

# NOVAC

THE NEWSLETTER OF THE NORTHERN VIRGINIA ASTRONOMY CLUB NO. 110 • VOL. 23 • NOVEMBER/DECEMBER 2003

## Building a suitcase observatory

by Richard Robinson

A few months ago I had a vision. Well, at least a really neat idea. I really needed a portable telescope that I could take anywhere. I took a look at my 8" LX200 and all of the gear I would need to set it up: power supply, tripod, wedge and laptop (if I'm going to use my CCD), dew heaters, and tripod. I have taken it to remote sites a couple of times and it seems to always completely fill the trunk of my full-sized car. Checking all of this into the baggage compartment of a commercial airline was going to take a lot of planning, work, and expense. Not to mention the problem of getting it to and from various airports. So my vision: Why not a telescope I could fit into a briefcase?

### Realizing the vision

To realize this vision all I needed to do was find a telescope that would fit into a briefcase then add a mount and setting circles that would also fit into this brief-

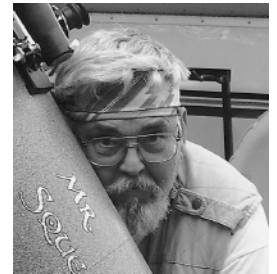
*continued on page 6*



### MESSAGE FROM THE PRESIDENT

## Signing off

I have two serious past times, astronomy and cycling. This started a thought process about who we are as a club. In cycling there are development clubs that train riders to perform at a higher level. We do a lot of that type of thing in this organization. We are very lucky to have such a wide range of experience and the depth of generosity to share this knowledge with our new folks. Your board of trustees is filled with able people who are dedicated to providing the club with interesting projects, programs, and observing opportunities.



NOVAC President Ed Karch

I have had the pleasure to serve as your club president for the past three years. I am now going to spend more time riding and observing. Thanks for the opportunity —Ed. ★

### ASTROPHOTO CORNER



The full moon, imaged by Richard Robinson on December 23, 1999, with an Orion Mak 500.

# NOVAC OFFICERS 2003

## President

Ed Karch 703-631-3263  
ekarch@karch.com

## Vice President

Craig Tupper 301-773-4386  
ctupper@erols.com

## Secretary

Bob Hand 703-532-5607  
Bob.Hand@mail.house.gov

## Treasurer

Pedro Martinez 703-534-2604  
pmartinez@ushcc.com

## NOVAC Trustees 2003

John Avellone 703-768-8086  
jgavellone@aol.com  
John Deriso 703-476-3543  
seaotter@bellatlantic.net  
Alan Figgatt 703-860-8239  
afiggatt@erols.com  
Rob McKinney 703-924-5883  
robmckinney@aol.com  
Bob Stewart 571-434-0366  
rhshrs1@msn.com

## Directors

### Membership Director

Gene Latour 703-444-6674

### Public Events Committee POC

Bob Garrett 703-978-3387  
robtgarrett@earthlink.net

## Important NOVAC Numbers

Savage (Paul McCray) 703-729-0596  
wodtrail@erols.com  
Mason Neck SP 703-550-9960  
Crockett Park 540-788-4867

## NOVAC Web Page

<http://www.novac.com>

## Webmaster

Greg Piepol GPiepol@aol.com

## NOVAC Newsletter

### Editor

Dave Yustein d.yustein@ieee.org

### Layout

Kim Bieler kimbieler@mindspring.com

### Distribution

John Nusbaum john@nusbaum.com

# MOS continues to evolve

by Bob Parks

I want to take this opportunity to thank all of the members that have come out to support the Monthly Observing Sessions. I also want to send a "virtual bear hug" to the many members that have helped organize, run, and serve as program presenters. Without these members, the MOS would not be possible.

Considering the amount of bad weather and record amount of rain this year, it seems like a miracle that we've been able to hold 5 out of 9 events.

After each event, we have tried to refine the MOS concept based on our experiences and feedback from the attendees. We also have had an informal email poll to try to see what we can do to bring more members out to the MOS. We have incorporated as many of these suggestions as possible into our plans for future events.

The NOVAC Board and the MOS coordinators have recently met to plan next year's MOS schedule and to get input regarding future direction. Here's some of what has been decided.

## Fewer, but better, programs

Due to the number of volunteers that are necessary to plan and present a full program at the MOS, we will need to scale back the number of events which will have a program. We just don't have enough people to go around. In an effort to conserve the

members that are volunteering to help run the event and present programs, we will hold six "full blown" MOS events each year. We will have a "no frills" MOS during the months that there isn't a full blown MOS. The no frills MOS will be a chance for members to meet under the stars in a common spot and just enjoy the opportunity to observe with other members.

Next year we will plan the majority of the MOS events to fall on the Saturday immediately preceding the NOVAC monthly general meeting. It is hoped that this will allow members to share their observing experiences with other members when they get together the next day.

The majority of the MOS will be members-only events. Some members have expressed a desire to be able to enjoy more MOS events without needing to share the time with the general public. The NOVAC picnic will be followed by a members-only MOS this year.

## The observing sites

We have made a concerted effort to spread out the events among all of the NOVAC observing sites as best as we can so that a MOS will be close to every member. However some observing sites will not accommodate the quantity of cars that accompany a MOS and therefore cannot be used. Thus far the MOS has been held at

## Monthly Observing Sessions

### 2004 Schedule

January 17	Crockett Park	Mentor Month
February 14	Camp Highroad	
March 20	Camp Highroad	Messier Marathon
April 24	Mason Neck SP	
May 15	Crockett Park	Astronomy Day
June 12	Crockett Park	NOVAC Picnic
July 10	Mercer Park	
August 7	Spruce Knob	
September 11	Crockett Park	NOVAC Star Gaze
October 16	Mason Neck SP	
November 13	Mercer Park	
December 11	Camp Highroad	

Crockett Park, Camp Highroad, Franklin Park, and Mason Neck State Park. We attempted to use Spruce Knob last month but the weather did not cooperate. Next year we have planned to include Mercer in the rotation in an effort to give as many NOVAC observing sites as much exposure as possible. This has always been part of the MOS plan.

**Improving the program**

We have been actively soliciting ideas for how to improve the program content. Based on members input, we will be adding a regular “shootout” session where members will be able to compare different types of equipment. At the July 5th MOS we had a scope shootout that was well received. We had scopes set up from as many designs as we could find, including a refractor, Newtonian reflector, Dobsonian, Schmidt-Cassegrain, and Mak-Cassegrain. We set them up to look at the same objects using eyepieces that provided approximately the same magnification. Members were able to move from one scope to another and judge the relative strengths and weakness for each model. At future events, we plan to have “Go To” and eyepiece shootouts.

Another regular addition will be an observing skills session. This part of the program will concentrate on developing skills that can make the observing experience more efficient and rewarding. At the July 5th MOS, Bill Burton led a star hopping tutorial. Bill helped members learn the basics of finding objects with this popular technique. All participants were set up in a designated area so they can work on these skills as a group. Future topics will include using star charts, observing session planning, and Messier Marathon tips.

**Focus on mentoring**

The MOS will continue to work closely with the Mentor Program. The January 2004 MOS has been designated a Mentor MOS. The program for the January MOS will focus on topics related to the beginning observers. Kevin Beamer will also hold a “beginners corner” at other MOS’s throughout the year. This will give beginners a chance to get help with issues like equipment setup and use, observing skills, and using charts. If you would like to participate in the Mentor program, please contact [k\\_beamer@yahoo.com](mailto:k_beamer@yahoo.com).

Let me know if you have suggestions for other program topics and please consider

volunteering to present a program on a topic of interest that you think others would enjoy. The future of the Monthly Observing Sessions rests with you, the members of NOVAC. While we have had some members jump in to help, we have plenty of room for additional members. You don’t have to make any long-term commitments. We need help with tasks like setting up the refreshments table, taking attendance, putting up signs at the event, and helping with parking cars.

The volunteering of an hour or two by you will make all the difference to the success of the MOS.

The main goal of the MOS is to get more members out to enjoy the NOVAC community. We want NOVAC members to know other members by name and to share their knowledge with the group. The concept only works if we all pitch in and come out to enjoy the events. Hope to see you soon. ★

**Upcoming NOVAC meeting programs**

**November 9, 2003**

**Cataclysmic Variable Stars • Steve Robinson**

Steve Robinson is a lecturer and consultant specializing in Object Oriented Requirements, Analysis, and Design. He is a former member of the Vision 2000 team for the Hubble Space Telescope project, and is a fifth year member of the American Association of Variable Star Observers (AAVSO). He has been a member of NOVAC off and on since its early history. For the past three years, Steve has focused his efforts toward Cataclysmic Variable photometry. He has over 600 CCD observations of variable stars to his credit, and regularly measures stellar luminosity in the 15th–18th magnitude range from his home in Potomac, Maryland. His imaging gear consists of an 18" equatorial newtonian telescope and an ST-9E camera.

