

NOVAC

THE NEWSLETTER OF THE NORTHERN VIRGINIA ASTRONOMY CLUB

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New Club Scope Report

John Nusbaum

The club's new 10 inch f/6 Discovery Dob arrived last Friday, April 13! I was able to assemble it and get out to Savage with it both Friday and Saturday nights.

The scope seems to have pretty good optics. I was pleased. I put it through its paces by observing lots of spring edge-on galaxies with a few planetary mixed in for good measure. The results were really good. Folks will be able to do some pretty serious deep sky observing with this scope.



NOVAC recently acquired a Discovery 10" f/6 Dobsonian similar to the one pictured here.

I was not overly impressed with the stiffness of the rocker box and it was fairly hard to move in the altitude direction. But these things are simple to improve upon. The tube, mirror cell, JMI 2" focuser, and 50 mm finder all were just fine.

Bob Bunge star tested it on Saturday night and pronounced it a fairly typical commercial mirror: a slightly turned edge and a bit of astigmatism. But nothing too serious. As I said before, I thought the views were pretty nice.

(Editor's Note: A custodian for the new 10" scope has not yet been assigned. Information about who to contact to borrow this instrument will be made available as soon as the details are finalized. Check the newsletter, website, and e-mail list for updates.)

President's Message

Ed Karch

It is warming up and the rain may have stopped by the time you read this. It is time for the non-ironperson couch potatoes, self included, to arise from their winter hibernation and stick a telescope in their eye. We are exploring new sites both metro and darker and the permits process is underway. Keep a lookout on the list for someone announcing an evening out and go join them.

Our annual picnic (June 16 at Franklin Park) is another chance to eat burgers, socialize, swap astrostuff (used telescope?), tell lies, and look through probably the biggest collection of telescopes on one field in the region. We are planning to line up as many as we can on the same target so you could march down the line and see which one suits your needs best. We have arranged to use the park until 3 AM so you can stay up just like the grownups do.

Adventures in Telescope Building

Laquetta Karch

I've just finished building my first telescope using one of the 4.25" f-4 mirror sets purchased from the NOVAC ATM group and decided to share some of my experiences. I'd always had a vague notion that building a telescope would be a cool thing to do. I've read a few books on telescope making, but never had the time (or courage) to try it until this winter.

I haven't been out to observe much this year. Between the bad weather, work, and the 50-minute minimum drive to one of the club dark sky sites, there haven't been many opportunities for viewing. I began talking about wanting a "grab-and-go" scope I could use if I had a few minutes on a clear night. I began looking at the catalogs. I began introducing terms like "Televue 85" into the dinner conversation. My husband, ever-alert to signs of scope fever (and a ruptured checking account), used the same technique on me I've seen him use on small children-distraction with shiny objects. Shortly before Christmas, he came home from an ATM

ANNOUNCING

**NOVAC PICNIC
2001**

June 16 at Franklin Park
(On Business Route 7 in
Purcellville)

Hot dogs, hamburgers, and sodas will be provided. Please bring a side dish to share.

meeting with a "present" consisting of a primary and secondary mirror set plus eyepiece. I thought the 4.25" f-4 mirror would make a nice rich-field telescope which I could mount piggyback on my 18" Obsession for long observing sessions or on my binocular tripod as a "grab and go" scope to sneak in a few minutes here and there.

I started the project by attending one of NOVAC's Sunday night ATM show-and-tell meetings to steal ideas. I got lots of ideas, lots of encouragement and was even given some very nice parts.

What did I learn from building this telescope? Lots of stuff:

1. The ATM group is very friendly, very supportive and wildly imaginative. If it doesn't move, they'll find a way to stick two mirrors on it and turn it into a telescope.
2. Smaller is not necessarily easier. A 4.25" scope actually has finer collimation requirements than my big scope. Plus, you can't fit both hands and a paintbrush into a 5" square piece of plumbing pipe like you

(Continued on page 5)

Starting Out, Write

Rob Lentini

I got a big kick out of glancing through the first few pages of my observing log recently. The first entry is dated 5-21-99 (I can hear some of you groaning, "Rookie!"), and are observations of the moon made with Canon 10x30IS binoculars I had borrowed. I mixed in some facts about the objects I observed with my notes. For example, I had sketched the moon and various features I was identifying, and included the nearby star Regulus. I wrote that, "Regulus, the largest star in Leo, was visible. The moon occulted (passed over) Regulus at 12 midnight. Watching these events is how astronomers determined the moon has no atmosphere." I included a note about a crater on the moon that was prominent, "Gemma Frisius has an exceptionally high wall - over 5000m (according to web)." These aren't facts that I know; they are tidbits that caught my attention as I was looking at maps and researching what I was looking at. Mixing them in with my observations makes my notebook a more interesting read.

It is fun to review my observing log "discoveries" and sort of re-experience the naïve joy and fascination I had on clear nights over the past years. On 8-11-99, I wrote, "Excited to see Jupiter and Saturn again, I'm up early. The sky is unfamiliar... I only see Cassiopeia high in the North. For reference, brighter stars are shown below. I'm facing East-Southeast... Cassiopeia is back and to the left. It's getting bright out, so I can't include many in the picture. (sketch) I spotted an odd group of close stars after observing Saturn and Jupiter. It was an open cluster and I could count 60+ stars in the field of view of the 25mm Plössl. The beginning of the next page is a diagram so I can figure out which it is later." The sketch of the open cluster on the next page is accompanied by a note added later: "The Pleiades open cluster in Taurus 'The Seven Sisters' M45!" Rob Lentini discovers the Seven Sisters. Classic.

"Like an old diary or journal, you will find reading an old observing log is a window to your past and a great record of your accomplishments."

Maybe you have been keeping an observing log for a while or perhaps you are just starting out. I have several suggestions for "good practices" to follow when logging your observations that will not only make your log an interesting and fun read for the future, but will enhance the educational value of your sessions. Please note that you can start an observing log even if you don't have a telescope. Writing about what you

see through other club members scopes, or through binoculars or even with your naked eye will be worthwhile. Let me record a few credits before I start. I am modeling my suggestions after some really good observing reports I have seen on the NOVAC email listserv and the "starry nights" Yahoo E-Group. In particular, Susan Delaney, a Georgetown grad living in Fairfield, CT, regularly posts very organized reports on the web.

Let's talk materials first. I recommend working with what you are comfortable with, be it a spiral notebook, loose-leaf binder, observing cards or even a tape recorder. I use a spiral notebook, but if you are prone to print charts and pictures that you would like to include with your notes, it may be nice to have a binder so you can add pages as you see fit. A couple of companies make observing cards that have a sky map (of a constellation, for example, showing bright stars and describing deep space objects of interest) and room for notes. Definitely use a pencil instead of a pen for a couple of reasons. Some pens don't do well in cold weather, but more importantly, when you are drawing objects, being able to shade and express dark and light regions with a pencil will enhance your pictures. This is perhaps less important with star clusters, but when you draw sunspots or nebula or even galaxies, you will appreciate the ability to control shades. If you're not into drawing pictures, a micro-cassette recorder may improve your observations. With a recorder, you can stay at the eyepiece without interruptions, and not have your night vision adversely affected by your red flashlight. You can observe the object longer and perhaps pick up more detail.

My second suggestion is that when you get to your observing site, jot a few notes before you begin to observe. Note the date, time (local time or Universal Time or both), something about the setting/site/location (even a latitude/longitude if you know them), the temperature, who you are with, who's out in the park with you, what kind of scopes they have, and what equipment (scopes and eyepieces) you brought. I also recommend thinking about using a system for quantifying the weather conditions. Describe the wind, cloudiness, humidity, seeing, and limiting magnitude. "Seeing" is a measure of how steady the air appears to be, and you probably should make that estimation looking through the telescope. If those stars are twinkling like mad, chances are the air in the atmosphere is really boiling, and highly detailed views of the clouds of Jupiter, for example, might be difficult or impossible. A ten point scale for the seeing will keep your descriptions of the seeing more consistent. You can use a similar scale for limiting magnitude. There are formal ways to make these estimations described on the web and in certain issues of Sky & Telescope and Astronomy magazines.

