FULL MOON	14
15 •ATM SIG Meeting	16	17	18	19	20	21 •NASM/Sky Meadows •PineKirk Outreach
22	23	24	25	26	27 NEW MOON •Observing at all sites	28 •Observing at all sites
29 •Observing at all sites	30	31	1	2	3	4

S E P T E M B E R

O C T O B E R

NOVAC Notices and Benefits Discounts on *Sky & Telescope* and *Astronomy*.

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

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

Discount on Books

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

Club Telescopes and Binoculars

NOVAC makes available three six-inch Newtonian reflectors for club members to check out, free of charge, and use for a limited time.

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

The second telescope is a homemade six-inch f/5 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.

The third telescope is a six-inch, f/8 Meade Dobsonian reflector.

To borrow a telescope you will need to show your NOVAC observing pass and leave a \$500 (for the Celestron) or \$250.00 (for the Dobson) security deposit. To borrow the

Celestron, contact Doug Mistler at (703) 437-0513; for the Dobson, contact Bob L'Hommedieu at (703) 978-0946. Note: Checks must be made payable to "NOVAC". The club also has a pair of 10x50 binoculars available for members to borrow. They are kept in the club library in the back of the planetarium, and can be checked out after the regular monthly meeting, for a period of one month. Please show your observing pass.

NOVAC Library

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

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

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

General Membership Meetings

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

The meetings are in the Lecture Hall, next to Fenwick Library, on the North side of campus across Patriot Circle from the parking lots. Meetings start at 7:00 p.m.

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

NOVAC On-line

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

NOVAC Observing Site Rules

C. M. Crockett Park:

The agreement between NOVAC and Crockett Park expires at the end of June. Currently the board is working on a new agreement that will allow the club continued access to the park. Until further notice, do not attempt to observe at Crockett Park without first consulting the web page or a board member. See page 1 for more details about the problem at Crockett.

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

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

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

Mickey Gordon Regional Park:

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

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

Directions to NOVAC Observing Sites

C. M. Crockett Park:

From the Washington, D.C./Northern Virginia area, go west on I-66 to Exit 43A in Gainesville onto Rt. 29 South toward Warrenton. After 11.8 miles on Rt. 29, stay left (toward Culpeper), to bypass

Warrenton (but still on Rt. 29 S.) Go about 1 mile to the Rt. 643 exit, Meetze Road. Turn left (East) on Rt. 643. Go 7.5 miles on Rt. 643. Watch for the C.M. Crockett Park sign on your right, and turn right into the Park Entrance Road.

Alternate directions to Crockett

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

Savage Site:

From D.C., I-66 West to Route 17 North. Stay on Route 17 North until it intersects with Route 50 at Ashby Gap. Turn left onto Route 50 and go 1.0 mile and turn right on Route 601. Continue on Route 601 (Blue Ridge Mountain Road) for 8.4 miles (about two miles past the main gate of the FEMA installation). Turn right at the park entrance after passing the gateposts with *Belle Allee* and *Ball Alley 1875* on your right.

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

Alternate Directions to Savage via the Dulles Toll Road

Take the Dulles Toll Road west to the Dulles Greenway. Take the Greenway west about 14-15 miles to where it ends at Rt. 7 near Leesburg. Stay in the left-hand lane to go to the exit for Rt. 7 West. Take Rt. 7 West for about 18 miles to Route 601, Blue Ridge Mountain Road, which is at the top of Snickers Gap and marked by a flashing yellow light on Rt. 7.

Turn left onto Rt. 601 and continue 2.4 miles to the park entrance, which is on the left about two-tenths of a mile past a driveway on the left with a stone wall marked with the name "Ben Lomond." There is a white "NOVAC" sign nailed to a large tree to the right at the entrance to the somewhat rutted gravel driveway that leads to the park. Drive up to the white gate at the top of the hill. The combination for the gate is on your observing pass. The driveway curves down and around to the right to the observing area after you pass through the gate. Please lock the gate behind you and remember to use parking lights only as you approach the observing area, which is on the left as you reach the lawn in front of the old house.

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

Mickey Gordon Regional Park:

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

Site Locations

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

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

The NOVAC Newsletter is the official publication of the **Northern Virginia Astronomy Club** and is published six times per year. The *NOVAC Newsletter* is sent to members of NOVAC as a regular membership benefit.

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

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

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

NOVAC members are invited to submit articles for publication in the *NOVAC Newsletter*. The editor reserves the right to edit all materials submitted. Send article submissions to the Editor, Michael Mills mjmills@fpcc.net, (703)333-5075, 5001 Ridgewood Road, Alexandria, VA 22312. The deadline for submissions is three weeks in advance of publication, e.g., October 9 for the November/December newsletter.

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NOVAC

The Northern Virginia Astronomy Club

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