Steve has presented on the topics of Gamma Ray Bursts and Cataclysmic Variables to NOVAC, Mid-Atlantic and Mason-Dixon star parties, and for the University of Maryland Summer Program. Steve has attended the two High Energy Astrophysics Workshops sponsored by the AAVSO and NASA. During these programs, professional astronomers have presented their fields of research, frequently eliciting the assistance of AAVSO members. It was during the first workshop in Huntsville that Steve began his work first with Gamma Ray Bursts, and later with Cataclysmic variables.

**December 14, 2003**

**Roboscope Demonstration • Craig Tupper**

This will be a live demonstration of NOVAC’s Roboscope, which already has over 20 users. If the weather is good we will be remotely driving the telescope and imaging targets in real time, via the web. If the weather is lousy we will still be doing a demo, using the web to drive a telescope and camera simulator. Applications for access to the Roboscope will also be taken.

General membership meetings are open to the public, and are held at Enterprise Hall, room 80, on the campus of George Mason University (directions) in Fairfax, Virginia. The meeting hall is in the basement floor of the building. It is best to park in parking lot B and walk up the hill to the rear of Enterprise Hall. Meetings start at 7:00 pm, on the second Sunday of every month.

**Events in November and December**

November				December				
	8	16	23	30	8	16	23	30
	FULL	LAST	NEW	FIRST	FULL	LAST	NEW	FIRST
<b>21–13   28–29</b>	Prime observing weekends				<b>13–14   19–21   26–28</b>	Prime observing weekends		
<b>9</b>	General meeting				<b>13</b>	Monthly observing & public night (Crockett)		
<b>29</b>	Monthly observing & public night (Crockett)				<b>14</b>	General meeting		
<b>1–2   17–30</b>	Crockett open				<b>13–28</b>	Crockett open		

# Meeting highlights

## Board of Trustees Meeting

Tuesday, September 2, 2003

- ★ **Treasurer Pedro Martinez** reported that the club's financial picture remains satisfactory.
- ★ **Membership Director Gene LaTour** provided a summary report of membership for August 2003. There has been a jump in new members, probably due to the events surrounding the Mars apparition, rising to 744 from 572 households. The club also received its first corporate sponsor. Comments from renewal forms included praise for the website and e-mail list, appreciation of access to dark yet safe observing sites and support for the club's outreach to young people. One member asked about the possibility of getting electricity at the Savage site.
- ★ **Alan Figgatt** reported that bad weather continued to hamper the Society's observing nights, but the 40–50 people who showed up at a recent night demonstrated that these events may catch on when the weather does decide to cooperate. The Society also continues to be active in fundraising.
- ★ **Astronomical League Coordinator John Avellone** reported that he has one Deep-Sky Binocular Club Certificate to present and just reviewed and sent in an application for a Messier Club Certificate.
- ★ **Craig Tupper** reported that work continues on the **Robotic Telescope**, and he is now giving serious consideration to controlled access to the telescope. **Bob Traube** circulated some images he recently took with the telescope.
- ★ Member **Tom Finkenbinder** relayed discussions he had with members of the **Astronomy faculty at Penn State University**, including the possibility of doing outreach through NOVAC. It was not entirely clear what projects might be possible, however, especially given the gap which sometimes exists between the professional and amateur astronomy

communities. It was suggested that **George Mason University Professor and NOVAC member Harold Geller** be consulted on this, and Bob Traube from the Outreach Committee was appointed the contact point on the issue.

- ★ **Bob Traube** presented a paper outlining a step-by-step process for selecting a “volunteer of the year” among club members. He asked that Board members read the paper and provide him with comments by the next Board meeting.
- ★ **President Ed Karch** noted that time was approaching for new elections. He asked **Rob McKinney** to organize a search committee for candidates for two trustee positions and the four officer positions.

## General Meeting

Sunday, September 14, 2003

- ★ **Club President Ed Karch** opened the meeting, while **Vice President Craig Tupper** chaired the proceedings. Sixty-nine people were in attendance, including about seven first-time visitors.
- ★ **Harold Geller** announced that as of October 1, construction will require members to park somewhere besides Lot B behind Enterprise Hall. More details will be provided when available.
- ★ **Trustees Alan Figgatt and Rob McKinney** have formed a committee to prepare for **club elections for the four officer and two open trustee positions**.
- ★ **Bob Traube of the Outreach Committee** relayed requests from the public, asked for more volunteers, and noted that NOVAC did well in the survey by the Astronomy Society of the Pacific. **Bill Burton** added that the star party he organizes in Reston will be in October and would benefit from the participation of club members. Plans for the **September 20 Star Gaze** were also discussed.
- ★ **Craig Tupper** announced that the **Robotic Telescope Project** has advanced

to the point where it will become available to all club members to try out.

- ★ **Astronomical League Coordinator John Avellone** presented **Laquetta Karch** with the AL Deep-Sky Binocular Award she earned. Laquetta spoke briefly on the fun and advantages of binocular observing. **Bob Parks, Coordinator of the Monthly Observing Sessions**, presented volunteers **Kevin Beamer, Bill Burton, Rob McKinney, Bob Stewart** and **Will Stewart** will the first batch of volunteer T-shirts, and **Ed Seward** with a T-Shirt and the Volunteer of the Year Award, which included a gift certificate, for exceptional effort in making the MOS a success.
- ★ **Alan Figgatt** provided the monthly **Sky Tour**, reviewing upcoming club events, the gradual dimming and shrinking of Mars in the night sky over the next few weeks and then a review of eyepiece basics.
- ★ **Greg Piepol's talk, entitled “Stargazing Sunnyside,”** covered in detail solar observing with rear-and front-mounted Hydrogen-alpha filters made by various companies and described the various solar phenomena these filters can observe. Greg's very informative presentation has been made available on the club's website.

## Board of Trustees Meeting

Tuesday, October 7th, 2003

- ★ **Treasurer Pedro Martinez** reported that, despite the payment of several larger bills including insurance, a weather station for the Robotic Telescope, newsletter printing, and MOS T-shirts, the club's financial picture remains satisfactory.
- ★ **Membership Director Gene LaTour** provided a summary report of membership for September 2003 including 27 new members and 42 renewals, including one as a supporting member. Comments from renewal forms were overwhelmingly positive, with praise for the Monthly

Observing Sessions, the willingness to share resources and expertise, and tolerance of beginners to the hobby. Suggestions included adding a marketplace for selling equipment on the website, a focus on various methods of astronomical imaging at an upcoming MOS, and finding additional convenient observing sites.

★ **Vice President Craig Tupper** announced that Club member **Jim Mosquera of the Columbia Accident Investigation Board** will be the speaker at the next General Meeting this coming Sunday. Club member **Steve Robinson** will speak on cataclysmic variable stars in November.

★ **Alan Figgatt** reported that a lot has been happening with the Society and its development of **Observatory Park**. First, as the park has become more well-known, the Society would like it to be called by that name and not "Turner Farm Park," which is, in fact, the property next door. Sufficient funds have been obtained to begin construction of the building with a roll-off roof, hopefully next March. Additional fundraising efforts are contemplated. Meanwhile, public observing programs continue every Friday night, and Fairfax County may get organized programs for their schools. More people with telescopes are desired now and are critical to the expansion of public observing at Observatory Park, raising a question for NOVAC whether it should, at some point, officially indicate its support for some Society events.

★ **Astronomical League Coordinator John Avellone** reported that there are two requests with the League for observing certificates, but responses have not been received thus far.

★ **Alan Figgatt** reported that some loaner scopes are still available and that an announcement to that effect might be made at the General Meeting. A suggestion was made that a 2" eyepiece would be a good accessory for a 10" loaner telescope, if a donor can be found.

★ There was thorough discussion of the **2004 schedule of public nights at Crockett Park and Monthly Observing Sessions** proposed by **Tilly Smith** and **Bob Parks**, respectively. Motions were

made, seconded, and passed to move the April and October MOS's to the dates of the Crockett public nights on April 24 and October 16 respectively, to hold the annual Star Gaze on October 16, and to switch the proposed dates for the MOS and Crockett in May. It was decided to keep the June MOS and Crockett public night separate and on the nights already indicated, in order to allow all Club members to enjoy the annual picnic rather than prepare for a public event.

★ A motion was made, seconded and carried to move the **General Meetings** in April and May 2004 to the third Sunday of the month.

