

NOVAC

THE NEWSLETTER OF THE NORTHERN VIRGINIA ASTRONOMY CLUB

NO. 131 • VOL. 28 • SEPTEMBER/OCTOBER 2007

The NOVAC Roboscope *Past, Present and Future*

by Craig Tupper

In November 2002, following an enthusiastic discussion on the NOVAC email list, Pete Johnson and I submitted a proposal to the NOVAC board to build a robotic observatory. The observatory would be available to all club members, enabling them to take CCD images from home, using only a web browser. The observatory would be located in West Virginia, and would be available on any clear night. Although almost none of the hardware or software was in hand, our hope was to have a completed system deployed within a year.

Ah, the best laid plans. Today, after thousands of hours of volunteer work by numerous contributors, thousands of dollars, and many hardware failures and upgrades, we are tantalizingly close to the goal. With all initial optimism beaten

continued on page 6



MESSAGE FROM THE PRESIDENT

by Phil Wherry

I recently attended an event at George Mason University in my official capacity as NOVAC's president. GMU's College of Science was holding a fundraising event for, among other things, their new observatory—and I was one of the people who had the opportunity to meet and greet some of the potential donors.

As many NOVAC members already know, the school is installing a 32-inch reflecting telescope (a Ritchey-Chrétien design) in its observatory dome. The telescope hasn't been delivered yet, so I spent much of my time talking with potential donors about the capabilities of such an instrument while showing them views through GMU's existing 12-inch Schmidt-Cassegrain telescope.

Before I continue, please allow me a digression: the university isn't just seeking huge contributions from the very wealthy to fund its observatory program; even modest gifts are meaningful. If the program aligns with your personal philanthropic interests and plans, I'd urge you to contact Dr. Harold Geller (hgeller@physics.gmu.edu) or the College of Science's development officer, Tere Linehan (tlinehan@gmu.edu). GMU has been a great friend to NOVAC over the years, and I hope that other members will join me in supporting their program.

The questions that people asked me were very interesting. One of the most common was about light pollution: wouldn't the sky glow from the surrounding area interfere with the work of the observatory?

continued on page 2



OFFICERS 2007

President

Phil Wherry president@novac.com

Vice President

Ed Witkowski vp@novac.com

Secretary

Yvette Johnson secretary@novac.com

Treasurer

Kent Allingham treasurer@novac.com

Trustees

Alan Figgatt 703-860-8239
afiggatt@erols.com

Harold Geller

Lyle Mars jonmars@cox.net

Rob McKinney RobCMcKinney@aol.com

John Stewart thestewarts@erols.com

Directors

Membership Director

Kent Allingham kent.allingham@
verizonbusiness.com

Outreach POC

John Stewart thestewarts@erols.com

Important NOVAC Numbers

Blue Ridge Regional Park 703-729-0596
(formerly Savage) wod@nvrpa.org

Mason Neck SP 703-550-9960

Crockett Park 540-788-4867

NOVAC Web Site

www.novac.com

Webmaster

Matt Roper webmaster@novac.com

NOVAC Newsletter

Editor

Tim Nicholson newsletters@novac.com

Design & layout

Deb Stover deb@stoverstudio.com

President's message, from page 1

I was pleased, of course, to see that awareness of the issue was so widespread, of course; perhaps this bodes well for more responsible lighting in the future (though I suspect that rising energy costs may ultimately play an equally large role in making the right things happen).

I explained to the people who asked that light pollution was a big issue and frustration for astronomers everywhere—particularly the recreational astronomer doing visual observing. All things being equal, darker skies are always better skies. But with that said, it's possible to do real science and meaningful public outreach even from a light-polluted site in Fairfax. The large aperture of the telescope they're installing will help, of course. And technology has changed the way that a lot of observing is done, making it possible to see and study objects that are masked by light pollution or just too faint to see.

After repeating this explanation quite a few times, it got me to thinking about how our hobby has changed over the years.

