



REFLECTIONS / REFRACTIONS

REFLECTIONS \ REFRACTIONS

University Lowbrow  
Astronomers

DECEMBER 2016

VOLUME 40, ISSUE 11

# *The Rosette Nebula*

By Brian Ottum



*Brian Ottum sent in this spectacular exposure of the Rosette Nebula. Brian took this 2 years ago from his remote control observatory in the Boot Heel of New Mexico. Brian writes: "Here's one of my very first pictures taken with the remote control telescope: 3 hours' worth of 5 minute exposures, controlled from my basement here in Saline. The telescope started its life as a Taiwanese-made dobsonian: 10" f/5. It has been tweaked to make it better for photography. The camera is a Canon 5D mark III, modified for astrophotography by removing the IR reduction filter, so we can pick up the deep red (near IR) of nebulae. The mount is the Paramount MX, their smallest." If you don't have a remote control observatory and the ability to take 3 hours of 5 minute shots at a dark site, you will at least need to get yourself to the dark site to see the nebula through your telescope. Your editor observed the Rosette 16 years ago from the Everglades looking out over Florida Bay. The cluster (NGC 2244) of hot white stars blowing out a hole in the center is easily seen in binoculars, but the nebula in the telescope is very faint, until you slip an OIII or UHC filter onto the end of the eyepiece and then it pops beautifully. The object is large and to see it all in one low power field will require a true view of more than a degree. Cranking up the magnification will allow detailed examination of the various lobes of the nebula.*

