

NOVAC

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Hunting for Difficult Objects

By Ralph Marple

I expect that everybody approaches a night of observing in a slightly different manner; however, I think we all discover that to get the most out of it, it's important to plan ahead. In this article I would like to share my approaches to finding really dim, obscure objects hiding in areas of the sky with no reference stars.

It took me quite a few years, but I worked my way through the Messier list and completed it several years ago using my 41/2" reflector on a Dobsonian mount with a little help from one of the club's 6" reflectors. Many of these object, after I "discovered" them for the first time, have been included in my repertoire so I can point them out to others.

After my 10" Dob became operational, I realized I needed new goals, so I started on the Herschel 400 list. Although most of the objects on this list are more challenging than those in Messier's list, there is a recurring problem-finding the really tough objects.

What makes an object really tough? There are two factors that contribute: The ease of finding the correct location and the ease of actually seeing the object.

However, the first, finding the correct location, is the can be the real challenge. Here are some definitions I invented to describe the difficulty of finding an object:

- * **Very easy:** The object's location is easy to find with the unaided eye and the object is visible in the finder scope (or unaided eyes).
- * **Easy:** The object's location is easy to find with the unaided eye and the object is readily visible in a low power scan.
- * **Moderately difficult:** You need to star hop to the location using the finder scope, but the object is readily visible with low power
- * **Difficult:** There isn't an easy star hop to the location, but the object is readily visible with low power.
- * **Really Tough:** There isn't an easy star hop to the location, you're not sure you're looking in the right spot, you need moderate power and averted vision to see it, and you're not sure if you see the object or imagining it.

(Continued on page 4)

MESSAGE FROM THE PRESIDENT

More Observing Sites

By Ed Karch

Parks? We don't need no stinkin' parks.

The members present at the December meeting all held up their hand when asked if they would pay another \$10 a year on their dues for leasing access to new site on private land. Two of the advanced observers understandably wanted a real dark site, but the rest wanted another "Mickie"-type site. Criteria preferred are: not too far to drive after work, freedom to use it when we want, set up next to your car, ability to stay overnight (camp), good horizons, and as dark as possible considering the other criteria. Two members volunteered to start the search. The board will be discussing this in detail, including how dues would be changed.

Meanwhile back at the ranch/farm. We have permission to use two private sites and possibly three by press time. These are landowners who welcome NOVAC to use their land for observing at no cost to the club. We marvel at their generosity and pledge to be thoughtful visitors.

The future of our darkness is constantly under attack from thoughtless spewing of unneeded light. As we search for new sites don't forget the other side of the fight. Make your neighborhood darker by fighting light pollution. ✨



NOVAC 2002 Annual Meeting

Tuesday, January 8

7:30 PM

Arlington Planetarium

Vega Bray and the 2001 Leonids

By Barry Wolfe

The Leonids of 2001 were spectacular from the dry, dark skies of southeastern Arizona. Peaking at more than 2000 per hour and having a two-hour window of 1000 per hour or greater made it the most spectacular and exciting meteor shower of my life.

The Trip to Vega-Bray

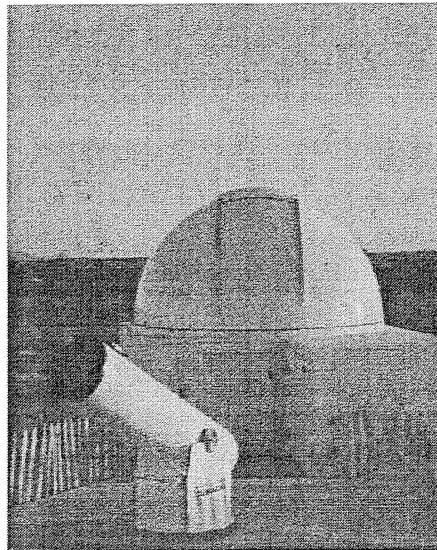
My adventure began last spring when I saw an ad in *The Reflector*, the quarterly publication of The Astronomical League, from a company called Skycamping Worldwide (www.skycamping.com) which organizes trips with astronomical folks in mind.

Upon visiting their website I discovered a planned 3-night, 4-day trip to Arizona for the Leonid meteor shower predicted for Saturday night, November 17-18. I signed up but, as it turned out, the trip was eventually cancelled due to insufficient interest. Nevertheless, as the trip was being cancelled, I asked to take over the Friday night (Nov. 16) reservation which had been made at the Vega-Bray Bed, Breakfast, and Observatory (www.communiverse.com/skywatcher; see *Sky and Telescope*, August, 1999 for a review), determined to go on my own to Arizona.

Inquiring with Vega-Bray I found, remarkably, that there was a room available for Saturday night and took it. After further inquiries I discovered that, although they were full on Thursday night, I could stay at a local motel (10 minutes away) and, for \$45, could spend the evening at Vega-Bray and use any of their telescopes. So I was set with three nights under dark Arizona skies with telescopes ranging from 8-inches to 18-inches at my command, and the prediction of 1500 meteors/hour for early (3 am) Sunday morning!

On Thursday, an 8:00 am flight out of Baltimore-Washington Airport got me into Phoenix by 11:00 and, in my rental car, into Tuscon, by 2:00 pm. Vega-Bray is 45 miles east of Tuscon and is situated 10 minutes out of the small town of Benson. After checking into Motel 8, I went over to Vega-Bray to see the facilities and determine which telescope I would use that evening.