★ **Outreach Committee members Bob Traube and Donna Blosser** said they will soon announce six upcoming outreach events for which volunteers are needed. More volunteers will be needed to ensure coverage of non-MOS public nights at Crockett and other requests for Club involvement.

★ **Craig Tupper** reported that steady, continual progress is being made regarding the **Robotic Telescope**, including the near completion of the structure which will house the telescope.

★ **Bob Traube** reviewed comments on an earlier paper outlining a step-by-step process for selected a "**volunteer of the year**" among club members. He circulated a new paper incorporating those comments, including judge selection, evaluating nominations, board approval, and the award received. There was general agreement that current Board members not be eligible to receive the award, that the judges should be Board members, and that volunteer efforts over the course of many years could be considered in addition to that provided in the current year. Suggestions were made regarding what the award might be, and how this could change the budget item for next year. Treasurer **Pedro Martinez** said that this year's budget allotted \$200 for this item.

### **General Meeting** October 12, 2003

★ **Club President Ed Karch** opened the meeting with 54 people in attendance.

★ **Bob Parks** announced preparations for future **Monthly Observing Sessions**, highlighting November 8 at Camp Highroad to watch the lunar eclipse and the January 2004 MOS dedicated specifically to the Mentor Program.

★ **John Avellone** presented **Donna Blosser** with a Messier Certificate from the Astronomical League for observing a minimum of 70 Messier objects.

★ **Bob Stewart** announced the formation of a Yahoo! group for the Video Special Interest Group (VOID/SIG).

★ **Alan Figgatt** updated the club on candidates for the four officer positions and two trustee positions for the club Board of Trustees.

★ For the Sky Tour, **Alan Figgatt** showed the latest images by of Mars by of **Ralph Kantrowitz** and **Alex Lim**, and drawing by **Bob Bunge**. The planet is getting smaller and less bright, and November 8, 2005, will be the next close approach. The November lunar eclipse will be short, but it is well timed in the early evening. He examined some of the local galaxies near the well-known Andromeda Galaxy. Some of which are easier than others to observe.

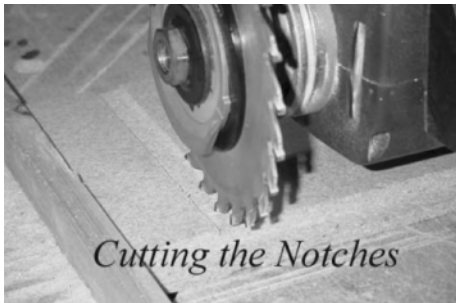
★ The guest speaker for the night was club member **Jim Mosquera, a leading member of the Columbia Accident Investigation Board**. Using pictures and animations, he demonstrated what the Board found went wrong in February 2003. While the foam, which hit the left wing was the direct cause of the accident; other problems provided additional reasons for the catastrophe. These included a lack of planned obsolescence for the Shuttle itself, and a system geared towards rewarding good news, not bad. The loss of foam had become an expected event, viewed as acceptable because previous Shuttle flights returned safely. A lack of risk analysis for landings was also uncovered. The Board concluded that the astronauts could have assessed the damage. Once the problem was found, reaching the International Space Station would not have been a possibility but the Shuttle Atlantis could have been deployed in a rescue effort, albeit a risky one.

# Suitcase observatory, from page 1

case and finally find a way to pack everything into the briefcase so that it would arrive at the destination and still work. You can tell by the title of this article that the practicality of doing all of this forced me to upsize my "briefcase," but I came pretty close. This article describes how I generally went about creating my "Suitcase Observatory." It's not a step-by-step construction project, just a general discussion of how I did it.\*

## The telescope

The telescope was the easiest part for me. Since the scope had to fit into a suitcase, I had to be able to disassemble it. I would have



liked to use a 6", but I remembered giving my father-in-law a small collapsible 4-1/4" rich-field reflector as a Christmas present several years back. The scope was ideal! It consists of two 5" diameter cylinders about three inches long. One of these holds the 4-1/4" mirror mount and the other holds the diagonal and eyepiece. During operation the two cylinders are held in place by a small aluminum extrusion. All I needed to do as to convince him to let me "borrow" it for an unspecified length of time. This also proved possible, since we were planning a trip to Arizona, and I suggested that I could get everything built in time for that trip. Wow, this was getting easier all the time.

## The suitcase

I initially figured on making the suitcase out of wood, but a few construction details kept cropping up. For example, hinges, latches,

*\*I have a web page ([rao.150m.com/Home\\_Built\\_Index.html](http://rao.150m.com/Home_Built_Index.html)) that shows more of the construction detail, but like any of these build your own projects, expect to adapt the ideas and detailed construction to fit your own needs.*

and sealing the edges. Finally, I started searching the web for cases and found a nice case that was 19" x 14" x 10" from [www.beaconww.com](http://www.beaconww.com). It was made of high impact plastic, and had locking latches, wheels, and a pull handle. So that's what I ended up using. One small design detail about these cases: Even though the dimensions were given as "inside" dimensions, they neglect to tell you that items such as wheels and pull handles protrude inside these dimensions. This almost resulted in a redesign of the elevation box.

## The mount

The mount had to be a Dobsonian design. I'm sure most folks interested in astronomy



as a hobby are familiar with the basic design. It's made mostly of wood and consists of two boxes and a platform. One wooden box, the elevation box, holds the telescope and has a set of bearings that sit on top of a second wooden box. These bearings let you rotate the scope in elevation. The height of the second box, the azimuth box, determines how high the scope will be off of the ground. Finally both of these boxes sit on a wooden platform that allows you to rotate the scope in azimuth. A simple design that's easy to make and well documented.

My problem was that I wanted mine to fit into a suitcase, and it would take a very big suitcase to hold any design I could come up with.

## Problem with the azimuth wooden box

The problem was the azimuth wooden box: The RFT scope is only about 20 inches long fully assembled, and that second box had to be very tall to get the scope to viewing height. Then I saw a "new product" article in *Sky & Telescope*. The new product was a small collapsible table that fit into a 13" x 11" x 2" package. Its legs extended to 30" and it could hold up to 20 pounds. This was a

perfect solution to my design problem. By using this table, the second box could be tiny by comparison (11" x 7" x 8"). If I took it apart, both the table and the second box would fit inside a briefcase. You can see the table at [bamart.com/pctabletote](http://bamart.com/pctabletote). Design problem solved.

## Making it fit in the case

The only way to make the azimuth box fit into the case was to disassemble the box. That way you have four flat pieces of wood that will stack on top of each other inside the case. That made every thing fit inside the case, but I did not like the idea of trying to reassemble the box in the field in the dark. Also, repeated assembly and disassembly cycles using wood screws would soon enlarge the screw holes and make the whole



assembly loose and wobbly. Two innovations solved these design problems. The first was to use a dado blade to cut shallow notches in the top of the azimuth setting circle. The four sides of the azimuth box fit into these notches and, since the notches are cut square, the sides of the azimuth box are automatically aligned. Great for assembly in the dark.

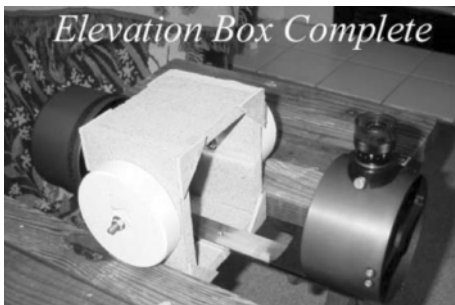
The second innovation was to use T-nuts. T-nuts are devices which allow you to insert metal machine threads into a piece of wood. The T-nuts are installed into a small strip of pine molding which is then glued and nailed to the edge of the azimuth box side. By putting these strips of molding on the appropriate edges of the azimuth box you can use metal machine screws to hold the edges together and hold the box to the top of the azimuth setting circle.

If you are careful in installing these nuts and in cutting the notches, the screw holes and the T-nuts will align perfectly when you place the four sides of the azimuth box in the notches you cut into the top of the azimuth setting circle. This makes field assembly much easier.

### Problem with the elevation wooden box

Actually, the problem wasn't the box. I've piddled with woodworking for many years, and while not a topnotch furniture maker, I was pretty sure I could build a box. The problem was the elevation bearings. I can cut circles with a scroll saw, but these bearings needed to be really good circles. They need to be true circles and they need to be smooth.

The answer here came from a trip to Home Depot. Back in the plumbing section you can find PVC sewer and vent pipe. One item for sale is a cap for 4" PVC pipe. It's about two inches deep, perfectly round, has a very smooth surface and is 4-1/2" in diameter. So these caps became my elevation bearings. I just cut some rough circles from particle board with my scroll saw, glued



them to the sides of the elevation box and then fit the PVC caps over them. You can cut the thickness PVC caps down with a Dremel. First and second box design concept complete.