As you starhop or navigate to the objects, don't be afraid to add interesting facts you spot in your books or on the charts. Indicate the source

of the information. Keep a record of how you navigated to the object. For each object, record its New General Catalogue (NGC) number, Messier number, or any other identifying catalogue references as you observe, or leave room to add this information later. Include the common name (e.g., Trifid Nebula, Andromeda Galaxy, the Hercules Cluster), note the object type (galaxy/open cluster/globular cluster/planetary nebula, etc.), and mention the home constellation of the object.

With your descriptive text, in addition to eloquently describing how the object appears, mention the magnifications you are using (which one provided the best view), any filters, and finder views. Describe your photographic settings. Compare and contrast the features with similar objects. Draw a circle on your page representing your field of view for the eyepiece, and draw the object within that circle. Label the drawing with star/moon names, magnitudes, object names and info.

A sample observing entry from Susan Delaney:

NGC 3556 - M108 - Gx - Uma

M108 appeared dim, thin, and needle-shaped elongated E-W at 64x and at 284x with direct vision. Averted vision extended its size a bit more. Curious as to how this compared to M82, I quickly centered it in the eyepiece at 64x. In fact, M81 and M82 were in the same FOV at 64x! The difference in surface brightness between M108 and M82 was obvious at first glance. M82 was extraordinarily bright, large, had a core with fairly well defined edges and a diffuse halo, stunning! Is there an edge-on that rivals the beauty of M82? Perhaps it was unfair to compare M108 to M82. They are each beautiful in their own unique way.

Adding comments to observations after the fact is something I do frequently. I'll observe some objects, and read more about them later, adding interesting info to my log. Also don't be afraid to include entries in your log for cloudy-weather activities. If you read a great astronomy book, write a brief review on the day you finish it. If you collimate your telescope, or get some new equipment, or plan an observing session, note those things in your log.

All of your fellow club members will appreciate an email observing report summarizing your outing. I highly encourage everybody to send a report to the group every time you go out. Let us know how you are doing on your observing lists or what your plan was for the evening.

I hope you will apply some of these ideas to improve your observing log. Like an old diary or journal, you will find reading an old observing log is a window to your past and a great record of your accomplishments.

Jumping into Mirror Making

Michael Mills

I have been preparing to grind my own primary mirror for a long time. I've collected many fine books on telescope making and mirror grinding, including Richard Berry's *Build Your Own Telescope*, Sam Brown's *All About Telescopes*, and Jean Texereau's *How to Make a Telescope*. I read through all of these books, ordered a 6" mirror kit from Willmann-Bell, and built a grinding stand and Foucault tester. But something always kept me from starting: graduate studies, work, other hobbies. Another cause for my procrastination was a nagging little fear of failure. All of the books make very clear that there are a huge number of variables and environmental factors to control in order to craft a fine optic. How can a beginner keep in mind all of Texereau's myriad warnings and still make progress? What I needed was some sort of crash course to get me going.

Then, last November, the Delmarva Stargazers announced the First Annual Mid-Atlantic Mirror Grinding Seminar. They would provide the materials and guidance over three days to help novice mirror grinders turn out respectable mirrors. In addition to the Stargazers' experienced glass pushers, Steve Swayze and Peter Ceravolo were going to be present to impart their wisdom. This was the kind of impetus I needed to get moving: lock me in a lodge a long way from

home and don't let me out until the mirror is finished. I immediately sent a check to reserve an 8" grinding kit and a room for two nights at the lodge.



Grazing reflection of light bulbs in a fine-ground mirror. (Photo by the author)

Once the check was mailed, I was committed to making a mirror. But I wanted to get a little bit of experience before I went to the seminar, so I took my four-year-old 6" mirror kit to the National Capital Astronomer's mirror making club at American University. There, Jerry Schnall and Guy Brandenburg got me started. By the end of the first session, I felt like I was really getting the hang of it. I had the f/8 curve fully hogged out, and I hadn't ruined my blank yet. Over the next two weeks, working at home and at AU, I gradually made my way through the various grit sizes. I got more and more excited as I finished each abrasive and saw the mirror's surface get smoother and more reflective. By the end of the third week I was ready to polish. By then it was also time for the seminar, and I felt pretty confident that I would return with a nice 8" mirror, ready to put the ultimate figure on the 6" that was already underway.

I arrived at Mallard Lodge in Smyrna, Delaware just as the Delmarva Stargazers were getting the mirror grinding stands set up. I picked out a stand at a comfortable height and listened as Don Surles, the president of the DMSG, gave us some quick instructions. Then we beveled the edges of our preground f/8 blanks and tools and started grinding. Since the blanks already had rough curves ground in, we were able to start working at a relatively fine grit, saving several hours of caveman work. Throughout the grinding process, the Stargazers floated among the students, checking our progress and offering helpful suggestions. Fine grinding proceeded very quickly, and by about 4 o'clock (taking time out for a late lunch), I was ready to start polishing.

To speed the polishing process, the kits we used included eyeglass polishing pads. These are self-adhesive paper pads shaped like flower petals. We stuck them all over the faces of our plate glass tools and proceeded to polish with cerium oxide. By the time dinner was served, the center of my mirror had a beautiful polish, but the edge still showed a gray haze, indicating there were many fine pits left from fine grinding.

After a delicious dinner, I gave my back and shoulders a much needed rest as the first of the weekend's presentations was given. David Lane of the Royal Astronomical Society of Canada, and author of the planetarium program *Earth Centered Universe*, showed a number of beautiful slides he had taken on a trip to the Canada-France-Hawaii telescope on Mauna Kea.

After David's talk, I continued polishing. The edge of my mirror got shinier at an agonizingly slow pace, so I took it to Steve Swayze for suggestions. He set it up in the mirror test stand and crouched down behind his Ronchi tester. "Oh my. What is going on here?" he said in a puzzled tone. "You have a severely hyperbolic figure." Uh-oh, that didn't sound too good, so I looked for myself. While I had hoped to see straight, vertical "jailbars" of light, what I faced were pairs of concentric oval rings. I had mistakenly made my polishing lap too small, causing the center of my mirror to be polished far more than the edge. To fix the problem, I would have to abandon the polishing pads and continue polishing on a standard pitch lap. At that point I gave up for the night, sneaking into my bunk around 12:30 am.

I got up early Saturday morning and prepared to make a pitch lap, which is a notoriously messy job. Don Surles helped me heat up the pitch, pour it onto the tool, and press channels into the pitch layer with a rubber mat. When it was finished, I had a checkerboard of squares about 1/4 inch thick and 1 1/2 inches wide distributed over the glass tool.



Don Surles getting ready to press the channels into a pitch lap. (Photo by the author)

After about an hour of polishing on the pitch, my edge finally reached full polish. Checking the figure on the Ronchi tester once again, the inner 3/4 of the ovals had turned into nice straight bars, while the outer zones still showed severe curvature. I continued polishing for the rest of the afternoon, stopping to test every once in a while. It appeared that the techniques I was using were going to give me a nice spherical mirror, so I continued working in the same manner throughout the afternoon.