For one thing, the quality and capability of inexpensive equipment has gotten a lot better. The popularity of the Dobsonian mount has made it possible to buy a good starter telescope for little more than the horrible "department store" telescopes that have frustrated so many beginners. The same mount puts large-aperture telescopes within reach of the more serious observer. Computerized "go-to" object location systems have been around for a while now, and their impact on the hobby has been largely positive.

Digital cameras and inexpensive laptop computers have made imaging a much easier and pleasant task. And while still expensive devices, the capabilities of astronomical CCD cameras sold to hobbyists now are well beyond those available to even large professional observatories not too long ago.

The Internet has had a huge impact on our hobby, too. While it's essential to large efforts like NOVAC's experimental robotic telescope (described elsewhere

in this issue), it's also been a contributing factor to the growth of our club. With a simple post to our mailing list, even the most inexperienced and casual observer is likely to be able to find another person or group with whom to observe on just about any clear night. The Web site allows us to share pictures. And some of our members are using the Internet to collaborate with professional astronomers: asteroid searches, grazing occultations, and the study of gamma-ray bursts are but a few of the ways we're making use of this amazing tool.

So, as I explained to the prospective donors at GMU, I think we're really enjoying something of a golden age for astronomy. Light pollution has gotten worse, true, and we need to keep up our work to limit the damage being done to the night sky. But the tools we use have gotten better, and a lot of them are less expensive now than they once were. And we can share our questions and ideas more easily than ever.

So, as the weather turns cooler and skies become less hazy, may I suggest that everyone take the time to go outside and look up? Break out the binoculars or a telescope and spend a little time learning more about the sky. Then, if you have the time and are so inclined, share what you've learned (or the questions you have) with the many helpful and knowledgeable members of the club.

And, if you're like me, you may wind up realizing that there's never been a better time to be an amateur astronomer! *

Next NOVAC Meeting:

November 11, 2007

George Mason University

7 PM

*Gravity in the
Outer Solar System*

Dr. John Wallin

More info at

www.novac.com

Almost Heaven Star Party 2007

by Tim Nicholson

This article is a compilation of excerpts from three reviews the NOVAC Newsletter received. Contributing are: John McDonnell, Frank Strock and Jim Richberg. We start out with Jim's description of the site.

The third annual "Almost Heaven Star Party" (9-12 August) was once again hosted by NOVAC and VOLT at The Mountain Institute (TMI), located near Spruce Knob, West Virginia. Spruce Knob is reputed to be one of— if not THE—darkest observing site east of the Mississippi, as well as a prime spot for hiking, caving, birding, and a host of outdoor activities. Look at one of those "night face of North America" enhanced satellite images such as you can find on the IDA web site, and see the dark "hole" west of Washington/Baltimore. That's the area that contains Spruce Knob and Green Bank, West Virginia, home to the National Radio Astronomy Observatory (NRAO).

John McDonnell was a staff volunteer at the event. He starts his review with the first night the staff was there, "The first night that the staff was there, Wednesday night was an excellent viewing. On the first night in my one and one half month old 12 in. LX200R I saw every object in the "tonight's best list" for that Wednesday; it must have been 30 to 35 objects. The object that I remember most was M13; all I could say was WOW. On Saturday night I saw M13 through a 25 inch DOB and I thought, "WOW that is what I have been missing in my 12 in. scope." The list included a few planets, a number of Messier objects plus some open and globular objects. I had three new objects that I had never viewed in my own scope before; these objects were Uranus, Neptune and Pluto. The weather was wonderful that first night. I was hoping that every night would be the same. I could see stars from horizon to horizon, there was no ambient light and there was no reflection of light on the few clouds that did show up the first night. I could see the Milky Way from horizon to horizon. I was amazed at how dark that it was."