### Design of the azimuth platform

The challenge with the azimuth platform is finding something with a nice smooth surface. The best material to use here is kitchen countertop. Now try to avoid buying a six or eight foot piece of counter top, when you really only need a piece that's about 15 inches square. My solution was the cut-out for a sink. When you install a sink into a counter top, you need to cut a hole just big enough to allow the sink to fit. The people who install sinks are interested in getting the hole the correct size and in the correct position. They normally just throw the piece left over from cutting the hole away. That's the piece you want. They'll probably give it to you to get it out of their way, but if you can't find one try Home Depot or Lowes. Some of these stores will sell these pieces for a few dollars. You will need to add a shaft to the platform for the azimuth axis of rotation. I used a small pipe flange and pipe nipple.

### Making the setting circles

I was pretty comfortable making the setting circles because they would be much larger than the elevation bearings. I finally settled on eleven inches as the diameter because this matched the dimension of the table.

A router will make very good circles with a smooth edge at a nice right angled edge if you are careful. Just make a small guide out of thin plywood you can attach your router to. Then fix it to the particle board at the correct radius, turn the router on and draw a circle. You can also buy a commercial circle guide for a router also. (Look at my web site for details on how to do this.) I did not try this on the elevation bearings because the base of the router was too big. Also, don't try this unless you know how to use a router. Many things can go wrong unexpectedly and

*My measure of success for any woodworking project is to complete the project with the same number and size of thumbs and fingers as I started with.*

your fingers are only a few inches away from a very sharp cutting blade that's spinning at about 30,000 times a minute. My measure of success for any woodworking project is to complete the project with the same number and size of thumbs and fingers as I started with.

### Putting scales on the setting circles

So all done. Right? Well, sort of. If you want to scan the skies with a RFT, then the answer is yes. But what if you want to see M27 or NGC 3694? That takes just a little more work.

First, you need to add degree scales to the setting circles. Fortunately, Glenn Ashmore has written a shareware program called the nth degree to perform this exact task. You merely give the program the number of degrees you want the scale to cover and the diameter of the circle. If you have a computer connected to a HP LaserJet, it will print the exact scale you need. There are many laser jet models. It works on mine,

which is a HP LaserJet 4MP. I suspect it will work with any printer that will read HP printer codes. You just print the scale and glue them to the setting circles.

The elevation scale is pretty simple since you only need 90 degrees and that scale will fit on a single 8-1/2 x 11" sheet of paper (for a eleven inch circle). The azimuth comes out in several strips and you need to carefully glue them in place to cover the entire 360 degrees. And when you glue the last strip into place it needs to exactly fill the circumference of your setting circle. I normally need to try a couple of times to get it exact.

### Finishing the mount

The finishing touches on the mount were to cut out some of the excess particle board on the sides of the azimuth box and the eleva-



tion setting circle. I also drilled out some material on the azimuth base. Use caution regarding the depth of the hole here, since you do not want to drill into the smooth top of the counter top surface. I also painted it black and added the index pointer for the azimuth and elevation scales.

### Wait, I still can't dial in M27!

Now to find M27. Another problem! You need to find some way to convert from the Earth geocentric coordinates you know for M27 (right ascension and declination) to the values you can read off of the setting circles on your telescope. In engineering terms you need to be able to convert from Earth-centered geocentric coordinates to telescope coordinates. Well, that's enough to make anyone's head hurt.

Fortunately, shareware comes to the rescue again. You can download a two-star alignment program called TAKI.BAS from the *Sky & Telescope* website. This program will do exactly what you want. Just go outside and plop your scope down any old way.

*continued on page 9*

# From the pier in the Potomac

by Steve Robinson

I like to observe from my home. There's a lot to recommend this, not the least of which is the sheer number of times I can sneak away for an hour here or an hour there. The only problem with this is the Potomac skies, which from an astronomical perspective are in pretty bad shape. I can't do much with the faint fuzzies, but I can do a lot with stars.

## Fuzzies versus points

I don't care what visual magnitude you give the fuzzy, its light is dispersed across an area of sky, and when viewed against less than good background, the fuzzy is simply next to invisible. It isn't there in the eyepiece, and when it is on the CCD chip, it might as well not be because of the faintness of its gossamer structures. The background light overwhelms it.

Stars are another matter altogether. Their full brightness is concentrated into a single point (plus usually one diffraction ring very close to the single point). This means the star can be seen offset against the sky background whether being viewed through the eyepiece or through the silicon receptor of the CCD camera. In fact, when viewed using the camera, stars to an amazing dimness can be viewed and even measured. In my personal experience, right here in Potomac, I have measured the V band brightness of stars even down past 18th magnitude.

## The right scope for the job

Folks reading this might be tempted to question the kind of telescope needed to accomplish this. I personally own an 18-inch equatorial Newtonian telescope on an excellent mount. And because I can use it right here at my home on an average of twice per week for 3 hours each good evening, I didn't have much difficulty justifying the cost of the scope. It's just a Harley, or some other expensive toy.

The point is simply this: Scopes like mine, equipped with cameras, are affordable if they are used. If stars are the objects of interest, the scope can be used under even hazy conditions. Some of my observations take place under cloud conditions that would seem pretty bad to the more casual observer. A lot of folks have 12" scopes.

These scopes, equipped with a camera, could be used to get down to 16th magnitude without much trouble.

## Stars are what are up there

Stars. What can be done with stars? Well stars are what are up there—whether concentrated in galaxies, coagulated into globulars, or just hanging out evolving from the cosmic mists. Individual stars can be studied and measured. Some stars are even interesting enough to warrant measuring thousands of times because they change over time. Some change in ways that can be breathtaking. Would you find it interesting if a star that you happened to know about changed

*My observations are considered sufficient for inclusion in an international database used by professional and amateur astronomers from around the world*

brightness by a factor of 100? Would it blow you away if that change could take place in a matter of days? And not just once either, but over and over again for thousands or perhaps millions of years (assuming one very long lifetime of course).

These are the stars I study. My observations are considered sufficient for inclusion in an international database used by professional and amateur astronomers from around the world. Last year that database contained over 10 million observations made on something like 2,000 stars. The American Association of Variable Star Observers (AAVSO) manages the database. I have also contributed observations to the Center for Backyard Astrophysics (CBA). The AAVSO is a much more active group, though.

AAVSO has numerous programs to satisfy the needs of whatever observational whim one might have, so long as the interest

is the individual star. Their web site is at [www.aavso.org](http://www.aavso.org). Give them a look. They also have discussion groups to help the newbie accelerate along the track of beginning their variable star observing. The help available is simply astonishing. These folks are committed to helping the beginner move along. When I first started, my primary problem was finding the right question to ask. In the beginning, formulating the question from the concept in my head was the difficulty. How do you ask a question when you are not even sure what the question is that you need to ask? This group has been through all that and seems to understand. The amount of information available is huge, the folks providing the support really do a wonderful job, and it need not cost a thing.

## Choosing the right stars

Over the past three years I have put together my own observing program. The AAVSO collects information currently on over 5,000 stars. My program is a subset of this number. I collect data on 140 stars. Because of my local horizon, the stars I measure are all in the Northern celestial hemisphere (above 0 degrees declination). Most of my stars are cataclysmic variables, a few are Mira variables, and five or six are Active Galactic Nuclei. They all share the following in common: They all are measured as stellar points, and they all vary in brightness regularly.

I chose my 140 stars to suit my own interests and available time. I needed stars I could observe with my horizon. I also needed stars that would be observable whenever I might have the time to observe and when weather might permit. I wanted a program that would provide no fewer than 20 stars to observe on any night of the year. I have a database of over 600 observations made with these stars. Most of the stars in my program have fewer than three observations because I concentrate on my highest priority targets. These targets again are chosen from the 140 simply because I like them. On a good four-hour night, I can image 10 of these stars. I like to have 20 stars available because if I get two good nights in a row, I want a second set to go for.

AAVSO provides star charts for almost all of the stars in its program. The charts can be

found off the main page at the URL given above and can be downloaded. The charts provide the star name, coordinates, range of variability, and the pattern of stars around the variable. Some of the field stars have numbers that give their visual magnitude. The numbers look a little strange, though. A star having a magnitude of 14.5 will be shown as 145. This is done to keep periods (that could be mistaken for stars) off the chart. I only had to construct one chart for one star in my program. AAVSO hasn't gotten around to doing that one yet. Don't ask why I follow such a star. It's a quirk of mine to go it alone from time to time.