The folks were very nice and the range of telescopes was outstanding. I chose an 18-inch JMI split ring reflector which is housed in a roll-off roof observatory which also houses two 12-inch Meade LX200s, an historical 14.5" Newtonian on a wooden German Equatorial Mount (with all-wooden gears), and an 8" f/7 homemade Newtonian scope optimized for planetary viewing. There were also 12 and 8-inch commercial dobsonians stacked against the wall. In a sepa-



The Meade 12.5" Dob poses with one of Vega-Bray's domed observatories

rate dome was a 20" f/10 Maksutov-Cassegrain made by Max Bray on a mammoth German Equatorial Mount; very impressive, but not something I felt comfortable piloting. In yet another dome was another 12-inch LX200 and, I discovered later, a very fine 10-inch truss-tube reflector on a Dobsonian mount. Additionally, on a large observing deck there were two pair of giant (110 mm and 150 mm) binoculars on permanent alt-az mounts. Thus, there was no shortage of equipment.

The First Night, a Disappointment

Although the beds were full at Vega-Bray that night, there only observers were myself, on the JMI, and an elderly couple on an LX200. The couple was being given a nice sky tour and an 'Astronomy 101' lecture by Mike, an astronomer at Kitt Peak who also sometimes gives sky tours at Vega-Bray. By 7:00 the sky was becoming very dark and the winter Milky Way began to shine brightly.

That evening proved to be, however, quite disappointing. The optics on the JMI seemed rather poor, and its design, which allows the whole top of the scope (with eyepiece and secondary mirror) to spin around so that the eyepiece is always at a convenient spot, made stable collimation essentially impossible. Mike confirmed my fears and I switched to the other 12-inch LX200. This scope was also in bad repair and I could not get sharp images due, I think, to the focusing mechanism being very sloppy.

In addition to the poorly maintained scopes, the walls of the roll-off observatory cut off any viewing below about 40 degrees from the southern horizon. Thus, I went to bed around midnight wondering if I had made a mistake in choosing to come to Vega-Bray.

The Second Night was Great

In spite of this, on Friday I moved into Vega-Bray for the next two nights. I met another 'resident astronomer' named Olivia, who was incredibly helpful and who put a finder scope on a 12-inch Meade Dobsonian (which also had a Telrad). She also had her husband repair a camera tracker for my use during the Leonids.

That evening, which was also crystal clear, I moved the 12-inch Dob out onto the observing deck and collimated it after dark. On the observing deck I met two newcomers, Will, a geologist from Texas A&M, and Simon, a Brit currently living in New York. Will and Simon became my observing partners for the next two nights. I borrowed the Herald-Bobroff AstroAtlas from the well-stocked library at Vega-Bray and, as the night got darker, began in Sculptor with the plan of moving south.

The telescope proved to be excellent, giving crisp, high-contrast images. Eddie Vega (Ed Vega's son) recommended that we also try the 10-inch truss-tube Dob that was made by a friend of his. So we set it up next to the 12-inch. This proved to be a marvelous choice as this telescope, too, had excellent optics. The 10-inch appeared to be about an f/4.5 and had a 2-inch focuser into which I put my 32 mm wide field Brandon eyepiece giving approximately 1.8 degrees of field. This allowed remarkably wonderful images of several large objects (double cluster, M31/32/110, Pleiades, Beehive, etc.).

With the 12-inch I found the edge-on galaxy NGC 253 which practically jumped out of the eyepiece and showed quite a lot of mottling and apparent dust lanes. Using a 14 mm Pentax, the bright galaxy spanned the entire field of view. Because of the southerly latitude, low humidity, and absence of (southerly) light pollution, we were able to move south to NGC 300 (large and faint) and NGC 55, another big edge-on that nearly filled the eyepiece. Both of these fine galaxies, being at nearly 40 degrees south latitude, are almost impossible to see from northern Virginia, but were both excellent objects from Vega-Bray.

Similarly, we were able to poke around in the Fornax Galaxy Cluster and find several faint fuzzies. As the night wore on, we alternated between northern showpieces like the Veil supernova remnant, globular clusters such as M15 and M2, Saturn, and Jupiter and several deep southern fuzzies and planetary nebulae. In particular, the Great Orion Nebula was spectacular with 6 stars visible in the trapezium, indicating good seeing and good optics

Clouds Threaten

Saturday evening began with some thin clouds making patches here and there, and a fairly heavy concentration of clouds in the western sky that seemed as if they were heading our way. Nevertheless, as the evening began to unfold, we reprised a number of the objects of the night before.

The western clouds seemed stalled or were moving northward. The satellite pictures showed the entire state to our west covered in clouds with the prediction that they would move into the Tuscon area before dawn.

At 10:30 an early, earth-grazer, apparent Leonid streaked from horizon to horizon. This stimulated us to give up the telescopes and lie back and just look up. It was mostly dim, fast Taurids at about 5-10 per hour for the next 90 minutes. But around midnight, the Leonids started to show themselves.

The Leonids

I had brought two old manual Pentax Spotmatic cameras and set one up on a stationary tripod and the other on a tracking camera mount. A roll of 36 exposure, ASA 1600 film mail-ordered from Adorama.com in New York was in each. The plan was to take 36 ten-minute exposures from midnight till dawn and this is fairly close to what was done.

By 1:00 am the sickle of Leo began to be visible above the eastern horizon and the rate of Leonids rose to more than 100/hour accordingly. By 2:00 the rate seemed to be more than 300/hour.

Lots of magnitude 4, 3, 2, and 1 meteors streaking the sky.