Once again, after dinner we had presentations. Dave Groski spoke about a design for a solar prominence viewer that could be built by an

(Continued on page 4)



Expert mirror maker Steve Swayze demonstrates polishing techniques to a student. (Photo by Doug Miller for the Delmarva Stargazers)

(Continued from page 3)

amateur for about \$320. This project may be the focus of next year's Delmarva telescope making workshop. After Dave's brief presentation, Peter Ceravolo described his efforts to film the delicate structure in Comet Hyakutake's tail. Those efforts resulted in a very striking short film, which shows fine filaments of dust undulating behind the comet's head.

After the presentations, I tested my mirror once again. The edge was almost spherical, but a broad hill had appeared in the center. Once again, Steve gave me instructions about how to proceed and I went back to work for a while. At about 10:30, I tested the mirror one last time before going to bed. The hill had not changed much, but at least the edge was maintaining its good figure.

The next morning, I continued my efforts to reduce the hill in the center of my mirror. I was particularly paranoid about overcorrecting my hill and digging a hole, so I proceeded very slowly. Every 30-45 minutes I took my mirror back to Steve for testing. Eventually, the hill got reasonably small and the edges of the mirror began to parabolize. Meanwhile, we were hearing reports about a great snowstorm that was on its way to the Mid-Atlantic and Northeast. I was feeling rather rushed to finish my mirror and make the 2 1/2 hour drive back Alexandria before the snowstorm hit. I decided it was time to stop when my novice eye could no longer discern the errors that Steve described to me as he examined the mirror under the Ross Null test. I thanked the Stargazers for their well organized seminar and wonderful meals, then headed home.

Since returning from the mirror grinding seminar, I have continued to attend the NCA's mirror making class on Friday evenings at Ameri-

can University. Guy Brandenburg helped me pour another pitch lap, I got the 6" mirror polished, and I am now working on figuring it. I have also tested the 8" mirror, and have found that it does not quite meet the 1/4-wave criterion for diffraction limited performance. Once the 6" is finished, I plan to revisit the 8" to improve its figure.



Several of the seminar's students work on polishing their mirrors. (Photo by the author)

I can envision mirror making becoming an addiction. The way a beautifully polished surface emerges from a plain disk of glass is magical. The realization that, using only hand tools, one can make a glass surface accurate to a few nanometers is intoxicating. Furthermore, the whole process has turned out to be a lot less complicated than I had feared. While you can't hope to simultaneously control all of the factors that affect the mirror, all you have to do is follow reasonable working habits and tackle any problems as they arise. There are two pearls of old mirror making wisdom that one should keep in mind: "Anything you grind into the mirror, you can grind out again", and "Grind more, worry less". I definitely plan to grind more.

For More Information...

NCA Mirror Making classes, led by Guy Brandenburg and Jerry Schnall, are held on Friday evenings from 7:00 until about 10:30 in American University's McKinley Hall, room 9 (in the Basement).

NOVAC ATM Special Interest Group meetings are held on the third Sunday of each month at 6:00 pm. The location varies; subscribe to www.yahoo.com/group/novac-atm/ for up to date information.

Some good websites:

The ATM page:
<http://www.atmpage.com/>

STAR Astronomy Club:
<http://www.starastronomy.org/>

The ATM List Archives:
<http://astro.umsystem.edu/atm/>

Mel Bartels:
<http://www.efn.org/~mbartels/>

Stellafane.com:
<http://www.stellafane.com/>



The whole gang poses outside the Mallard Lodge. (Photo by Doug Miller for the Delmarva Stargazers)

Sweet Sixteen

John Avellone

"Sweet Sixteen" is the name of a project that may result in a large club telescope for NOVAC. Club member Bill Powers generously donated a large mirror and various other optical treasures to NOVAC. Club president, Ed Karch, designated a "gang of sixteen" to try building a telescope from this stuff. I am gang leader. Other gang members, all notorious ATM nuts, are: Bob Bunge, Pete Johnson, Ed Karch, and Mike Mills.

To start with, we have a large mirror, 16" in diameter and 1.5" thick. Testing at Guy Brandenburg's mirror making session established that the mirror has a fine spherical figure and a focal length of ten feet. The aluminum coating was dull, but the expert optical technicians at Cumberland Optics, in Marlow Heights, were able to restore it to a usable level of reflectivity. These are good people! Rather than accept payment for a good hour during which they applied "secret arts", they urged me to consider it their contribution to NOVAC!

At some indefinite future time, when the mirror needs recoating, the club may want to take the trouble and time to refigure it to a good parabola. For now, we intend to use it "as is". Sort of. A spherical mirror of this large a diameter

and focal length will show aberrations when used to view stars. It may be possible to "flex" the mirror, by mechanical means, into a more nearly parabolic figure. This method has been described in recent ATM literature, but not for this large a mirror. Alternatively, there are optical ways to correct the images through the use of auxiliary lenses. So, we must do some experimenting here. Little is at risk, so far the project has only cost time and not money.

"The club may end up with a good and unusual large telescope for public events."

The long focal length of ten feet will allow the use of long focal length eyepieces. This is good. John Dobson holds that these are easier for most people to use, say at public viewing events like star parties. However, in a standard Newtonian configuration, the eyepiece will be high off the ground. The ten foot ladder required by the observer may prove awkward in the dark. This is another area for experimentation! Alternatively, it may be possible to "fold" the optical path of the scope.

Included among the other optical treasures are

some excellent quality optical flats, 6" in diameter by 1" thick. One of these flats, aluminized and placed on the optical axis, seven feet above the mirror surface, would redirect the optical path downward. A conventional diagonal, about 2.25" to 2.5" on minor axis, placed just a bit more than two feet down from the folding flat, would put the observer's eye just five feet above the mirror surface. This, if it works out, is more reasonable. Observers would require a low step stool rather than a tall ladder.

Use of a folding flat of this size also brings up some curious optical questions. The entire center of the mirror, a zone six inches in diameter, will be obscured. Only the outer zone of the mirror, an annulus five inches in width, will act to produce images. This outer zone may not differ that much from the equivalent parabola of best fit to have a sensible effect on image quality, without the need to "flex" the mirror. Some calculations need to be worked out here!

So, the "gang of sixteen" has a lot of experimentation to carry out. The club may end up with a good and unusual large telescope for public events, etc. A first-cut at a working prototype may be ready as early as the picnic, certainly by the club star party.

Adventures in Telescope Making

(Continued from page 1)

- can a one and a half foot wide upper cage assembly.
3. Guys DO like to shop (who knew?), especially for small pieces parts at Home Depot and Sears. This turned out to my advantage as my husband happily and cheerfully shopped every hardware store in the area looking for screws, bolts, pipe, etc. ("Honey, I know it's almost bedtime, but we're out of milk, and while you're out could you pick up some brass acorn nuts and one more 6-32 cap screw?")
4. An optical tube made out of plastic plumbing pipe looks just like a piece of plastic plumbing pipe until it is painted and finished. I know this because my husband needed a couple of inches of plumbing pipe and cut it off my telescope. (Maybe that's why he's done so many hardware runs without complaint).
5. Murphy LOVES telescope projects.
6. If you're going to clean your mirror with alcohol, don't use acrylic paint or shellac on the mirror or mirror cell. (Do you really need to ask how I learned that one?)
7. A good workshop helps but is not an absolute requirement. I had the advantage of a husband who has been generously indulged by a doting spouse with a nice shop and equipment like a drill press and band saw. For my small project, everything I did could have been done with the tools I owned and used in the pre-shop days. It might've taken a little more planning or effort, but it would have been doable. In fact, some of my cuts would've been straighter using my old, hand Japanese saws.
8. Plan to spend a lot of time just shopping for parts. If you need four 8-24 stainless steel thumbscrews to fit four brass acorn nuts, it's almost guaranteed the local hardware store will have three of them in stock and you and Murphy will be schlepping all over Northern Virginia looking for the fourth. ("Honey, it's such a nice day, let's go for a drive in the country. I've heard there's a hardware store in West Virginia with 1/4-20 stainless steel screws.")
9. It's the journey, grasshopper. The right mindset really is important. Telescope making can be fun, but not if you just want to screw it together and use it ASAP. For that, stick to kits like the Coulter Odyssey, StarSplitter Steve's six-inch kit or one of the other small kits. If you are crafty and find joy in the process as well as in the end product, telescope building can be a good experience.
10. Finally, never, EVER, leave an unpainted optical tube made of plastic plumbing pipe out where others can get to it. (see item 4).