### Finding and measuring the target

I use the coordinates to locate the star using my digital setting circles. The granularity of my setting circle computer is good enough to get me to within one half degree of my star. That's usually good enough for visual observing, but not for CCD observing. My CCD chip is large, but still it's only about a quarter of the field of view I would expect with an eyepiece.

The upshot of CCD chip size is this: I have to take a short, 10-second image of the field where the chip is pointed when I use the digital setting circles. Then I use TheSky and the Guide Star Catalog to locate the exact position of my star with respect to where the chip is looking. TheSky software provides this service under its Image-Link functionality. Guide has a similar piece of software for doing this function. Once I know where the chip is looking, I simply move the telescope in the direction of my star. Sometimes I have to do this process two or three times. My goal is to have my target variable star on the imaging chip and a good guide star on the very small camera guide



chip. Again, TheSky provides a visual template of image and guide chip boundaries superimposed on its rendition of the virtual sky. I use the templates to position the target and the guide stars on their respective chips. The process works perfectly. I can easily guide using a star no brighter than 12th magnitude. There are a lot of those stars around.

Once I have the guide star locked on and tracking, I set up the image. Usually I take four 4-minute images. I do this to limit the effects of a plane passing overhead, or maybe other problems that can cause a bad image. I don't like the potential waste of a longer exposure, and 4 minutes seems to be about right. Stacking the four images gives me a 16-minute exposure of the field, which is sufficient for my needs. Longer exposures in Potomac are of questionable value from my experience. I used to expose for 5 minutes and collect five or six images. Frankly, the excess was probably a waste.

With the 16-minute exposure, I can get very accurate measurements on 14th magnitude stars, accurate measurements on 15th, useful measurements on 16th, probably useful measurements on 17th, and occasionally useful measurements on 18th magnitude stars.

My measurements are all done using the Johnson-Cousins V filter, which is greenish in color and passes those wavelengths of light that more or less correspond to the primary human visual response. Blue and red light are filtered away as is infrared. It is unfortunate that red and infrared are removed from the image since the CCD camera is most sensitive in those areas. A lot of the AAVSO charts have comparison stars that provide magnitudes that are close to V-band magnitudes. This is the main reason for the choice of the V filter in my case. It should be noted that even with the huge waste of red and infrared light, my equipment still produces measurable stars down to 18th magnitude.

### The payoff

I have found the measurement of stars to be fascinating. In the last three years I have developed an appreciation for astronomy that has led beyond the fuzzy to a place where light comes to sharp focus and science becomes possible. I voyeur in a violent place with naked stars expiring. My fortune is to know their face, and I can stand here watching. ★

## Suitcase observatory, from page 7

### So I have to carry along a computer in this suitcase?

Well, that depends upon what you call a computer. I've converted the TAKI.BAS routine to work in a handheld, HP-248 "Calculator/Computer." This is a pretty powerful calculator. You can download the code for the conversion routine from my web page as soon as I get it completed. The web page also has more detailed instructions, so the following paragraphs just outline the general procedure.

To use the routine you need to know the longitude and latitude of your observing site, the offset from GMT, and have your calculator set to the time corresponding to the time zone offset. For example, if the calculator is set to EST, then make sure the



time zone set is 5 hours. You don't need to set the calculator to the time zone of the observing site. All of the calculations are done in UT. You just need to make sure that the time zone offset corresponds to the time zone that the calculator's clock is set to.

Once you go through the alignment routine with two known stars, you can enter the geocentric coordinates of the object and the calculator will display the azimuth and elevation values to dial in on the telescope setting circles. Just dial these in and look through the eyepiece! The object is normally in the field of view of the RFT scope. ★

# New members

Joe Pierson

**Phillip M. Awtrey**

10402 Deakins Hall Dr.  
Hyattsville, MD 20783  
home 301-408-1244  
work 202-874-7215  
pmawtrey@yahoo.com

**John J. Bacha**

20266 River Ridge Terrace #301  
Ashburn, VA 20147  
home 703-723-9705  
work 571-233-7323  
bacha12@adelphia.net

**Joanne Muir and Daniel Bachman**

6807 Broyhill St.  
McLean, VA 22101  
home 703-442-4911  
joamuir@mindspring.com

**Linda Barnes & Carolyn Bocian**

2101 Lake Ave  
Baltimore, MD 21218  
home 410-662-6408  
work 410-887-3608  
lmbarnes@radicus.net

**Christopher Bellomy**

5624 4th Street South  
Arlington, VA 22204  
home 703-824-0475  
work 703-351-8515  
christopherbellomy@msn.com