There were also several brighter ones at magnitude 0 and -1 and some real bright ones. A few of the brightest left smoking trails that were visible for more than a minute after the meteor. Most of these streaked 30 to 60 degrees across the sky before fading out or brightening to a burst.



Two bright Leonids streak through Orion

Everyone was very excited and we all agreed that even if it got no better than this, it was still spectacular and at least as good as 1998. The clouds to the west and north kept threatening and at times even covered the zenith. But the south remained clear. The clouds must have been in bands, as they seemed to come and go in the west. So we kept our eyes and cameras pointed towards Orion, Gemini, Canis Major, and Canis Minor.

After 2:00 the sky started exploding! For the next two hours the rate seemed to be at 1000 per hour or more. On many occasions two, three, or even four meteors would streak across the sky nearly simultaneously. This led to discussions as to why this might be and the consensus speculation seemed to be that these simultaneous meteors may have originally been a single particle that, over the years had broken up into smaller particles that travelled

together and thus, entered the atmosphere together. But, by-and-large, there seemed to be little time for discussing such things since the beauty and excitement of the shower as well as the need to change exposures on two cameras every ten minutes or so kept me busy.

The prediction that the shower would peak approximately at 3:10 seemed right on the mark. Several people reported estimates of 2000+/hour for the 20 to 30 minutes surrounding this time and, although I didn't count, it seemed like an excellent estimate to me. This translates to about one meteor every 2 seconds! In reality they seemed to come more in bunches with a dozen or more occurring within a 5 to 10 second window followed by a 10 second lull.

By 4:00 you could see the rate declining and it did so at a fairly regular pace till the sky began lightening slightly after 5:00. But even at that point, when several of us were standing, looking at the sky and marveling at what had just happened, the rate seemed to be in excess of 300/hour as every 10 seconds or so, another meteor would streak across the sky.

It seemed to me like the period just following a total eclipse of the sun. The excitement surrounding that stunning event makes one pay

almost no attention to the partial eclipse still in progress. Similarly, we had just been stunned by the shower of our lives!

As it turned out several frames on both cameras captured bright meteors. In a couple of pictures, I had two meteors. When I thought about it afterwards, it is clear that during

many of my exposures, there must have been dozens of meteors that crossed the sky in the field of the camera, but only the very brightest ones were recorded on the film. Some of these images are posted on my website <http://www.angelfire.com/stars2/bwolfe>.

After a shower, I said goodbye to our hosts, Ed and Cat Vega, and my observing buddies, Will and Simon, and jumped into my car to head back to Phoenix to catch a 2:00 pm flight to BWI. During the drive, I mulled over the past three nights and concluded that coming to Vega-Bray for the Leonids was a great choice. Relative to an east coast site, I gained an extra two hours after the 3:10 peak during which I probably saw nearly 2000 meteors. I also got some great telescope time with some very southerly objects not readily seen from home, had some great Mexican food, and got to meet and observe with some new friends. ✨

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(Continued from page 1)

Hunting...

Here are some examples:

The Orion Nebula (M42) and the Pleiades (M45) are very easy because you can see them with unaided eyes.

The Andromeda Galaxy (M31), once you know where to look, is very easy. It can be seen with unaided eyes from a moderately dark site like Mickie Gordon, but it sure doesn't look like the pictures!

I rate M32, a companion galaxy to M31, as easy. Its proximity to M31 makes it easy to find and it can be seen in 10x50 binoculars from a moderately dark site. However, it looks like a star at low magnification and when conditions are poor.

M110 is moderately difficult. Under very dark skies and with good transparency it can be seen with averted vision in 10x50 binoculars if you know what you're looking for and where to look. However, it's visible from Mickie Gordon in a small scope when the transparency is very good. I often use this object as a transparency test. Some nights at Mickie Gordon it's barely visible in my 10".

M40 is actually a difficult object, not because it's hard to see, but because it's not recognizable. It's a double star, and without accurate and detailed charts, you won't be sure you've found it.

In a small scope, M101 is really tough object. It's quite large and has a very low surface brightness. You need to be sure you're looking in the right place and the conditions have to be very good to make it out. Here are some things I do to find the toughies.

I use Sky Atlas 2000 and Uranometria. Sky Atlas shows stars visible in my 10x50 binoculars and 8x50 finder scope. Uranometria shows dimmer stars and is excellent for star hopping with a low power eyepiece.

I prepare for an observing session by developing a list of objects sorted by chart. This works just fine on most objects, but it isn't adequate

preparation for the tough ones. If I can't find an object first time out I

do some more homework to prepare for the next session.

If I've been unable to find an object, or if I expect one to be difficult (e.g., galaxies in the Virgo cluster), then I use my planetarium program, SkyChart III, to prepare more detailed charts. SkyChart III can show stars to magnitude 14 which is more than I need for my 10".

The Digitized Sky Survey (DSS) is an outstanding internet resource that lets me view an object and see what it looks like. Although the

detail in the images aren't visible in my scope, I can see the shape and exact location among the stars. I also use the DSS after a session to look at an object if I was uncertain of my observations. Another excellent online source for object information is "The Interactive NGC Catalogue Online." This source provides information on deep sky objects (not just by NGC number) and will get a DSS for objects of interest.

It turns out there is another reason that an object can be difficult to locate: Sometimes the charts are wrong! In particular, NGC 7023, an emission nebula surrounding a magnitude 7 star in Cepheus, is catalogued as a cluster with different coordinates in some references. I spent a considerable amount of time investigating this object.