John continues with some news from Thursday, "On Thursday I went on the NRAO tour. This was an excellent tour. It took us about an hour and half to get there, and the tour of the facility that lasted about an hour. There is also an excellent museum there with a lot of interesting interactive. I was amazed at how big the 440 ft radio dish was. They also had on display a scale model of the solar system using flags on flag poles. The flag for Pluto was flying at half staff"

Thursday night and Friday were somewhat of a washout. Jim Richberg describes it this way, "The star party opened on Thursday, and attendees arrived under generally hazy or overcast skies. As night

fell, the clouds began to thicken, and thunder could be heard in the distance. As the rain clouds approached our location, many participants sat on the deck outside the TMI yurt and enjoyed the celestial sound and light show featuring significant cloud-to-cloud lightning strikes. The two rain storms we had precluded any observing on Thursday evening, but washed the skies clean for Friday. Although Friday was clear during the day—and I spent much of it hosting solar observing—the clouds returned around sunset. In fact, it was ~90% overcast until midnight, which made chasing views through 'sucker holes' a challenge. The skies cleared a couple

Continued on p. 4

Almost Heaven Star Party, from page 3

of times during the night, including from 0430-0500.”

Saturday night however was spectacular according to John once again, “On Saturday night, the last night of AHSP, the weather was perfect. I was able to look at 53 Messier objects. I looked at M2 through M35, then M69-M78, M57 plus 8 others whose numbers I don’t remember.”

And from Jim we hear, “Saturday night was an almost pristine evening. My Sky Quality Meter gave readings of 21.65—approximately Limiting Magnitude 6.5/Bortle 3 conditions—and the sky was dark enough that the few clouds that slid through during the first half of the night were black silhouettes rather than the light masses that many of us are accustomed to seeing under our light-polluted suburban skies.”

“The skies rapidly clouded over at about 0300 Sunday morning, which I took as a sign to stop observing and get a few hours of sleep, since we had to be off the

site by 1000 the next morning because of another incoming group scheduled to use TMI. However, the skies cleared again, and some of the more daring observers (or those willing to face long drives on no sleep!) continued to take advantage of these outstanding conditions.”

There was plenty to do during the day at TMI as well. In addition to the NRAO tour there was caving and hiking available. Many presentations were made as well. Both Jim and John had things to say about the activities.

“I went on the Summit hike on Saturday morning. It was a great hike; there were some wonderful views to be seen. I also listened to a number of the presentations that were given later in the day. The presentation that was given on the crater in the Chesapeake Bay was very interesting as was the presentation on the NASA GLAST mission.”

“The programs were well-attended. Having already done the Green Bank

National Radio Astronomy Observatory tour, I tried the caving outing instead, and had a blast. It was not technically challenging (a little climbing over rocks, and only one optional ‘wriggle through this tunnel on your belly’ spot), but instead involved walking a mile through an underground stream. TMI offers this to Eighth Grade students, so it should not be beyond the limits of virtually any AHSP attendee who doesn’t mind getting wet and muddy.”

The food at TMI received this accolade from Jim, “The meals provided by the TMI staff were excellent, as usual. My personal favorite was the burrito bar.”

Several vendors attended the event. Notable were Hands On Optics and AstroGizmos. Here is another quote from Jim Richburg, “There was good vendor participation at the event. I was especially impressed by the folks from AstroGizmos, who not only provided free satellite-based wireless internet access for all, but



who also showcased two homegrown products—a binocular viewing chair and a portable observing dome—that I think may be ‘best in class’ designs. A number of vendors provided door prizes and silent auction items, with attendees walking away with items as substantial as an 8 in. Meade reflector or an 80mm Celestron ED refractor.”

While attendance was near or over 200 people with over 100 scopes on the fields, Jim also had this to say about the crowd and the types of scopes seen, “I was struck by the number of families with children (in part because I was set up next to a three generation family), in contrast to the overwhelmingly middle-aged crowd I have seen at other star parties.” And, “Scopes of all varieties were represented on the

three viewing fields. I was impressed by the number of large Dobsonians—three 25 in. and three 24 in. scopes present. This is comparable to the amount of ‘big glass’ typically found at the Winter Star Party in Florida, an event which is triple the size of AHSP!”