**Janid P. & Enid Blanco-Kiely & Tom Kiely**

7404 Englewood Place Apt. 203  
Annandale, VA 22003  
home 703-798-9366  
work 703-312-2199  
tom.kiely@ngc.com

**Randy & Carol Buchanan**

763 Palmer Drive  
Herndon, VA 20170  
home 703-437-5905  
work 703-471-2104 X25  
z33@cox.net

**Paul and Ryan Butler**

P. O. Box 39  
Lovettsville, VA 20180  
home 540-822-9182  
work 202-219-0382  
pnbutler@megapipe.net

**John & Maggie Castagnola**

615 Harrison Circle  
Locust Grove, VA 22508  
home 540-972-2065  
work 703-501-1594  
johncastagnola@adelphia.net

**Note:** This directory is not to be reproduced or used for any commercial purpose.

**John Cole**

8317 Carnegie Dr.  
Vienna, VA 22180  
home 703-560-4027  
work 703-698-6668  
jcole@msn.com

**Darren Collins**

58 Larkwood Ct.  
Stafford, VA 22554  
home 540-657-4496  
dc2861@hotmail.com

**Linda Gudrun Corey**

7908 Pearlbrush Drive #304  
Gaithersburg, MD 20879  
home 240-683-6597  
work 301-961-8122  
lcorey@arterygroup.com

**Tim Cox**

2809 Marywood Oaks Lane  
Vienna, VA 22181  
home 703-281-4526  
work 202-712-0712  
tcox@usaid.gov

**Gary Craddock, Jr.**

14325 Belleville Ave.  
Dale City, VA 22193  
home 703-583-5648  
work 202-332-7322  
g.craddock30@starpower.net

**Karen DeLucia**

2116 Elliott Ave.  
McLean, VA 22101  
home 703-237-5318  
work 703-237-5318  
kdelucia@elite.com

**John Dietrich**

12495 Fox View Way  
Reston, VA 20191  
home 703-648-0016  
work 301-214-9870  
john.s.dietrich@comcast.net

**Stephen Doherty**

2017 Lirio Court  
Reston, VA 20191-1307  
home 703-620-3582  
stephend@iadb.org

**Peggy Donakowski & Daughter**

102 Harvest Lane  
Sterling, VA 20164  
home 703-433-2145  
peggy.donakowski@verizon.net

**John Dowdle**

5929 Dungeness Lane  
Alexandria, VA 22315-4726  
home 703-922-6585  
work 703-692-7335  
dowdlej@yahoo.com

**Dave & Pat Dworak**

7095 Gresham Ct. West  
Frederick, MD 21703  
home 301-663-9758  
work 301-279-6201  
karowd2@msn.com

**Joe, Patty, Jenny & Warren Egan**

1163 Bellview Rd.  
McLean, VA 22102  
home 703-757-5968  
work 703-918-4942  
eganpc@aol.com

**Thomas Evans**

4561 Sawgrass Ct.  
Alexandria, VA 22312-3152  
thomas.evans@wap.org

**Larry Farver**

1404 Kurtz Rd.  
McLean, VA 22101-4019  
home 703-356-3201  
work 703-356-3201  
lordboomer@erols.com

**Mark Feldhousen, Jr.**

5120 Observatory Way,  
Alexandria, VA 22312-1925  
home 571-218-2305  
markf@geekpad.com

**Kevin C. Fraiser**

516 Gibbon St.  
Alexandria, VA 22314  
home 706-903-3073  
work 703-299-8718  
kfrasier@wd-ae.com

**Alan J. Genteman**

P. O. Box 151090  
Alexandria, VA 22315-1090  
home 703-922-1985  
algenteman@aol.com

**Andy Gerberich**

14830 Basinstroke Loop  
Centreville, VA 20120-3103  
home 703-818-7392  
work 571-237-2881  
agerb@erols.com

**Zach Girod**

11105 South Glen Rd.  
Potomac, MD 20854  
home 240-498-6878  
zach@girod.com

**Graham K. Glover**

2971 Oakborough Sq.  
Oakton, VA 22124-1768  
home 703-255-9811  
work 703-883-1263  
graham.glover@erols.com

**Doug Goldring**

10040 Tummel Falls Drive  
Bristow, VA 20136  
home 703-335-9025  
work 202-305-3870

**Bob Gregor**

2909 Rock Manor Ct.  
Oak Hill, VA 20171  
home 703-716-4871  
rsgregor@cox.net

**Alexander Grigolia, Jr.**

1310 S. Geroge Mason Dr., Apt. 21  
Arlington, VA 22204-3848  
home 703-979-0725  
work 202-231-8569  
grigolia@aol.com

**Martin Gruszka & Ira Gorbuzova**

14466 Four Chimney Dr.  
Centreville, VA 20120  
home 703-867-6526  
work 703-652-8920  
mgruszka@my-digitaldream.com

**Bettina Guerre**

4343 Lee Highway, Apt 703  
Arlington, VA 22207  
home 703-276-1454  
work 202-312-5516

**John & Nancy Handy**

10861 Meadow Pond Lane  
Oakton, VA 22124  
home 703-620-3179  
work 703-917-7385  
handydad@aol.com

**Stephan Hanna**

206 W. Meadowland Ln.  
Sterling, VA 20164  
home 703-450-1097  
stephan.hanna@hannacorp.com

**Jeff Haverson**

10802 Jewett St.  
Silver Spring, MD 20902  
home 301-649-4623  
work 301-614-6333  
haverson@gilbert.gsfc.nasa.gov

**Benjamin Hendricks**

9512 Seminole St.  
Silver Spring, MD 20901  
home 301-495-2954  
work 202-237-1670 X227  
bhendricks@gscnc.org

**Nancy Hirshbein**

9603 Bristol Av.  
Silver Spring, MD 20901  
home 301-565-3966  
rochehirsh@ad.com

**Edmund and Melba Jones**

RR7 Box 536J  
Fairmont,, WV 26554  
home 301-526-8196  
work 301-529-6751  
edmundnjones@att.net

**Nagesh Kanvinde**

4944 Herkimer St.  
Annandale, VA 22003  
home 703-642-5575  
work 703-797-8114  
enkay@usa.net

**Nathanael D. Katterson**

5834 Orchard Hill Ct.  
Clifton, VA 20124  
home 703-631-4752  
unwrthyservnt@juno.com

**Pete Keleher**

A. V. Williams Bldg.  
Dept of Computer Science, U of MD  
College Park, MD 20742-3255  
home 301-434-6811  
work 301-405-0345  
keleher@cs.umd.edu

**John Kircher**

701 Fitzhugh Way  
Alexandria, VA 22314  
home 703-217-6669  
jfkircher@aol.com

**Abhay V. Kulkarni**

775 Gateway Drive SE #1201  
Leesburg, VA 20175-4044  
home 703-669-9480  
work 703-777-5255 X2109  
a\_kulkarni@att.net

**Matthew Latimer**

12166 Eddyspark Dr.  
Herndon, VA 20170  
home 703-471-2168  
mtlatimer@cox.net

**Steve LeBel**

12816 Pinecrest Road  
Herndon, VA 20171  
home 703-476-6112  
work 202-619-7072  
crockettlabel@cs.com

**Kevin Levin**

10712 Meadowhill Rd.  
Silver Spring, MD 20901  
home 301-593-7039  
work 301-622-9546  
klevin@aol.com

**HoaQi Li & Matthew Ma**

3842 Persimmon Circle  
Fairfax, VA 22031  
home 703-426-5503  
hqtrash@yahoo.com

**Thomas A. Long**

7519 Rhodes Ln.  
Chesterfield, VA 23838  
home 804-590-9396  
work 804-751-3329  
tlong9396@comcast.net

**Jeffrey MacQuarrie**

3155 Southhampton Drive  
Jeffersonton, VA 22724  
home 540-937-9827  
work 703-995-5656  
jamacq@erols.com

**David Macri & Jodi Marder**

526 Letterback Store Rd.  
Great Falls, VA 22066-3330  
home 703-421-0466  
bryar@cox.net

**Jane Mason**

1815 Kalorama Square  
Washington, DC 20008-4021  
home 202-483-4222  
work 202-483-4222  
janem112@aol.com

**Maher Massis**

13582 Big Boulder Rd.  
Herndon, VA 20171  
home 703-713-0524  
mmassis@aol.com

**Greg McCain**

8902 Stratford Ln.  
Alexandria, VA 22308  
home 703-780-2125  
work 703-346-0196  
gregory.a.mccain@veridian.com

**Roy McGriff**

04 Quarters  
Quantico, VA 22134  
home 703-630-0851  
treymcgriff@yahoo.com

**Ramon Miro'**

10421 MacArthur Blvd  
Potomac, MD 20854  
home 301-983-9888  
work 202-707-1256  
rmiro@erols.com

**Laura and Herb Moore**

12507 Alexander Cornell Drive  
Fairfax, VA 22033  
home 703-758-1460  
work 703-864-8519  
herlau@att.net

**Ward Morrison & Mariam Newton**

6610 East Wakefield Dr., #A1  
Alexandria, VA 22307  
home 703-898-6981  
wardpix@earthlink.net

**Scott C. Nolan**

3328 Oakshade Court  
Fairfax, VA 22033  
home 703-904-0410  
work 703-293-9095  
nolan@erols.com

**Eric Norby**

7704 Leeds Manor Ct.  
Fairfax Station, VA 22039  
home 703-323-9094  
work 703-698-0666  
eric.norby@wap.org

**Rebecca Olson**

5980 Richmond Hwy #711  
Alexandria, VA 22303  
home 614-560-7023  
work 301-763-5944  
rebiccola42@yahoo.com

# New members, cont.

## **Francis Quale O'Neill**

Windsor Farm, 2100 Trappe Road  
Upperville, VA 20184  
home 540-592-9095  
work 540-592-9095  
petrel1996@earthlink.net

## **Richard Pavel**

8312 Armetale Ln.  
Fairfax Station, VA 22039  
home 703-689-4127  
work 703-689-4127  
pavelr@alpa.org

## **Gaither Pennington**

133 Tull Place  
Alexandria, VA 22304  
home 703-567-3710  
work 703-567-1700  
gfpennington@earthlink.net

## **Matt and Wendy Pickering**

13700 Winding Oak Circle #304  
Centreville, VA 20121  
home 703-803-7250  
work 240-662-2571  
mpickering@mindspring.com

## **John, Rhea & Kelly Powers**

4415 San Carlos Dr.  
Fairfax, VA 22030  
home 703-691-8894  
imagtek@cox.net

## **Haroon Rashid**

1607 Yale Pl.  
Rockville, MD 20850  
home 301-251-5214  
work 202-444-5515  
hrashid@pol.net

## **Colette & Alan Reynolds**

8226 Summerfield Hills Drive  
Warrenton, VA 20186  
home 540-349-9551  
work 540-347-1239  
corey@crosslink.net

## **Matt & Susan Rutherford**

8900 Waites Way  
Lorton, VA 22079  
home 571-642-0696  
timrutherford8@msn.com

## **Walter T. & Calvin J. Sauerbier**

5829 Kestrell Court  
Burke, VA 22015  
home 703-425-5190  
work 571-216-7477  
tsauerbier@cox.net

## **John Schattel**

280 Kimberwicke Dr. N.  
Charles Town, WV 25414  
home 304-725-0624  
work 301-713-0056 X111  
j392@frontiernet.net

## **Gary Schmalenberg**

87 Jackson St.  
Boston, VA 22713  
home 540-987-7278  
work 540-987-7278  
fencerdr@earthlink.net

## **Tom Schottle**

5624 Rocky Run Drive  
Centreville, VA 20120  
home 703-631-2459  
tschottle@hotmail.com

## **William Schweber**

3405 Woolsey Drive  
Chevy Chase, MD 20815  
home 301-907-9152  
work 202-342-2200  
.bill19541@cs.com

## **Roland Serrano**

8669 Old Dumfries Rd.  
Catlett, VA 20119  
home 540-788-9968  
work 703-631-0800  
serrano@crosslink.net

## **Michael Sharpston**

4531 Lowell St. NW  
Washington, DC 20016-2750  
home 202-363-7210  
sharpston@alum.mit.edu

## **Stephen Shaw**

2725 Connecticut Ave., NW #701  
Washington, DC 20008  
home 202-797-0633  
work 202-708-0614 X5087  
sshaw11131@earthlink.net