After my first attempt to view this object I couldn't really be sure I saw it. The star appeared to be flared, but subsequent review of the DSS makes me think it was larger. It is a Dfn, not a cluster. I received a nice note from Brent Archinal clarifying the catalogue problem after I related my efforts to research this object via the NOVAC email list.

On my second attempt I spent a lot of time trying to decide if I could really see this object. My observations were 1) The central star appeared slightly "fatter" than it should - it didn't quite achieve a pinpoint focus, and 2) At 262x (16mm ep with a 2.8x barlow) there was a faint glow (viewable via averted vision) emanating from the central star and slightly elongated in the direction of a barely visible magnitude 14 star to the south. I could detect a dimmer section in the center of the glow. When I checked the DSS, the view matched the image very well. I was very happy. I spent a lot of time on this object and am very pleased to add it to my observed list.

The URL for the DSS is: <http://skyview.gsfc.nasa.gov/cgi-bin/skvadvanced.pl>.

The URL for The Interactive NGC Catalogue Online is: <http://www.seds.org/~spider/ngc/ngc.html>

Large Mirror Donated to NOVAC

By Michael Mills

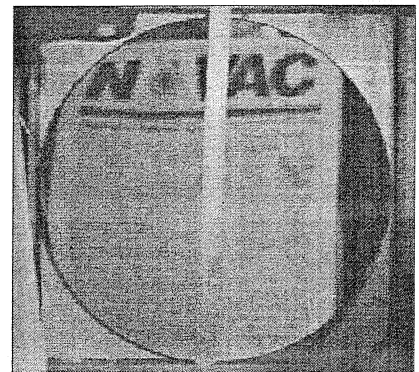
Bill Powers, the great benefactor of NOVAC telescope makers and donor of most of the optics that went into Sweet-16, has donated another treasure to NOVAC. This time, it's a 34.5" f/2.8 mirror that was rescued from a government junk pile.

Bill had plans to someday make it into a telescope, but he decided that it would be better to give it to an organization that has the manpower to accomplish such a task. Thus, with the understanding that NOVAC would try to turn it into a telescope objective, Bill entrusted the mirror to the club.

This massive piece of glass was originally made by Glass Mountain Optics in 1990. It is a two inch thick, 160 pound slab of Pyrex that was slumped in a furnace to an f/2.8 curve and then polished to a rough sphere.

In its current form, the mirror has no useful telescopic application. However, the NOVAC amateur telescope making special interest group (ATM-SIG) is studying ways to make it part of a large telescope. Several options have been discussed (and most have been discarded). The group has mulled over various complex optical designs that could utilize a fast primary mirror (classical Cassegrainian, Dall-Kirkham, and Gregorian). Also considered were various methods to reshape the mirror to a slower curve for use in a Dobsonian mounted Newtonian.

What this project needs is more brainpower, more muscle power, and a larger workspace. If you would like to take part in the telescope design discussions or in the telescope construction, please sign up for the NOVAC-ATM mailing list at <http://www.yahogroups.com/group/novac-atm>. Or, come to an ATM-SIG meeting (see the calendar for the schedule). ✨



The Powers mirror. About 38" of a 48" ruler is visible as the (nearly) vertical bar.

Reflections in the Eyepiece

by Robert Bunge

Author's note: In Central Ohio, there is a famous observer named Biff Smooter. Biff is sort of local folk legend stuff. His observing skills are second to none. He was looking for the horse head years before any of us. Perhaps Biff's most remarkable skill is how he only has to find an object once to memorize its position forever. Many times over the past five years, I've had the honor of observing with Biff. Each time, it's a lesson I never forget. This is the story of one such observing trip.

As the Mit-e-Lift observing platform (<http://www.ladyandtramp.com/31-inch/>) coasted down toward the floor through the cold, early morning air, I planned to steal some of Biff Smooter's hot coffee that was downstairs in the warm clubhouse. I had been observing with the big 31-inch f/7 reflector at the Warren Rupp Observatory near Mansfield, Ohio all night and it was time for a break.

I normally don't drink coffee, but I was cold and thirsty. And I needed something to keep me awake. Biff and I had decided to risk death on the drive home after a week night all-nighter because neither of us had done any observing throughout the winter months.

The promise of both spring-time galaxies and a clear, moonless night had prompted me to risk drooling on my notes in meteorology class tomorrow when I fell asleep during lecture. The instructor might understand. He's an amateur, and was probably out tonight as well.

So while I was observing clusters of galaxies in Leo and Ursa Major with the 31-inch, Biff was happily outside, using Tom Burns' 17-inch (I assumed he had permission). While I was busy identifying each galaxy, taking notes and making drawings, Biff was doing a completely different type of observing.

The Mit-e-Lift door banged closed behind me. The clocks on the wall said it was 3 a.m..

Outside, it was quiet and calm. I couldn't believe no one else had ventured up to the hilltop on such a great night. Biff was the only person outside.

The frosty grass crunched as I approached him. He was staring off into the southeast sky, puffing on his cigar.

The glow from the tip of the rolled up bunch of tobacco lit the scene with a dull red glow. Biff didn't use a red flashlight. He just puffed a little harder.

"Whatcha wait'g on Biff?"

"M-4"

"How're you doing so far?"

"Sixty two."

That's what I like about Biff. Straight and to the point.

"How bout a break, Biff? I need a wake up."

"No... gotta wait for M-4 and M-80."

"Ok, Biff but it's pretty hazy in that direction. Good luck."

Puff, puff, replied Biff as I headed down the steps.