Support The IDA

Join the International Dark-Sky Association

www.darksky.org

A Successful Messier Marathon

On Saturday/Sunday March 24/25, I attended my first "All Arizona Messier Marathon". This is an event I've seen publicized for several years (see <http://www.seds.org/messier/xtra/marathon/results.html> for summaries from previous years). It is put on by the Saguaro Astronomy Club, although in practice it is A. J. Crayon and Jack Jones that apparently do most of the organizing for the star party. In any case, now that I'm living in Arizona, it finally made sense to try to attend.

I've long had an interest in the Messier Marathon itself, having first done one in 1979 and several more in following years in the early 1980's, eventually observing 109 Messier objects in a one night. I also helped to publicize the idea somewhat, publishing the first detailed article on the subject in the March 1982 issue of *Deep Sky Monthly* magazine. I planned on other occasions in the late 1980's and the early 1990's to do the marathon again from the northern Virginia area, but was essentially clouded out every single time. Still, I always figured that I had done well enough in seeing 109 objects; it seemed impossible that one could observe all 110 Messier objects in one night.

However, by the mid '90's it had become clear that under ideal conditions, as hard as it was to believe, several amateurs had achieved that goal.

So, with all this in mind, I planned to attend the "All Arizona" event. I figured I would try the marathon once again, and weather and other conditions permitting try to repeat my 109 object count and maybe even get lucky and observe 110 objects. More importantly, in my mind, I was looking forward to seeing again, or meeting for the first time, a lot of the Arizona observers who were likely to be present. Further I was looking forward to observing at a "reasonably warm" site. The temperatures were likely to be in the 40's F, rather than the usual temperature of Flagstaff, normally about 20-30 degrees colder at night this time of year. Finally, the date itself was just about ideal, with a new Moon and at essentially the best possible time to see the difficult evening and morning objects, M 74 and M 30 respectively.

[An aside here - when I refer to the "110" Messier objects, I mean the catalog with the usual modern designations and assumptions accepted. This version is not necessarily compatible with Messier's true list. For example it's clear to me that M 102 does not exist as a separate object - Messier clearly stated it was a duplicate observation of M 101. However I, like lots of other folks, accept NGC 5866 as a "stand-in" for M 102, since many people in the past considered it as Messier's real M 102. For an explanation of the modern identifications, see my *Deep Sky Monthly* article, or any other current reference on the Messier objects such as Stephen

O'Meara's or Harvard Pennington's book on the subject.]

So on Saturday morning, March 24, with the car loaded up, I checked the weather and made the "go" decision to drive down to the star party site. Arizona was pretty much completely overcast with cirrus clouds, but the satellite maps showed a clearing was likely to arrive in southern Arizona that evening. I left about 11:30 AM for the 4 hour or so (240 miles) drive to the site. This turned out to be a beautiful trip, with the Sonoran desert, particularly just north of Phoenix, in full bloom after a wet winter. The desert was actually green, except for large patches of color, which were in fact fields of wildflowers of every color and description. On all the roadsides it was clear that ADOT had done a rather obvious job of covering the areas with wildflower seeds. In some of the road cuts it was as if one were driving through an orange tunnel of flowers.

"So not only had I seen 110 Messier objects in a single night, but I had done it with a pair of 11 x 80 binoculars!"

Somewhere in Phoenix, with lighter traffic than usual, I was thinking of the night's observing. It was then the revelation came to me that although I had all the observing and camping equipment I could possibly need, I had managed to forget part of my 10-inch telescope! I'd left the struts (that connect the mirror box to the front assembly) at home. I decided though that it certainly wasn't worth the trip back to get them. I would instead try observing with my 11x80 binoculars, and try to filch some looks through people's telescopes for all the objects I probably wouldn't be able to find.

The trip was otherwise uneventful. I exited the interstate at Arizona City (a town nowhere near the observing site, but for which it is often named), and continued the final 30 miles or so (15 paved, 15 dirt road) to the observing site. The site itself was on a large ranch, at this point about 80 miles south of Phoenix, and maybe 60 miles northwest of Tucson. The "observing field" was a several acre area pretty much clear of vegetation. Fortunately recent rain had kept the dust down at the site reasonably well.

Arriving about 4 PM, I quickly set up next to Bill Ferris, who had driven down the day before from Flagstaff. As expected (since I wasn't there...) everyone began telling us what a good night it had been Friday. In fact it was so good that Bill had been able to observe all 110 Messier objects with his 10-inch telescope! The other big news was that a light plane had made an emergency landing on the observing field that afternoon, even throwing a tire in the process. However the pilot had surprisingly got the aircraft repaired and back up just before I ar-

rived. I quickly touched base with a number of other Arizona amateurs who I had previously met, including e.g. Brian Skiff, Tom Polakis, Diane Hope, and A. J. Crayon. I also eventually spent time checking out many of the telescopes set up and meeting some new folks.

All this time the sky was still overcast with cirrus clouds, but by 5:30 PM or so, a clearing had begun in the west, pretty much as predicted. Telescopes (and in my case binoculars) were set up, everyone served up their own dinner, and the wait for twilight began. A common pastime while waiting for the sky to darken was to examine the telescopic view of Kitt Peak and all of its telescope domes, about 40 miles to the south. In doing so we were all surprised to find that the seeing was rock solid steady, with no turbulence visible even in that view across the desert. It was also nice to watch the sunset, in the one patch of clearing sky. I have never yet seen one of the brilliant green sunset flashes that others have described. However at least this evening (about 6:42 PM), Bill and I saw the last bit of the Sun turning a convincing green color as it disappeared between some mountains to the west. So it was "green" but not necessarily a "flash".

At about 7:45 everyone seemed to begin observing in earnest. The bright Seyfert galaxy M 77 was the first object I managed to spot in my 11x80 binoculars at 7:50 PM, and then surprisingly only a minute later I suspected the galaxy M 74. Bright zodiacal light also appeared in this area about that time, keeping the vicinity of the western horizon somewhat difficult to observe. The clouds continued to dissipate, and before long it was completely clear - a condition fortunately kept for the remainder of the night.

I started observing some other M objects, but kept going back to the M 74 area. I also confirmed the view of it in Bill Ferris's 10-inch telescope, although with its much greater magnification mostly only the nuclear region and a nearby faint star were seen. Finally I became convinced that although it was extremely difficult, by 8:15 through the binoculars with averted vision I was seeing M 74 as a spot about 20-30% of the time. Having gotten the difficult evening object, it now became relatively easy to start picking off the other evening Messier objects.

I won't continue here with a blow-by-blow account of observing the rest of the night. In general however, there were other difficult objects as the night went on, although not (as it turned out) as problematic as M 74. These objects included M 110, M 98, M 91, and - in the morning twilight - M 73 (more on which below). Other nearly stellar objects had to be confirmed against star charts or in the 10-inch. These included M 32, M 76, M 1, M 57, M 88, M 69, M 54, and M 72. 11 power is obviously not the ideal magnification for looking at some of these things!