## **Helen Belisle & Jonathan Siverling**

10689 Main St.  
Fairfax, VA 22030  
home 703-267-2601  
work 703-934-2066  
siverling@mindspring.com

## **Thomas Stanberry**

Box 97  
Orlean, VA 20128  
home 540-364-3088  
sstanberry@msn.com

## **Glen Swiggart**

705 Clarke Ct., NE #302  
Leesburg, VA 20176  
home 703-771-9404  
work 202-418-1831  
gswiggart@erols.com

## **Harry Tanner**

2870 S. Meade St.,  
Arlington, VA 22206  
home 703-684-5304  
work 703-308-2622  
harry.tanner@uspto.gov

## **Chris Thomas**

1122 Ware St. SW  
Vienna, VA 22180  
home 703-319-0638  
work 703-904-8931  
chrisandbets@cox.net

## **Paul Thomas**

10010 Broadsword Dr.  
Bristow, VA 20136  
home 703-880-3545  
work 703-262-1593  
paul@bachelorhouse.com

## **Brian Truitt and Beth Ward**

20052 Coltsfoot Ter. #302,  
Ashburn, VA 20147  
home 703-723-2321  
work 703-208-5445  
btruitt@rch.com

## **Phil Turcotte**

2800 Clarendon Blvd. #W522  
Arlington, VA 22201  
home 703-312-7033  
pmturcotte@yahoo.com

## **Greg & Susan Vaughn**

6313 Brocketts Crossing  
Alexandria, VA 22315  
home 703-921-1170  
work 703-251-5513  
gvaughn207@aol.com

## **Jay and Lori Wiegmann**

206 Amy Ct.  
Sterling, VA 20164  
home 703-444-3076  
lori@wiegout.com

## **Joon Y. Yang**

13980 Sawteeth Way  
Centreville, VA 20121  
home 703-830-7256  
work 703-604-6384  
joon\_yang@yahoo.com

## **Barton J. and Mrs. Yount**

3601 S. 5th St. #405  
Arlington, VA 22204  
home 703-685-7822  
work 703-553-6072  
siteguy@comcast.net

# Announcements

## NASM/Einstein Planetarium Public Observing

Join Sean O'Brien, staff astronomer of the Albert Einstein Planetarium, and other local amateur astronomers, for public telescopic observing under dark, star-filled skies, away from city lights. The evening begins with a short night sky orientation at dusk, followed by telescopic observing of various astronomical objects, ending at 11 pm.

Sky Meadows State Park is west of Washington, D.C. on US Route 17 North, 1 mile south of US Route 50, or 7 miles north of Interstate 66, Exit 23. The park contact phone number is 540-592-3556. There is a \$4 parking fee per car. Dress warmly. In case of clouds or rain, an amateur astronomer will lead a short alternate program.

### 2003 Schedule

November 8 Full Moon—Total Lunar Eclipse!

**Editor's note:** This is a fun program for NOVAC members to help out with. Sky Meadows park has great skies, and the public is always very receptive. Plus, NOVAC members who bring their telescopes to share may stay until 1 am.

## Sky & Telescope subscriptions

Starting in September, NOVAC members who subscribe to *Sky & Telescope* as part of their club dues will see their subscription rate rise to \$32.95. If you have recently renewed your membership, you won't see the rate change until your next renewal.

## Loaner scope update

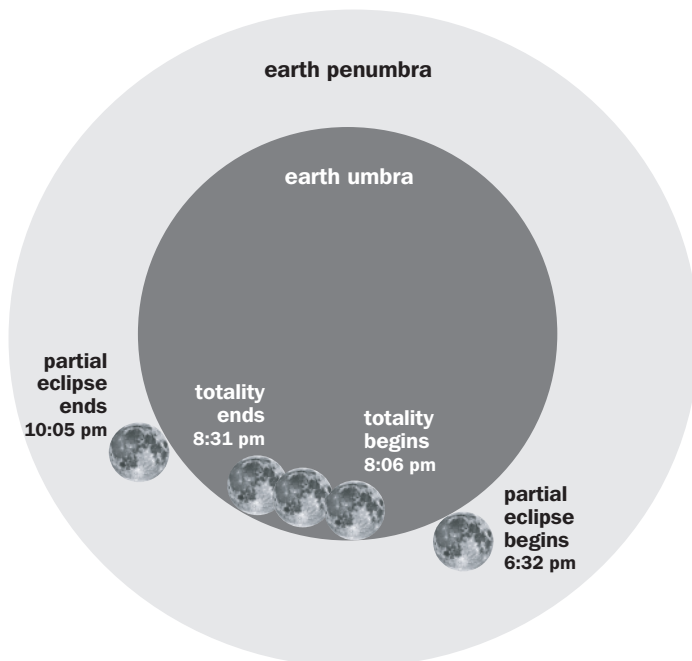
NOVAC has several telescopes and binoculars for club members to borrow for one month at a time. A few of these scopes have moved to the care of new custodians since the last Member's Handbook was mailed. To arrange pick up, contact the instrument's custodian at the phone number or e-mail address given below.

At the time of checkout, you must show your observing pass and leave a \$100 security deposit in the form of a check payable to Northern Virginia Astronomy Club. Deposit checks are held by the custodian until the scope is returned. Don't be shy about borrowing! Some of the scopes go unused for several months in a row.

Instrument	Custodian
Celestron SP-C6 6" Newtonian (Equatorial)	Mike Mills 703-333-5075 <a href="mailto:mjmill@fpcc.net">mjmill@fpcc.net</a>
6" f/5 Newtonian (Dobsonian)	Alex Hazzouri 703-264-5875 <a href="mailto:Alex@balloonyideas.com">Alex@balloonyideas.com</a>
Meade 6" f/8 Newtonian (Dob.)	Rob McKinney 703-924-5883 <a href="mailto:RobCMcKinney@aol.com">RobCMcKinney@aol.com</a>
Discovery 10" f/6 Newtonian (Dob.)	Alex Lim 703-222-0419 <a href="mailto:alexander.lim@wcom.com">alexander.lim@wcom.com</a>
8" Celestron SCT	John Deriso 703-476-3543 <a href="mailto:seaotter@bellatlantic.net">seaotter@bellatlantic.net</a>
SolarMax H- $\alpha$ filter w/ 70 mm refractor	Wolfgang Schubert 703-321-9617
Binoculars (10x50, 12x50, or 8x40) (no deposit)	John Deriso 703-476-3543 <a href="mailto:seaotter@bellatlantic.net">seaotter@bellatlantic.net</a>
Laser collimator (no deposit)	Pete Johnson 703-830-7513 <a href="mailto:pjohnson19@cox.net">pjohnson19@cox.net</a>

## Lunar eclipse times

November 8, 2003, Eastern Standard Time



# Jeff's observing report

Jeff Stetekluh

Jeff's astronomical calculations are made for the Northern Virginia area. See [www.novac.com/jeff/jrefs.html](http://www.novac.com/jeff/jrefs.html) for calculation references and further details.

## Jupiter eclipse events on Friday and Saturday nights

None

### The Sun

Nov 9 rises at 6:44 am sets at 5:00 pm  
 Dec 14 rises at 7:19 am sets at 4:47 pm

### The Moon

Nov 16 Last Quarter  
 Nov 23 New Moon  
 Nov 30 First Quarter  
 Dec 8 Full Moon

### Events

Nov 18 The Leonid meteor shower peaks (active Nov 14 to Nov 21) (from IMO)  
 Nov 23 Total solar eclipse; mag=1.037 (from Espenak)  
 Dec 9 Mercury is at greatest eastern elongation (from Espenak)  
 Dec 14 The Geminid meteor shower peaks (active Dec 7 to Dec 17) (from IMO)

### The Planets

Nov 9	Rises	Transits	Sets
Mercury	7:33 am	12:28 pm	5:22 pm
Venus	8:34 am	1:21 pm	6:07 pm
Mars	2:13 pm	7:46 pm	1:20 am
Jupiter	1:35 am	7:59 am	2:24 pm
Saturn	8:30 pm	3:52 am	11:10 am

Dec 14	Rises	Transits	Sets
Mercury	8:50 am	1:28 pm	6:07 pm
Venus	9:30 am	2:12 pm	6:55 pm
Mars	12:33 pm	6:33 pm	12:34 am
Jupiter	11:32 pm	5:56 am	12:16 pm
Saturn	6:03 pm	1:26 am	8:46 am

### Notes

	mag	diam	Nov 9	Dec 14
Mercury	-0.6	4.8"	WSW, 3*	12*
Venus	-3.9	10.8"	SW, 10*	18*
Mars	-0.9	13.6"	SE, 28*	44*
Jupiter	-1.9	34.1"		
Saturn	2.1	19.6"		