Twenty minutes later, the silhouette of Biff and the 17-inch came into

view as I climbed the stairs. Biff hadn't moved. He was still staring

off toward the southeast.

"Still wait'g Biff?"

"M-8, M-20."

"You find four and eighty?"

The red tip of the cigar moved in such a manner as to point toward the eyepiece of the 17-inch.

A glance through the scope showed nothing. I pulled on the Dobsonian, and bumped it up a field. There, faintly, through the muck was a faint M-80.

"That make 64?"

"Nope. Seventy-five, replied Biff. Did the summer Milky-Way while I waited."

"Good luck," as I started back for the 31-inch dome.

Puff, puff.

"Biff, if ya ain't careful, you're going to cause a temperature inversion with that thing."

Puff, puff.

Biff was doing a Messier Marathon. Having never done one, I decided to find out why he liked doing this annual observing event. So during the drive home, I grilled him with questions. But first we had to get on the road.

After loading up the car in the morning twilight, Biff carefully placed the butt of his cigar, with the lit tip sticking out of the top, in a freshly poured cup of coffee. Then he got out three sticks of BIG RED chewing gum. He unwrapped each one, and popped them in his month. When finished with each stick, he bumped the cigar so the ashes fell into the coffee. After a minute of hard chewing, he pulled the cigar out of the coffee, took a swig and then a drag of cigar smoke. After all, he not only had to get us home in one piece, but also teach a couple of classes during the day!

"What is it Biff?"

"A Messier Marathon? You stay up all night long and try to look at all the Messier objects. It's tough. Some of the objects are close to the sun and hard to find. At times you have a lot to look at, and only a few minutes to find them before they set or morning twilight drowns them out. By morning, you're preeetty doopey in less you have some these ciigars."

"Why do a marathon?"

"It's a challenge, and it's fun. It's a great way to

learn how to find a lot of Messier objects, especially the fainter, rarely observed ones that nobody ever looks at. Besides, there is a bigger reason."

"What's that Biff?"

"You get to see how the universe is put together. In the evening, you start out with the local group of galaxies, then a few minutes later, you swing south and explore another arm of the Milk-Way galaxy. After working your way up the winter Milk-Way, you peak through a hole in our galaxy to examine the Coma-Virgo cluster. After that..."

"I get the drift, Biff. But, who does this thing?"

"Amateurs the world over, Bob. It started in the seventies... I think. Brent Archinal and John Kerns turned me onto it in '81. That year at Perkins (Observatory, near Delaware, Ohio) we saw a great aurora and 108 objects. I do it every year."

"When do you do it?"

"See that's the trick. It turns out that there is a hole in the sky where there aren't many Messier objects. At the end of March, beginning of April, the Sun is in that section of sky, and you can see more than a 100 of the 110 objects on the list. Remember, it's got to be dark all night, so it needs to be near new moon."

"How do you do it?"

"You get or make a search order list. You just can't go by R. A., or you're be all over the sky, going from north to south and then back north when you could have saved time and stayed in the north. (Sort of like this sentence) John Kern's search order list is good because it's grouped for use with Astro-cards. If two objects appear on the same card, he put them together on the list. You also need the list in order not to forget objects. Otherwise, you forget things like M-32, M-110, M-44 and M-45. Oh yea, it's better to use a smaller scope. I use the 17-inch because I know it so well, and I've been doing this a while. A ten or six inch is perfect. A few years ago, a fellow in Columbus used a 3-inch refractor, and found ninety-some objects. You wouldn't want to use the 31-inch... it's too big and slow to point."

"Were do you do it?"

"Somewhere dark, with a good horizon. get there early and be prepared to stay realllly late."

With that, Biff lit a new ciigar and cranked up some bluegrass music. When I started to choke on the smoke, he cracked his window.

"How the hell are ya going to stay awake if you don't get some stimuuulaates in your body?"

I didn't answer. I was dead asleep. Good thing he was driving. ✨

Originally published in the March, 1990 issue of M-111, the Newsletter of the Richland (Ohio) Astronomical Society

ANNOUNCEMENTS

Mickie Gordon closed to club access

Due to a recent reorganization at Loudoun County Parks NOVAC has temporarily suspended club observing at Mickie Gordon park until a new park use agreement is finalized. It appears we have new park management at the county to deal with and to educate. Among other things, the new park management wants to put a lock on the gate at Mickie and require some form of park authority present during NOVAC observing sessions.

The good news is that the county acknowledges that NOVAC has a valid agreement to use the park and they have a new person handling non-sports park use which includes hikers, birders, and now astronomers. So, it appears that Loudoun is somewhat in tune with our needs. There is reason for optimism.

Ex-president Tilly Smith has agreed to take on the role of Club representative for observing sites and Tilly is negotiating a new agreement.

Stay Tuned for further developments.

-Pete Johnson

NOVAC 2002 Annual Meeting

The 2002 Annual Meeting will be held at Arlington Planetarium Jan 8. This is every member's opportunity to address the board with concerns or compliments. All members are invited to participate. If you would like to add an item to the agenda, send an e-mail to club president Ed Karch (karch@karch.com) before 5 PM January 8.



T-shirt front



T-shirt back

Officers Elected at December Meeting

Officers and trustees for 2002 were elected at the General Membership Meeting on December 9.

Alan Figgatt announced the slate of candidates. There was a motion from the floor to vote on the slate as a whole, and this motion was seconded. A voice vote followed, and the slate was elected without dissent. The club officers and trustees for 2002 are:

President: Ed Karch

Vice President: Sean O'Brien

Secretary: Renée Pleasant

Trustees: John Avellone, Alex Lim, John Deriso, and Ed Witkowski.