I will mention though one particular late-night observation of an object I had never seen before. While waiting for the summer Milky Way objects to rise high enough to start seriously observing them, between about 2:30 and 3:30 AM, I spent some time talking to Brian Skiff and examining the sky carefully with the unaided eye. Having spent my life usually observing from more northern sites, the upper part of the constellation of Centaurus, now up in the south, was certainly interesting to see - particularly with the fuzzy "star" Omega Centauri appearing as an obvious object. I was also impressed to see the large 15-20 degree oval glow of the gegenschein - something I've seen only maybe half a dozen times in my life. It was now starting down in the west from the meridian, in the area of eastern Virgo and western Libra. However, Brian showed me convincingly that on this night the gegenschein was just a larger and brighter portion of the entire zodiacal band - something I'd _ never _ definitely seen before. It ran from the western horizon all the way into the brighter zodiacal light and light pollution of Tucson in the east. I was impressed that I was finally able to see it, from a good site, yes, but one with some notable light pollution. I suspect that as with many types of observing, this was a case where having an object pointed out will make it easier to see in the future. That has certainly been true for me in the case of the gegenschein - we'll see if it true for observing the zodiacal band as well.

In any case, the Milky Way was up before we knew it, so I went back to observing with my binoculars and slowly worked my way south along it, picking off the many bright objects of Scutum and Sagittarius. The sky seemingly started to brighten as I found M 2 about 4:15 AM, although this was still early enough that I must have mostly been observing through the Tucson glow and Zodiacal light. Around 4:45, M 73 gave me a bit of a scare when I couldn't see it at first. I had observed all these faint galaxies and might now be stopped on a group of 4 faint stars! Fortunately more time spent observing the area and checking the field against an Uranometria 2000.0 chart showed that I was seeing it. It was visible about 30-40% of the time with averted vision, along with the nearby green planetary nebula NGC 7009, which appeared stellar.

Now it was time to find the "holy grail" of the morning Messier marathon, M 30 - but a quick check of charts for the area showed it was still a few degrees below the horizon! So a seemingly long wait began, as I watched many faint stars preceding M 30 slowly climb above the horizon, and M 30 approach the same point, degree by degree. The field rose at 5 AM, and by 5:05 we had convincingly seen it in Bill's 10-inch. Finally, after years of observing, I had actually seen all 110 Messier objects in a single night! But, would M 30 be visible in the 11 x 80's? Only more waiting would tell. After only a few minutes I suspected it in the binoculars, al-

though I assumed it was visible due more to wishful thinking than anything else. But finally, at about 5:16 AM, I became convinced I could see it with great difficulty, about 20-30% of the time, by putting the field of view slightly in motion. By 5:35 AM, it was more obvious, visible about 50-70% of the time, just before the field started to turn blue with twilight. So not only had I seen 110 Messier objects in a single night, but I had done it with a pair of 11 x 80 binoculars!

We stayed up a little while longer, packing much of our observing gear away, and finishing off the check-off sheet that A. J. Crayon had provided and turning it in to him. After a few hours sleep, and a stop at a diner in Arizona City, I made an uneventful (but long) trip back to Flagstaff.

A. J. later posted a summary of this event (see <http://www.seds.org/messier/xtra/marathon/az01res.txt>), partially based on the check-off sheets. People had attended the event not just from all over Arizona, but all over the western U. S. and even as far away as Ohio and Ontario, Canada. He was quite surprised to find that with 91 people attending using 79 telescopes, fully 25 people managed to observe all 110 objects! 20 more found more than 100 objects, and 12 others made reports of over 40 objects observed. The results are all the more impressive when one realizes that before 2001 only four people had reported observing 110 objects in a single night (see <http://www.seds.org/messier/xtra/marathon/hall.html>).

Some final miscellaneous comments on doing a Messier marathon may be in order here. On the "Arizona observing" e-mail list, some have raised the issue of the best possible date for such an activity. With the 11 x 80 binoculars, M 30 was about as equally difficult as M 74 (or at best maybe only slightly easier). So there is no obvious indication any earlier or later date would be better with that aperture. In Bill's 10-inch however, M 30 seemed more obvious. So with larger (and more likely used!) apertures, an earlier date than March 24/25 might be better in order to see M 74. At this site, M 30 was also in the light pollution glow from Tucson, so the sky was a little brighter there than at other locations near the horizon. Therefore at other sites with equally dark eastern and western horizons an earlier date might also be best.

Another interesting point is that the visibility of both M 74 and M 30 improved quite a bit with time. For M 74 the battle is between the lowering elevation and the darkening sky (but only to a point due to the bright zodiacal light there). I first thought I saw it at 7:51 PM, but saw it best about 8:15. For M 30, the battle is of course the opposite. As it rises it becomes more easily visible, but the sky is brightening too. As described above I first thought I saw it about 5:05 AM, but considered it easiest in binoculars just before the sky started to turn blue, about 5:35.

Regarding the search sequence used for finding

the Messier objects, pretty much all of the search sequences (e.g. I have checked the one John Kerns and I published in *Deep Sky Monthly* _ in March, 1982, H. Pennington's order in his Messier Marathon book, A. J. Crayon's list, and a listing in the Coconino Astronomical Society newsletter) seemed to be "out of whack" for the latitude of the site. Brian Skiff has also independently noted this problem. Several times during the night, and in particular when it came time to observe the southern Milky Way objects in the morning, it was clear that a number of objects were fairly well up already for viewing in the south. Yet the search sequences suggested observing some northern object either not up or just clearing the horizon. Developing custom search sequences based on latitude will improve the efficiency of observing for slower or less experienced observers, thus increasing the total number of objects observed. For this the set and rise times, as well as the usual "lessons learned" about Messier marathons (e.g. observing groups of objects together), all need taken into account. Still, there could be little argument with what objects had to be observed right at the start and end of the night. So the search sequence probably would not make much practical difference on the total number of objects an experienced observer sees, just the efficiency with which they're observed.

Finally, and most importantly regarding the success of a marathon, it seems to me that one of the primary keys to observing the difficult evening and morning objects is to not only have a low east and west horizon, but also a very low humidity (e.g. desert) site. For me this made it much easier to see objects close to the horizon than in comparison to other sites where I regularly observed in the past in Ohio, Virginia, and other eastern states. While looking for M 30 in the 11 x 80's and waiting (seemingly forever, but actually for only 25 minutes after seeing M 73) for it to clear the horizon and get up several degrees into the sky, I noticed that 6th and 7th magnitude stars could be seen only 2 degrees or so above the (slightly raised) horizon.

In any case, as a summary and with some hindsight, it was impressive to be part of such an event, where it was demonstrated that under very good conditions, a large number of people were able to complete the 110 object Messier Marathon. I had also finally achieved that goal myself, even using binoculars rather than a telescope! But perhaps just as, if not more importantly, I have to say it was a superb night to be observing, with warmer weather than we've been having at night in Flagstaff, from a good observing site with fine transparent skies, and with lots of wonderful folks present.

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2001 NOVAC Messier Marathon Report

Elizabeth Warner

First, congratulations to all who participated!

As this is the first time I've coordinated a Messier Marathon, I'm not entirely sure what to write about. So instead here are some snippets from the observer's reports. The full reports can be found on the NOVAC website at <http://novac.com/mm.html>. As you read through these snippets, I want you to remember the purpose of the Messier Marathon, and actually Bob Stewart stated it quite eloquently in one of his posts! So next year, I encourage all the rest of us to at least bag some good stories!

(Bob Stewart) Look here you all: This is supposed to be a night of fun! If all we bag are good stories then it is a success (a dim fuzzy or two would not hurt). Perhaps the dimmest fuzzy seen thru clouds. Lets just have some fun!

(J. Bein) Well I wasn't planning on doing a marathon last night [3/18], but with the weather forecast looking so dismal I decided to head up to Savage at the last minute. I arrived just before 7:00 and set up like I was pit stopping a car in the Indy 500. ... I packed it in at 5:30 with a total of 107/110. A new personal best. I hear my pillow calling me so I gotta go.