In closing I’d like to quote Jim Richberg once again on this year’s AHSP: “I have attended all three Almost Heaven Star Parties. Each has been well-organized (superlative work by the staff of volunteers!), featured a rich menu of both food and events, but due to Mother Nature had been somewhat deficient in a key element—viewable skies—until this final night of the 2007 AHSP. In my mind, that night balanced the books for all three events! So let’s see you next year under the

stars at AHSP —or take advantage of one of the NOVAC weekends at TMI before then! You may be rewarded with the best viewing conditions you’ll find in the Eastern United States!” ★

I myself have only been to the 2006 AHSP and was astounded by how dark the skies are there and the wealth of activities and good food, not to mention the camaraderie of fellow amateurs. I was unable to attend this year but wish to thank everyone who contributed to this article, without your contributions this would have been an extremely difficult task to write up! Many thanks!

Tim Nicholson

*Photos courtesy of
Vincent Giaquinto*

MESSIER 22 (M22, NGC 6656) GLOBULAR CLUSTER IN SAGITTARIUS BY JETHRO BODINE



Taken: 10 Aug 2007

Location: C.M. Crockett Park, VA

Camera: Canon 30D (modified clear glass filter)

16 exposures totaling 47 minutes

- 11 exposures for 120 seconds at ISO 800
- 5 exposures for 300 seconds at ISO 800

Calibration images

- 11 darks (averaged)
- 11 flats (averaged)
- 11 bias (averaged)

Telescope: Celestron Schmidt-Cassegrain 9 1/4 in.

- 6.63 focal reducer

Filters: Hutech - IDAS Light Pollution Suppression (LPS) Filter

Guide scope: Meade - ETX-125AT - 5 in. Maksutov-Cassegrain

Guide camera: Meade - DSI (Deep Sky Imager)

Guiding software: K3CCDTools 3.4.7.1077

Mount: Losmandy - G-11 Equatorial Mount w/ Gemini GoTo System

Imaging software: ImagesPlus 3 Beta 5 (IP)

All images were calibrated using the dark, flat and bias frames. The 16 images were then aligned using 2 point reference to ensure alignment and rotation were accounted for. There did not appear to be any rotation due to a good polar alignment, but I always use two points out of routine. All 16 aligned images were then averaged; this kept me from over exposing the core while still capturing the fainter stars. I use a costume white balance, due to having the stock UV/IR filter in the camera removed, but still do a background neutralization to make a final adjustment to a neutral background using IP. Adjustments to the mid and white balance are then applied prior to doing the initial image stretch. Due to a small amp glow in the lower right corner, a Gaussian background compensation was used in this area to remove the remaining glow from the camera. I then ran a high/low pixel reduction to remove any remaining hot/cold pixels. Ten iterations of an adaptive Richardson-Lucy were run, followed by 5 iterations of a star reduction/smoothing algorithm that tighten up the stars. In the final step I made a slight increase in the saturation levels—I like a little richer color ★.

The NOVAC Roboscope from page 1

out of us, and our humor sometimes darker than our skies, we have continued to work. And we still think we will get there, and soon. Madness? Or dedication? You be the judge.

A few milestones: we started with just a Meade LX200 and an SBIB ST-7 CCD camera, neither of which are still with us. By May 2003, we were up and running in my Cheverly, Maryland back yard, with the first few users testing the web interface and imaging the mag 4 skies around my backyard trees. In October 2003, I got the basic observatory structure built, so I didn't have to set up the scope every night. A month later, it was motorized. In February 2004, we moved the structure to Pete's yard in Centreville, Virginia, where he could more easily work on automation, weather detection, etc. In August 2004, the telescope was also moved and placed inside the structure. In early 2005 our Meade LX200 mount failed for the third time, leading to replacement by a used Astro-Physics 600E mount. We also received a donation of an SBIG ST2000XCM color camera. In 2006, we replaced the old Schmidt-Cassegrain OTA with a new Meade LX200R "modified Ritchie-Chretien," which yields outstanding images. Unfortunately, a series of failures and issues kept us offline for most of the year.