No Treasurer was elected, as Pedro Martinez was unable to serve a fifth term due to term limits. There were no other candidates for Treasurer, so Ed Karch has appointed Pedro Chief Financial Officer, with the same duties as Treasurer. A vote will be held at the Annual meeting in January to amend the bylaws and articles of incorporation to remove term limits.

NOVAC T-Shirts and Decals Still Available

NOVAC is selling 100% cotton t-shirts that sport Bill Burton's design on the back and a small, circular logo on the front left breast. The shirts are navy blue, and the designs are rendered in white. They cost \$12 and come in adult sizes small, medium, large, extra large, and extra-extra large. The shirts will be available at general membership meetings.

Also available are self-adhesive decals that are decorated with a circular NOVAC galaxy logo. Decals will be sold in strips of five for one dollar.

See the club website (<http://www.novac.com/tshirt/tshirt.htm>) for more info and color photos.

New Members - June 21 through August 27

Joe Pierson

NOTE: This directory is not to be reproduced or used for any commercial purpose

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WELCOME!

Upcoming NOVAC Meeting Programs

Sean O'Brien

January 13, 2002
Observing Star Clusters
Ed Witkowski

February 10, 2002
TBA

NOVAC meetings are held on the second Sunday of each month, starting at 7:00 PM. Meetings take place in Room 80 of the Enterprise Hall at George Mason University in Fairfax, Virginia. See <http://www.novac.com/GMU.htm> for a map and directions.

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

Note: New Time and Place!!

NCA's meeting topics for January 5 and February 2 were not known by press time. See their website (given below) for updates.

Meetings are now held in the Bethesda-Chevy Chase Regional Services Center of Montgomery County, 4805 Edgemoor Lane, Bethesda, MD at 3:00 P.M.

The meeting will be held from 3:00 PM to 5:00 PM. Dinner will be held at the Rio Grande Restaurant, 4919 Fairmont Ave., Bethesda, tel. 301 - 656-2981, following the meeting.

For future meeting programs, see <http://www.capitalastronomers.org>

About NCA Meetings

NCA has regular monthly meetings September through June on the first Saturday of the month (unless it is a holiday weekend).

They do not have a monthly meeting in July or August.

Highlights of NOVAC Meetings



November 6, 2001 Board Meeting Arlington Planetarium

Meeting called to order by Ed Karch. In attendance Ed Karch, John Avellone, Alan Figgatt, Ed Witkowski, Alex Lim, Mike Mills, Joe Pierson, John Deriso, Sean O'Brien, Renée Pleasant.

John Avellone: Coordinated public outreach ideas for Huntley Meadows Park. on Sunday (1x month))

Night Sky on Friday (1x month)? Public invited to Geminid meteor shower.

Small joint astronomy program, Nov 16 at Cattail Cafe. Solar Program on Sundays. John will keep board updated.

Sweet 16 has made appearances at Mickie Gordon, Sky Meadows, Air and Space Museum and Halloween.

Attendees of Family Night encouraged to write a thank you note to their county delegate, as the budget looks really grim for next year. Ed will make announcement at Nov. monthly meeting.

Bill Powers donated a 34.5" blank, ideas sought.

IRS form for donated scopes: Scope hosts need to finish their evaluations and send the form to the donors. John Deriso and Alan Figgatt have scopes that need evaluating.

Report on newest club sites:

Buffalo ranch agreement still not signed. Ed W's update includes possibility that owner would like to sell burgers/etc. to NOVAC members who are observing.

Hanson site: No restrictions. Use of bathroom, kitchen while homeowners are present. Ed Karch will remain contact person; those wishing to use the site will contact Ed K first.

Clarification of monthly observing at MG - no public advertising of observing sessions.

Club Library will remain in hallway in front of Harold Geller's GMU office. Those wishing to check out books, etc., will be able to do so during the monthly meetings.

Submitted by Renée Pleasant

December 9, 2001 Board Meeting Arlington Planetarium

Meeting called to order by President Ed Karch. In attendance Ed Karch, Pedro Martinez, Ed Witkowski, Renée Pleasant, Pete Johnson, John Avellone, Alex Lim, John Deriso.

John Avellone reported on public programs at Huntley Meadows Park, such as the upcoming Geminid meteor program offered by Sandburg Planetarium teacher and NOVAC volunteers.

Pete Johnson reported NOVAC use of Mickie Gordon park halted until new agreement can be reached. Tilly Smith has volunteered to be point of contact for NOVAC with various county park authorities. President Ed Karch has appointed Tilly Smith Coordinator of Observing Sites.

Pete Johnson investigated various storage options and found the cost of at least \$110 per month for 4x6 storage to be prohibitive.

December Party - Board members will provide:

Ed Witkowski/John Deriso: beverages, Renée Pleasant/Pete Johnson: party trays, Alan Figgatt/Ed Karch: cups, plates, etc. Plus, goodies provided by membership.

Elections/Nominations- Alan Figgatt and Alex Lim will be responsible for conducting the election at Decembers monthly meeting.

Sweet 16 Telescope is available to a new home. Scope needs to go to a member who can transport it and is available to take it to various public outreach opportunities.

No official club observing at Mickie Gordon on Saturday prior to monthly meeting. Members free to find own alternate sites such as Mason Neck or Savage.

Solar Max Alpha Hydrogen filter has arrived and will be placed on a short tube 80 that Ed Karch acquired from Astromart.