(Kim Bieler) I started in on my Messier list, for practice. Managed to find 29 objects in 3 hours, which I was pretty chuffed about, but I think I'll have to work a lot faster to make a decent marathon showing....It wasn't particularly cold, but do I get points for driving 50 miles each way for the sake of the stars?

(J. Bein & Craig Tupper) The Ironman Messier Marathon: {Eliz's note: Their title says it all!}

Last night [3/22] Craig Tupper and I were on a mission from God to score a perfect 110 Messier Marathon. ... The site had 8-10 inches of snow on the ground and the wind was a steady 20-30 mph with gusts of 50 to 60 mph. The temperature was 38. ... I used about an hour of my time to erect a snow block wall between my scope and the howling wind out of the West. ... As the sky began to lighten we detected a

Club Member	Number Bagged	Location	Date
Jonathan Bein	107/110	Savage	3/18
Kim Bieler	29/110	MG	3/19
Jonathan Bein	106/110	GWNF	3/22
Craig Tupper	106/110	GWNF	3/22
Donna Blosser	54/110	MG	3/23
Alan Figgatt	87/110	MG	3/23
Bob Traube	25/110	Crockett	3/23
Robert Stewart	78/110	MG	3/23
Jonathan Bein	109/110	Savage	3/25
Craig Tupper	109/110	Savage	3/25
Brent Archinal	110/110	Arizona	3/24

cloudy haze up to about 15 degrees in the East. M30 eluded us and we ended with 106/110 very hard earned Messiers.

(Bob Stewart) What a night [3/23]. This being my first "official" marathon I feel good about bagging 78 objects. I did not even try for M77, and M74(along with 7 other FAINT fuzzies) I marked as "averted imagination." ... Next year, with a bit more planning I hope to knock off a few more. It was GREAT fun!

(Bob Traube) I got a start on my first marathon this year despite years of wishin and hoping. I believe it was on March 23 at Crockett. After a late start, and an early end (about 8:30 to midnite) I saw 25 objects. This includes two of the three galaxies in Leo (M105, M95 and M96) that I couldn't differentiate. I suppose technically I shouldn't get credit for any of them. That makes my official total of 23. Far from the very impressive totals reported by NOVAC members in earlier posts, but I had fun!

(Donna Blosser) I started around 7:30 Fri. evening and stayed with it until around 4:00 Sat. morning out long enough to catch the upper objects in Sag. This was a first Marathon for me and it was a lot of fun. I actually saw a lot of M's that were new to me because I just hadn't tried to track them down before. The Marathon

got me organized. Can't wait to try it again.

(Alan Figgatt) The short story: Last night at Mickie, March 23-24, 2001, I managed to bag 87 out of 110 Messiers in a marathon with my TV-85! Got all of the first 87 Messiers on the suggested marathon order list, from M77 & M74 to M6 & M7, but due to weariness and increasing haziness called it a night around 3:30 AM.

Craig "Never say die" Tupper and Jonathan "Stubborn as a mule" Bein made one final attempt at a marathon last night [3/26]. Early evening breezes gave way to a calm, clear sky and temperatures between 12 and 15 degrees. We found the first ten objects from the side of Mt. Weather rd. near Heart Trouble La. We then moved to Savage Farm and worked through the remaining objects before taking a break at 11:30. At 2:30 it was back out into the cold and after the easier objects in Lyra, Cygnus, Sagitta, Scutum, and the top of Sagittarius, we struggled through the tough objects near the glow in the East. Craig had everything but M30 by about 3:50 and I was caught up at 4:05. Unfortunately neither of us could bag M30 before we were overcome by the sunrise. I gave up at 5:20. 109/110. Next try in 2003.

Crockett Park Observing Schedule, May-June 2001

Below are listed the coordinators and backup coordinators for NOVAC's scheduled observing sessions at C.M. Crockett Park. For full details about observing at Crockett Park, see the club webpage or your Membership Guide. To volunteer as observing coordinator, please contact Tilly Smith (smithwt@navsea.navy.mil).

Date	Primary Observing Coordinator	Phone	Secondary Observing Coordinator	Phone
May 18	TBD	-	TBD	-
May 19	Allan Mayer	703-403-0926	TBD	-
May 25	TBD	-	TBD	-
May 26	TBD	-	TBD	-
June 15	TBD	-	TBD	-
June 16	Allan Mayer	703-403-0926	TBD	-
June 22	TBD	-	TBD	-
June 23	TBD	-	TBD	-
July 13	TBD	-	TBD	-
July 14	TBD	-	TBD	-

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.

Principle Club Observing Nights

May 18,19, 25,26

Jun 15,16, 22,23

Jupiter Eclipse Events on Principle Club Observing Nights

None

The Sun

May 13 rises at 5:58 AM, sets at 8:12 PM

Jun 10 will rise at 5:43 AM, will set at 8:33 PM

Jul 8 will rise at 5:51 AM, will set at 8:36 PM

The Moon

May 15 Last Quarter

May 22 New Moon

May 29 First Quarter

Jun 5 Full Moon

Jun 13 Last Quarter

Jun 21 New Moon

Jun 27 First Quarter

Jul 5 Full Moon

Events

May 22 Mercury at Greatest Elong: 22.4° E (from Espenak)

May 25 Saturn-Sun Conjunction (from Espenak)

Jun 8 Venus at Greatest Elong: 45.8° W (from Espenak)

Jun 13 Mars at Opposition (from Espenak)

Jun 14 Jupiter-Sun Conjunction (from Espenak)

Jun 16 Mercury at Inferior Conjunction (from Espenak)

Jun 21 Summer Solstice (from Espenak)

Jun 21 Total Solar Eclipse; mag=1.047 (from Espenak)

Jul 5 Partial Lunar Eclipse; mag=0.487 (from Espenak)

The Planets

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

(Mag = apparent magnitude, Diam = apparent equatorial angular diameter)

May 13	Rises	Transits	Sets	Mag	Diam	Notes
Mercury	6:56 AM	2:27 PM	9:59 PM	-0.3	6.7"	WNW, 18*
Venus	4:06 AM	10:21 AM	4:36 PM	-4.5	33.2"	
Mars	11:00 PM	3:39 AM	8:15 AM	-1.5	16.4"	
Jupiter	7:23 AM	2:43 PM	10:02 PM	-2.0	32.8"	WNW, 19*
Saturn	6:40 AM	1:47 PM	8:53 PM	2.3	16.4"	WNW, 7*
Jun 10	Rises	Transits	Sets	Mag	Diam	Notes
Mercury	6:30 AM	1:45 PM	9:00 PM	4.1	11.9"	WNW, 4*
Venus	3:26 AM	10:03 AM	4:40 PM	-4.3	23.0"	
Mars	8:53 PM	1:26 AM	5:55 AM	-2.3	20.4"	
Jupiter	5:58 AM	1:20 PM	8:42 PM	-1.8	32.2"	WNW, 1*
Saturn	5:02 AM	12:12 PM	7:21 PM	2.4	16.4"	W, 36*

References for Jeff Stetekluh's Observing Report

Sun and moon rise and set times, moon phases and Galilean moon events are calculated using my software that is based on algorithms from the book "Astronomical Algorithms" by Jean Meeus, 1991. This includes Bretagnon's and Franco's VSOP87 (the 1987 version of Variations Seculaires des Orbites Planetaires) planetary theory, the Chapront ELP-2000/82 (ELP means Ephemerides Lunaires Parisiennes, although this work is not an ephemeris (a list of calculated positions) but rather an analytic theory (a series of periodic terms)) lunar theory and Lieske's theory E2 and E2x3 of Jupiter's satellites. The Preliminary 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>)

Highlights of NOVAC Meetings

Renee Pleasant



January 10, 2001 NOVAC Annual Meeting

Meeting called to order at 7:35 by President Ed Karch, with approximately 21 members in attendance.