In January 2007, Robo

came back online, and reliability and performance were good enough that we could finally consider moving the observatory to a remote location. We poured the pier at our new site in semi-dark Lovettsville, and hoped for steady progress. In May, we made the big move—scope and structure out to Lovettsville, and placed atop the pier. Unfortunately, we quickly hit a few more bumps, including problems with our mount, our A/C power, and our internet connection. So we have yet to open for business from our new location.

As I write this on October 2, internet connectivity has been re-established, but we had another mount failure (RA drive #2 burned up) which has the repair folks at Astro-Physics amazed. Parts are in the mail for their

diagnosis and repair. Best case, we could be operational in 4-6 weeks. No promises! But I don't see any reason why we shouldn't be up and running soon.

In addition to Pete and me, many others have helped with Robo over the years. Major contributions have been made by Bob Parks, Phil Wherry, Arlen Raasch, Chris Nowland, John Deriso, Mike Mills, and Bob Neff. Many others, too many to list, have contributed either time or money. I'd also like to thank the club and the Board for continuing to support the Project. Soon, I think, all the work on this ambitious project will be worth it. For more information, go to novac.com and click on "Robotic Telescope." ★



M31

"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.

Large club library

NOVAC maintains a well stocked library that members may borrow from by contacting John Deriso (olgazer@verizon.net). A full list of titles is available from the club website.

Private email listserv

Members keep up with current club information by subscribing to the NOVAC email list, without fear of flame wars or spam emails.

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

Subscriptions to *Sky & Telescope* and *Astronomy* magazines are offered to club members at a considerable discount. Contact Kent Allingham (see contact info at right).

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 \$30.00 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:

Kent Allingham
3510 Country Hill Drive
Fairfax, VA 22030
kent.allingham@verizonbusiness.com

Change of address

All notices of change of address should be sent to Kent Allingham. 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, Tim Nicholson, at newsletters@novac.com.

The deadline for submissions is two weeks in advance of publication: Wednesday, November 14 for the November/December 2007 newsletter.

© Copyright 2007, The Northern Virginia Astronomy Club. All rights reserved.

The NOVAC Newsletter may be reproduced with proper attribution.

Astronomical League

Tom Finkenbinder and Pete Keleher Receive AL Messier Observing Awards

by Laquetta Karch

Congratulations to two club members, Tom Finkenbinder and Peter Keleher who received their Messier observing award from the Astronomical League. The award, which consists of a numbered certificate and a pin, is given for observing all 110 Messier objects, logging the date, time, seeing conditions (seeing, transparency, etc), scope aperture/power, location and a note or drawing.

Pete observed and logged the objects between February 14, 2005 and April 21, 2007. He used the following equipment, all in manual mode: 15x50 Canon self-stabilizing binoculars, 4.5" Orion Starblast, 6" Hardin dob, 12" Starhopper dob, 8" Meade

LX5 and homemade 16" dob. He observed them from his home address, from Crockett State Park (VA), Spruce Knob (WV), Big Meadows (VA), Little Bennet State Park (MD), Spruce Knob (WV), North Carolina and Mexico.

Tom observed the objects between December 27, 2003 and July 8, 2007 using a Televue NP-127 APO, Universal Astronomics UniStar mount and tripod (manual). He observed the Messier objects from his home address, Big Meadow at Skyline Drive, VA, Spruce Knob, WV and Camp Highroad, VA.

If you are interested in getting this, or one of the other observing club awards

offered by the Astronomical League, go to <http://www.astroleague.org/observing.html> to see the complete list and award requirements. Even if you are not interested in completing the requirements for an award, the various lists can provide a good start to finding things to look at. To see the list of NOVAC club members who have received this, and other, AL observing awards, go to the NOVAC Website and select "Resources" The second link under that will be "Astronomical League" or, click on this link: <http://www.novac.com/resources/al/> ★

c/o Kent Allingham, Membership Director
3510 Country Hill Drive
Fairfax, VA 22030



Non-Profit Org.
US Postage Paid
Reston, VA
Permit No. 6595