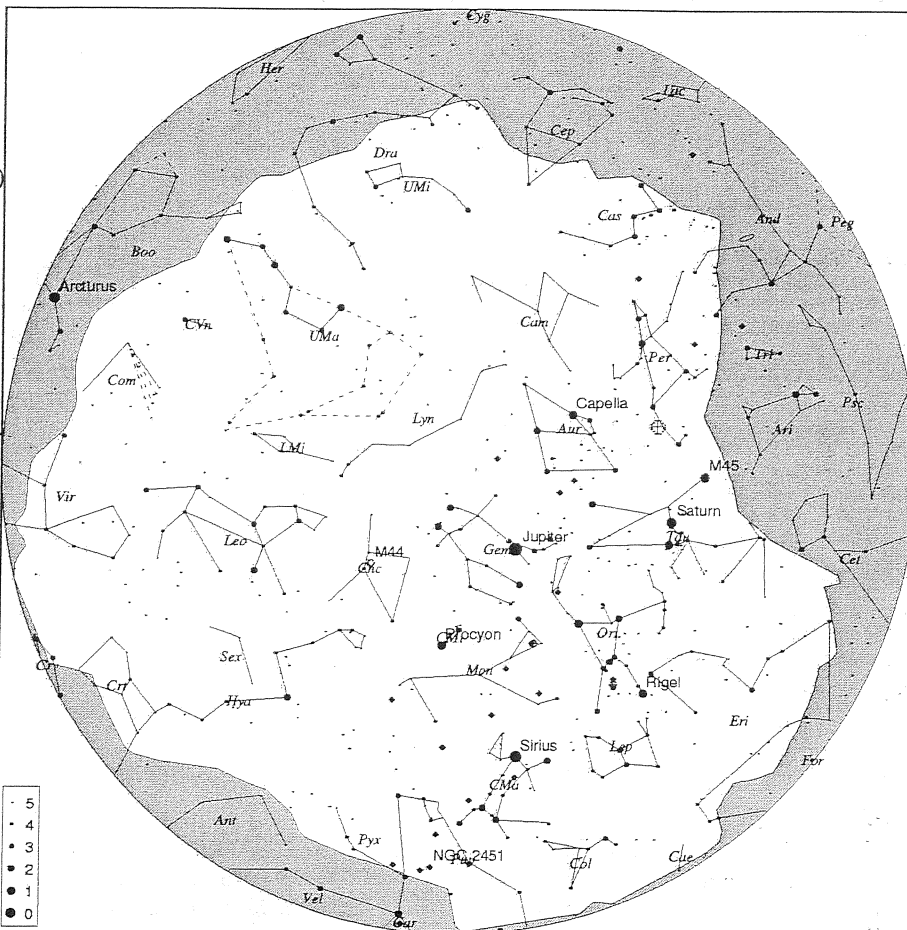
Various donated club telescopes have required small items to be purchased and these and other items purchased by board members, are authorized by the Board up to the amount of \$100, without prior approval.

The Board will encourage the attendance of all NOVAC volunteers (Public Outreach, Site Coordinators, StarGaze, etc.) to Board meetings to facilitate exchange of information with Board and members.

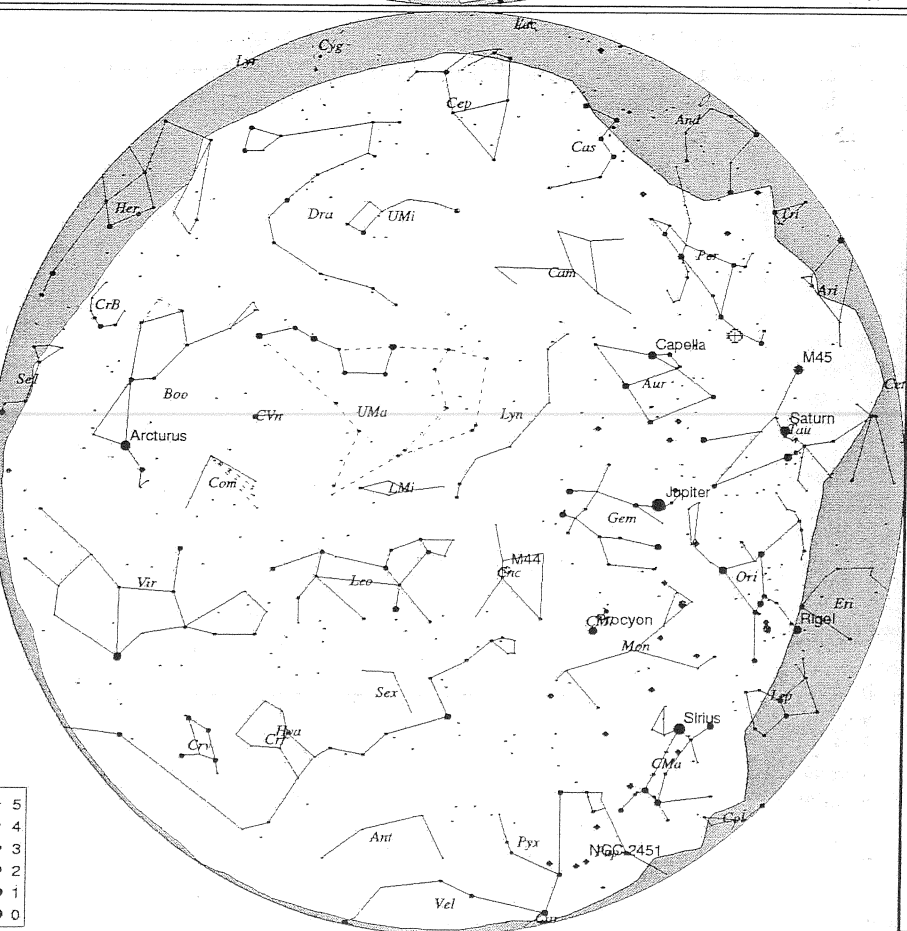
Ed Witkowski is still in contact with Legacy Farms liaison Jimmy Gilbert. It is hoped that he will be able to attend a meeting to share his Legacy information with the Board.