Pedro Martinez presented the treasurer's report. Items discussed that were not included in the budget: Hotline expenses, Web hosting for 2001.

Discussion then turned to increase in membership dues. Various dollar amounts were proposed as new amount for dues, it was pointed out that there has been no dues increase in 11 years. A suggestion was made for a newsletter only subscription.

Plans for the NOVA Star Party were then discussed, with the activity now being known as the **NOVAC Stargaze**. The upcoming **Club picnic** location was discussed, with Crockett Park being the likely location.

Webmaster Greg Peipol then gave a report on the change in web host for the NOVAC website. He outlined the number of hits, site format and invited volunteers to participate in the maintenance of the site.

Ed Witkowski was charged with formulating a formal agreement for observing at the location known casually as the Buffalo Ranch. The need for a Port-o-let was noted.

Ed Witkowski volunteered to run a beginner sky orientation when he is the observing supervisor at Crockett Park.

Alan Figgatt suggested an **announce only** list to keep NOVAC members more informed of upcoming events and to elicit more participation from members in club activities.

Meeting adjourned 9:30 p.m. Submitted by Renee Pleasant, Secretary.

January 14, 2001 NOVAC Membership Meeting

Meeting called to order at 7:00 p.m. by President Ed Karch.

Ed Witkowski gave a tour of the night sky.
Break.

Eric Smith of NASA Goddard, on NGST, Next Generation Space Telescope.

Meeting adjourned at 8:15 p.m.

February 7, 2001 NOVAC Board of Directors

Meeting called to order by President Ed Karch.

Joe Pierson gave Membership report and noted 20 new members and approximately 30 renewals as of 1/01/01.

Newsletter deadline was announced as 2/16/01 with updated format including membership information printed on the back of the newsletter with detailed listing mailed to new members upon joining and existing members periodically.

Discussion followed regarding speakers for upcoming General Membership meetings.

Discussion continued regarding increase in member dues.

Jeff Cook is continuing to organize the 9/22/01 **NOVAC Star Gaze**. Plans are being finalized for the **Club picnic** to be held 6/16/01 at Franklin Park.

Discussion regarding NOVAC announcement list continued.

Discussion regarding moving the Board of Directors meetings to 1st Tuesday at 7:00 p.m.

Steve LeBrenz working on organizing Metro Viewing arrangements, with a sign up sheet to be posted at the General Membership meeting.

March 6, 2001 Board of Directors Meeting

Meeting called to order by President Ed Karch. 9 members in attendance.

Ed Witkowski opened the meeting with a discussion on the importance of Public Outreach. Increase in awareness of light pollution cited as one benefit of continued public outreach programs. Discussion turned to continuing to find members willing to volunteer. It was noted that announcements of the public outreach sessions that are closest to the outreach date seem to garner the most volunteers. A suggestion was made to use the website to its best advantage for announcing public outreach, as was meeting the needs of groups requesting outreach by suggesting they attend already existing events such as regular observing sessions.

The scheduled speaker for the March general membership meeting will be Sean O'Brian, whose topic will be Planetarium Education. Pete Johnson volunteered to cover the topic of collimation at an upcoming meeting.

Elizabeth Warner continues to work on organizing the Messier Marathon.

The scheduled trip to Spruce Knob on March 23rd is being organized by Tom Dietz and will be weather permitting as snow is still on the ground from an earlier storm in March.

Meeting adjourned 8:50 p.m. Submitted by Renee Pleasant, Secretary.

February 11, 2001 NOVAC Membership Meeting

President Ed Karch opened the meeting at 7:00 p.m.

Announcements included the dues increase to be voted on at the March membership meeting. Items upcoming on the NOVAC calendar include the next Board meeting to be held March 6, 2001, April 28, 2001 Astronomy Day at Crockett Park, Club Picnic to be held June 16, 2001 at Franklin Park and the NOVAC Star Gaze scheduled for September 22, 2001.

Steve LeBrenz announced the Metro Viewing Program. MVP will focus on arranging viewing sites closer in to the Metropolitan area.

The various special interest groups now have sign up sheets at the information table in the back of the Hall near the entrance. The ATM group will be meeting at Ed Witkowski's home.
Break.

Speaker Bob Gent, NOVAC member and IDA Public Relations Officer, on Astronomy and the Astronomical League.

Submitted by Renee Pleasant, Secretary.

Thanks to Ed Karch for supplying notes in my absence.

March 11, 2001 NOVAC Membership Meeting

Meeting called to order at 7:15 by President Ed Karch.

Increase in dues vote was held, with motion passing to increase dues to \$25 per person, \$5 for each additional person.

Ed Karch stated that if the dues increase is burdensome then please apply to the board for a discount.

Board meetings are moved to Tuesdays, although the newsletter indicated they were still on Wednesdays.

Elizabeth Warner gave a summary of Messier Marathon options. Reminder that the checklist is in the newsletter and that other nights are available for observing if you cannot observe on March 24, 2001.

Tom Dietz gives an update on the planned Spruce Knob observing trip planned for March 23, 2001. Trips will be planned once a month on the weekend nearest the new moon, weather permitting. No planned trips in June and September.

Upcoming activities are the observing session planned April 2, 2001, for Smithsonian Magazine sales associates, planned observing of around 1 hour.

April 28, 2001 Astronomy Day at Crockett Park. June 16, 2001 Club picnic at Franklin Park. September 22, 2001 NOVAC Star Gaze at Franklin Park.

Pete Johnson gave a description of the lenses

(Continued on page 11)

(Continued from page 10)

Meeting Highlights

purchased for the ATM and invited interested members to attend a meeting.

Ed Witkowski updated members on current public outreach plans and invited those wanting public outreach to join club members at Mickie Gordon Park on an observing night. Those wishing to sign up for Earth Day should see Ed. Announcements will be made on the NOVAC list regarding upcoming events. No further outreach is scheduled until May.

A new children's program is to be organized by Mrs. Witkowski and will have a quarterly theme. July's theme will be the Moon.

Break.

Sean O'Brian with a presentation on Observatory Educational outreach. He demonstrated the scale of the Universe with members of the audience.

Meeting adjourned at 9:00 p.m.

New Members - February 21 through April 23

Joe Pierson

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WELCOME!

Upcoming NOVAC Meeting Programs

Sean O'Brien

May 13

Telescope Collimation

Pete Johnson

Pete will demonstrate how to get your optics aligned to get the best possible images out of your equipment.

June 10

TBD

For more information, watch the club website at www.novac.com as the date approaches.

PLEASE NOTE: the schedule of speakers is subject to change. Please check at <http://www.novac.com/meeting.html>

for the latest info prior to the meeting.

What's YOUR interest? Let sean.o'brien@nasm.si.edu know.

Come share and learn about YOUR favorite topic!

National Capital Astronomers Meetings

Elliott Fein

Saturday, May 5, 7:30 P.M. - Dr. Kirk Borne will present the featured talk for the May 5 meeting of National Capital Astronomers, "Scientific Data Mining with the National Virtual Observatory." The meeting will be held in the Lipsett Amphitheater in Building 10 (Clinical Center) of the National Institutes of Health in Bethesda.