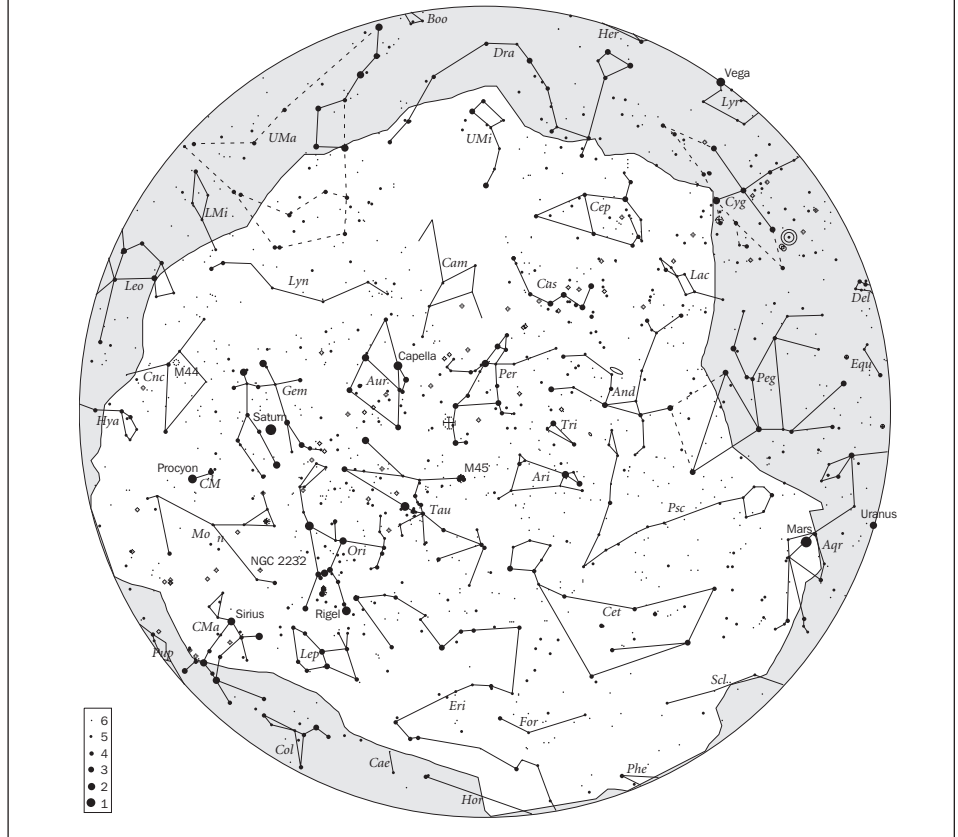
\* degrees elevation at sunset taking into account atmospheric refraction.

mag = apparent magnitude

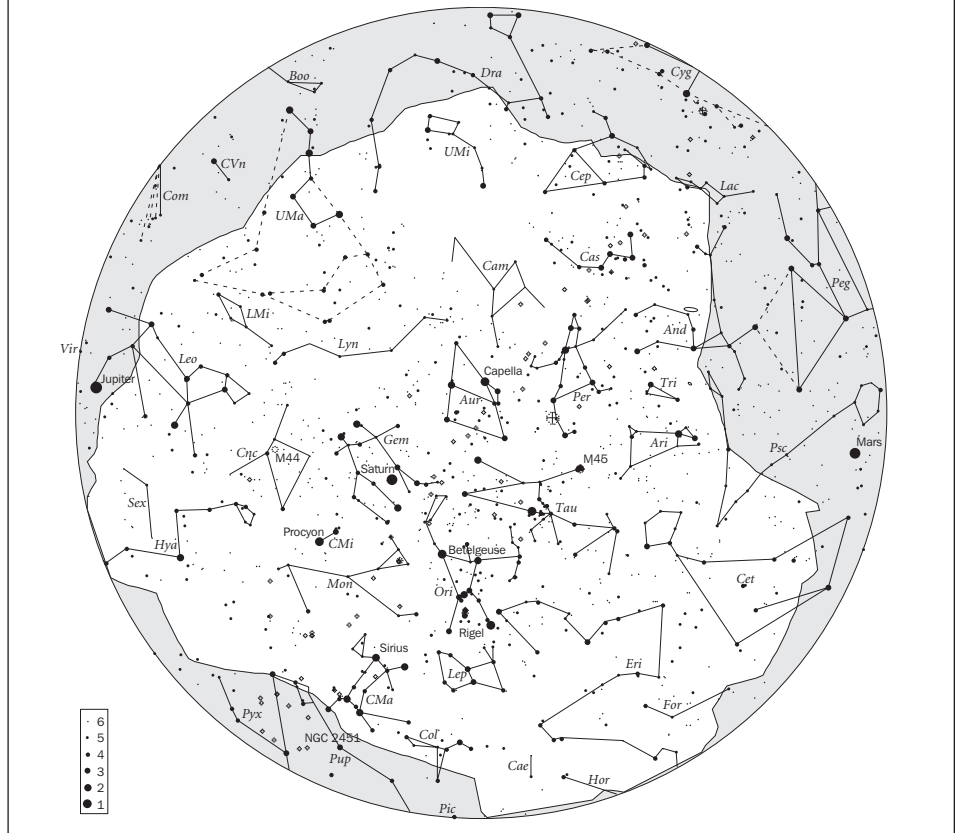
diam = apparent equatorial angular diameter

Each map depicts the sky at 0 hours for the 15th day of the respective month. The shaded area approximates the local horizon obstruction at the site.

## November skies from Savage Farm



## December skies from Savage Farm



# “To observe, and to help others observe”

NOVAC is a non-profit, all-volunteer organization chartered to advance amateur astronomy in Northern Virginia. Members benefit from:

## **Access to dark sky observing sites:**

NOVAC maintains agreements that provide club members with year-round access to observing sites away from city lights

## **Monthly meetings**

Monthly meetings are held at 7 p.m. on the second Sunday of each month in Room 80 of the Enterprise Building on the campus of George Mason University. Each meeting features a lecture on an interesting topic by a local expert. See the web page or future newsletters for a schedule of speakers.

## **Bimonthly newsletter**

The NOVAC newsletter provides information specifically for NOVAC members, as well as general interest articles on such topics as observing reports, equipment reviews, upcoming events, ATM projects, and more.

## **High-quality telescopes to borrow**

NOVAC members may borrow one of the clubs several “loaner” telescopes at no charge. Members may choose from among three 6" reflectors, two 10" f/6 reflectors, an 8" SCT, and a hydrogen-alpha solar scope. Binoculars are also available for loan.

## **Club website**

Up to date information about club events and activities is maintained on the club website at [www.novac.com](http://www.novac.com).

## **Large club library**

NOVAC maintains a well stocked library that members may borrow from by contacting John Deriso ([seaotter@bellatlantic.net](mailto:seaotter@bellatlantic.net)). A full list of titles is available from the club website.

## **Private e-mail list-serve**

Members keep up with current club information by subscribing to the NOVAC e-mail list, without fear of flame wars or spam e-mails.

## **Public outreach opportunities**

Several times each year, volunteers from NOVAC present astronomy programs to schools, churches, Scout troops, and other public groups.

## **Membership in the Astronomical League**

Through NOVAC's membership in the Astronomical League, NOVAC members gain access to the AL's newsletter, services, and observing programs.

## **Discounts on astronomy magazines and books**

Subscriptions to *Sky & Telescope* and *Astronomy* magazines are offered to club members at a considerable discount. Also, astronomy books purchased through the club are eligible for a 10–25% discount.

**See your *Membership Guide* for more details.**



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**

Membership in the Northern Virginia Astronomy Club is \$25.00 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 \$5.00 per person. Contact:

Gene LaTour  
807 S. Filbert Court  
Sterling, VA 20164  
703-444-6674  
[gene12r@earthlink.net](mailto:gene12r@earthlink.net)

## **Change of address**

All notices of change of address should be sent to Joe Pierson. Please include both old and new addresses.

## **Advertising**

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

## **Submissions to the newsletter**

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, Dave Yustein, at [david.yustein@aero.org](mailto:david.yustein@aero.org).

**The deadline for submissions is two weeks in advance of publication: Friday, December 5 for the January/February 2004 newsletter.**

© Copyright 2003, The *Northern Virginia Astronomy Club*. All rights reserved.

The *NOVAC Newsletter* may be reproduced with proper attribution.

# In this issue...

**News and articles** • Building a suitcase observatory •  
MOS continues to evolve • Lunar eclipse • From the pier in  
the Potomac

**Announcements** • Monthly Observing Sessions •  
Upcoming NOVAC meetings • NASM/Einstein Planetarium  
public observing • Sky & Telescope subscriptions • Loaner  
scope update

**Regular features** • Events in November and December •  
Meeting highlights • New members • Jeff's observing report  
• Sky maps



THE NORTHERN VIRGINIA ASTRONOMY CLUB

c/o Gene LaTour, Membership Director  
807 S. Filbert Court  
Sterling, VA 20164

Non-Profit Org.  
U.S. Postage Paid  
Merrifield, VA  
Permit #6017