Submitted by Renée Pleasant

January Sky from Savage Farm



February Sky from Mickie Gordon Park



Jeff's Observing Report

Jeff Stetkluh

Jeff's astronomical calculations are made for the Northern Virginia area. See <http://www.novac.com/jeff/jrefs.html> for calculation

Principle Club Observing Nights

- Jan 4-6, 11-13
- Feb 8-10, 15-17

Jupiter Eclipse Events

- Jan 13 7:29 PM Io Eclipse End
- Jan 19 2:56 AM Io Eclipse End
- Jan 26 4:50 AM Io Eclipse End
- Feb 1 6:54 PM Europa Eclipse End
- Feb 8 9:30 PM Europa Eclipse End
- Feb 9 6:26 PM Ganymede Eclipse End
- Feb 16 12:07 AM Europa Eclipse End
- Feb 16 7:17 PM Ganymede Eclipse Start
- Feb 16 10:27 PM Ganymede Eclipse End
- Feb 23 2:44 AM Europa Eclipse End
- Feb 23 11:17 PM Ganymede Eclipse Start
- Feb 24 2:28 AM Ganymede Eclipse End

The Sun

- Jan 13 rises at 7:26 AM, sets at 5:08 PM
- Feb 10 rises at 7:05 AM, sets at 5:40 PM

The Moon

- Jan 13 New Moon
- Jan 21 First Quarter
- Jan 28 Full Moon
- Feb 4 Last Quarter
- Feb 12 New Moon
- Feb 20 First Quarter
- Feb 27 Full Moon

Events

- Jan 14 Venus at Superior Conjunction
- an 27 Mercury at Inferior Conjunction
- Jan 28 Neptune-Sun Conjunction
- Feb 13 Uranus-Sun Conjunction
- Feb 21 Mercury at Greatest Elong: 26.6° W

The Planets

Jan 13	Rises	Transits	Sets
Mercury	08:31	13:35	18:40
Venus	07:31	12:17	17:04
Mars	10:26	16:23	22:19
Jupiter	15:51	23:13	06:40
Saturn	13:53	21:03	04:18
Feb 10	Rises	Transits	Sets
Mercury	05:47	10:48	15:49
Venus	07:31	15:50	18:09
Mars	09:23	15:46	22:10
Jupiter	13:48	21:11	04:39
Saturn	12:01	19:11	02:25

Upcoming Events

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
J A N U A R Y							
30	31		1	2	3	4	5
6	7		8	9	10	11	12
★Prime Observing			★ Annual Meeting 7:30 PM @ Arlington Planetarium			★Prime Observing	★Club Observing Night @ Location TBA
13	14		15	16	17	18	19
★NEW MOON ★General Meeting 7 pm @ GMU ★Prime Observing							
20	21		22	23	24	25	26
★ATM-SIG Meeting (Location TBA)	★FIRST QUARTER						
27	28		29	30	31	1	2
	★FULL MOON						
F E B R U A R Y							
3	4		5	6	7	8	9
	★LAST QUARTER					★Prime Observing	★Club Observing Night @ Location TBA
10	11		12	13	14	15	16
★General Meeting 7 pm @ GMU ★Prime Observing			★NEW MOON			★Prime Observing	★Prime Observing
17	18		19	20	21	22	23
★Prime Observing ★ATM-SIG Meeting (Location TBA)				★20 FIRST QUARTER ★ Moon occults Saturn near end of twilight for NoVa observers			
24	25		26	27	28	1	2
				★FULL MOON			

**“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 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 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 of different focal lengths, one 10” f/6 reflector and a couple of SCTs. Also available for loan is a 7x50 binocular.

Large club library

NOVAC maintains a well stocked library near 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 list-serve

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

Public outreach opportunities

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

Membership in the Astronomical League

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

Discounts on astronomy magazines and books

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

See your *Membership Guide* for more details

The NOVAC Newsletter is the official publication of the **Northern Virginia Astronomy Club** and is published six times per year.

The *NOVAC Newsletter* is sent to members of NOVAC as a regular membership benefit.

Membership in the Northern Virginia Astronomy Club is \$25.00 per year and is open to anyone interested in astronomy or the sciences. Additional memberships at the same address without additional copies of the newsletter are \$5.00 per person. Contact

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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, at mjmills@fpcc.net, (**The deadline for submissions is two weeks in advance of publication: February 9 for the March/April 2002 newsletter.**)

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Inside This Issue:		
Hunting Difficult Objects	Ralph Marple	1
President's Message	Ed Karch	1
Vega-Bray and the Leonids	Barry Wolfe	2-3
Large Mirror Donated to NOVAC	Michael Mills	4
Reflections in the Eyepiece	Robert Bunge	5
Announcements:		
Mickie Gordon Park Closed for Observing		6
New Officers Elected		
Annual Meeting, January 8		
Club T-Shirts Still Available		
New Members		7
Meetings		8
Observing Report	Jeff Stetekluh	9
Calendar		10



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