Synopsis: The astronomical community is about to become the beneficiary of huge multi-terabyte databases from a host of surveys. The rich and diverse information content within this "virtual sky" and the array of results to be derived therefrom will far exceed the clearly demonstrable results from the first Palomar Observatory Sky Survey (POSS), whose omnipresence in astronomy libraries, departments, and observatories is undoubtedly one of the great scientific legacies from the mid-20th century. The new digital surveys have the potential of exceeding the scientific usefulness of the POSS by orders of magnitude! To enable this to happen, the astronomical community is embarking on an ambitious endeavor, the creation of a National Virtual Observatory (NVO). This will in fact develop into a Global Virtual Observatory. To facilitate the new type of science enabled by the NVO, new techniques in data mining and knowledge discovery in large databases must be developed and deployed, and the next generation of astronomers must be trained in these techniques. This activity will benefit greatly from developments in the fields of information technology, computer science, and statistics. Aspects of the NVO initiative, including sample science user scenarios and user requirements will be presented. The value of scientific data mining and some early test case results will be discussed in the context of the speaker's research interests in colliding and merging galaxies.

Saturday, June 2, 7:30 P.M. Speaker has not yet been scheduled. See <http://www.capitalastronomers.org/> for information as the date approaches.

NCA has regular monthly meeting September through June on the first Saturday of the month (unless it is a holiday weekend like September 2 is this year) at 7:30PM. at the Clinical Building in the Lipsett auditorium at the National Institutes of Health in Bethesda, Montgomery County, Maryland, just a little north of Washington, D.C. You can get to their meeting by exiting at the Bethesda Medical Center stop on the Red Line of the Metro.

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Einstein Planetarium Public Observing Nights 2001

Sky Meadows State Park, near Paris, Virginia

Sean O'Brien

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.

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 \$2 parking fee per car. Please cover flashlights with a red filter or a brown paper bag. Dress warmly. In case of clouds or rain, a park ranger will lead a short alternate program.

Observers with telescopes are most welcome. These programs are enjoyable. Kathy Budnie works most of these programs. She is a wonderful ranger to work with.

Sky Meadows State Park is at the the foot of the eastern side of the Blue Ridge. Remember, telescope volunteers don't pay the \$2 parking fee, and get to stay until 1am. Some nights are before New Moon, others have a waxing crescent Moon. We can park in the field behind the visitor center house. We observe from the "backyard". More info & reminders as these dates approach.

Date

Comments

Saturday, May 19	No Moon (3 days before New).
Saturday, June 23	16th is NOVAC picnic, Franklin Park. 2 day old Moon.
Saturday, July 14	No Moon (6 days before New, Moonrise 1:40 am for DC).
Saturday, Aug. 11	Moon rise 12:11 am (for DC).
Saturday, Sept. 15	No Moon (2 days before New).
Saturday, Oct. 20	4 day old Moon, sets 9:11 pm (for DC).
Saturday, Nov. 17	Eastern Standard Time. 2 day old Moon. Leonid meteor shower (storm?) peaks 5 am 11/18, may catch some during program. More meteors perhaps during observing time, 11 pm-1 am.

Regional Star Party Season 2001

Laquetta Karch

If you haven't been to a star party yet, you can't go wrong with one of these. Consult *Astronomy* and *Sky and Telescope* for a more comprehensive list.

<u>Date(s)</u>	<u>Name</u>	<u>Description</u>
May 5	Northeast Astronomy Forum & Telescope Show (Suffern, NY)	http://www.rocklandastronomy.com
May 25-28	Cherry Springs No-Frills Star Party, PA	Outstandingly dark skies http://www.astrohbg.org
June 14-17	Laurel Highlands Star Cruise (Hazleton, WV)	John Holtz (724) 352-7596 http://www.members.home.net/lhstarcruise/
June 22-24	Mason Dixon Star Party (York, PA)	A popular mid-summer party http://home1.gte.net/dmdewey/mdsp.html
July 25-28	ALCON 2001 (in Maryland)	Astronomy League's annual convention http://alcon2001.homestead.com/alcon2001.html
Aug 17-18	Stellafane Convention (VT)	Amateur telescope making's premier event on the east coast http://www.stellafane.com
Sept. 13-16	Delmarva Star Gazers 6 th annual No-Frills Star Party	Tuckahoe State Park, MD. http://www.delmarvastargazers.org
Sept. 14-16	Black Forest Star Party (Cherry Springs, PA)	Outstandingly dark skies http://www.bfsp.org/starparty/
Oct. 12-14	Stalla Della Valley XV (PA)	Bucks-Mont. Astronomical Assn http://bmaa.freeyellow.com
Oct. 16-22	Mid-Atlantic Star Party (NC)	http://www.MASP.org
Oct. 19-21	Blackwater Falls Astronomy Weekend (WV)	No reservations, no charge. See web site for accommodations. http://www.kvas.org

Upcoming Events

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
MAY	29	30	1 Mars Rises 2343 EDT	2	3	4	5 •NCA Meeting
	6	7 FULL MOON	8 •Board Meeting (special date)	9	10	11	12
	13 •General Meeting 7 pm @ GMU	14	15 LAST QUARTER Mars Rises 2253 EDT	16	17	18 •Observing at all sites	19 •Observing at all sites
	20 •Observing at MG/ Savage	21	22 NEW MOON	23	24	25 •Observing at MG/ Savage	26 •Observing at MG/ Savage
	27 •Observing at MG/ Savage	28	29 FIRST QUARTER	30 Mars Rises 2148 EDT	31	1	2 •NCA Meeting
JUNE	3	4	5 FULL MOON •Board Meeting	6	7	8	9
	10 •General Meeting 7 pm @ GMU	11	12	13 LAST QUARTER • Mars at opposition	14	15 •Observing at MG/ Savage Mars Rises 2027 EDT	16 •NOVAC Picnic @ Franklin Park
	17 LAST QUARTER •Observing at MG/ Savage	18	19	20	21 NEW MOON • Summer Solstice • Mars at closest approach to Earth	22 •Observing at all sites	23 •Observing at all sites
	24 •Observing at MG/ Savage	25	26	27	28	29	30 Mars Rises 1909 EDT

“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 three observing sites away from city lights

Monthly Meetings

Monthly meetings are held at 7 p.m. on the second Sunday of each month in the Lecture Hall 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 upcoming 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.

Four high quality telescopes

NOVAC members may borrow one of the clubs four telescopes at no charge. Members may choose from among three 6” reflectors of different focal lengths and one 10” f/6 reflector. Also available for loan is a 7x50 binocular.

Large club library

NOVAC maintains a well stocked library in the Lecture Hall at GMU. At a monthly meeting, club members may check out books and observing guides and use them until the next meeting.

Club website

Up to date information about club events and activities is maintained on the club website at www.novac.com.

Private e-mail listserve

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 about these benefits!

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 Joe Pierson
15091 Jarrell Place
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jmpierson@home.com**

All notices of change of address should be sent to Joe Pierson. 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, **(The deadline for submissions is three weeks in advance of publication, e.g., June 8 for the July/August newsletter.**

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Inside This Issue:

New Club Scope Report <i>John Nusbaum</i>	1
President's Message <i>Ed Karch</i>	1
Adventures In Telescope Building <i>Laquetta Karch</i>	1
Starting Out, Write <i>Rob Lentini</i>	2
Jumping Into Mirror Making <i>Michael Mills</i>	3
Sweet Sixteen <i>John Avellone</i>	5
A Successful Messier Marathon <i>Brent Archinal</i>	6
2001 NOVAC Messier Marathon Report <i>Elizabeth Warner</i>	8
Crockett Park Observing Schedule	9
Jeff's Observing Report <i>Jeff Stetkluh</i>	9
Meeting Highlights <i>Renee Pleasant</i>	10
New Members <i>Joe Pierson</i>	11
Upcoming Meetings <i>Sean O'Brien and Elliot Fein</i>	12
Einstein Planetarium Public Observing Nights <i>Sean O'Brien</i>	13
Regional Star Party Season 2001 <i>Laquetta Karch</i>	13
Calendar	14



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