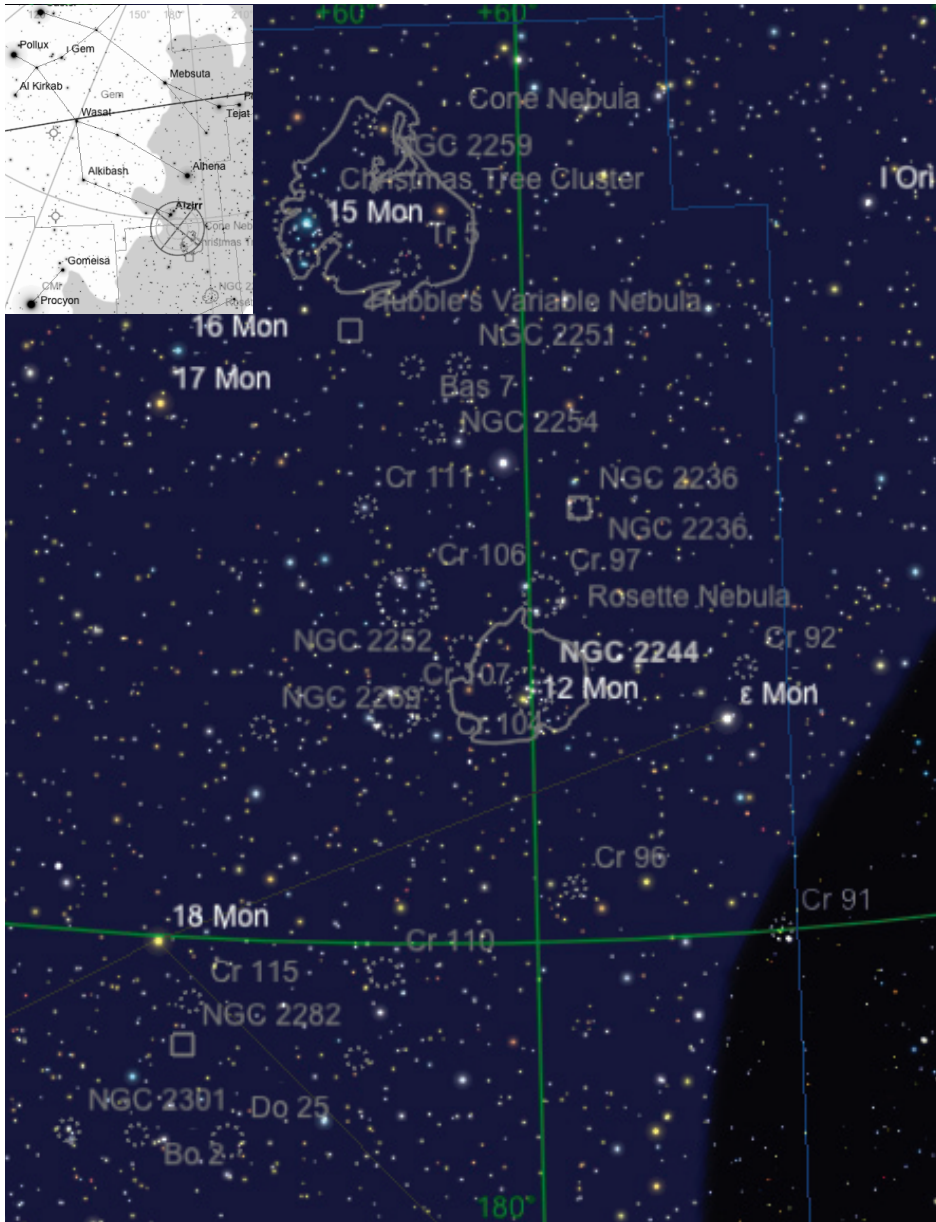
--Jim Forrester



Some Winter Observing Targets

# An Evening in Northern Monoceros

By Jim Forrester



There are few clear nights during Michigan's winter, and those we have can be so bone chillingly cold as to cut short the time at the eyepiece of even the most intrepid observers. Thus a good strategy is to find an area of sky so packed with objects you can't help but have a productive evening.

One candidate area for frigid observing is the northern corner of Monoceros. Situated in the winter Milky Way, it is loaded with nebulae, open clusters and multiple star systems. Some, like NGC 2244, the cluster at the heart of the Rosette Nebula, are easy binocular objects, while the "cone" of the Cone Nebula will take a dark sky and maybe a hydrogen-beta filter.

A good place to start is NGC 2264, easy to find 3° south of magnitude 3.3 Alzirr, the star marking the eastern most foot of Gemini. The cluster makes a kind of upside down Christmas Tree of 80 or more stars ranging in brightness from magnitude 4.7 S Monoceros at the base of the tree, to magnitude 7.18 STF 354 marking its apex, with a sprinkling of 7th, 8th and 9th magnitude gems, in between. A wonderful sight in most any instrument.

S Monoceros is a multiple star system of a dozen or more members. The companions range in brightness from mag 7.8-10. The closest member, at 2.3" is also the brightest at position angle 214°. The remaining associates of S Mon can all be seen in most scopes and their information can be found here: [http://www.deepskypedia.com/wiki/STF\\_950](http://www.deepskypedia.com/wiki/STF_950)

The tree is topped by another double, STF

*The fabulous objects of Northern Monoceros transit at about 10:30 PM in late January between 50 and 60 degrees above the horizon at Ann Arbor. If you might get out during the new moon later this month, the objects in the chart will be 10 degrees lower and in the southeast at the same time of evening. Charts generated in Sky Safari*

954. The primary is magnitude 7.2 and the magnitude 10.2 companion is 12.8" away at P.A. 153. The surrounding 20'x30' nebula, about 1000 light years away, is both an emission and reflection nebula. The blue-white part of the nebula reflects the light of the hot young stars and a small section can be seen unfiltered. An OIII filter will make larger portions of this region pop. In Brian Ottum's photo on Page 3, the name-sake "cone" is in the bottom center. But to have a chance of seeing it you'll need a dark sky and an H-beta filter.

The above chart shows a much larger nebula than that described above or what is shown in Brian's image, but the rest of the

nebula is achingly faint, even in photographs. Thus the 3 billion year old open cluster Trumpler 5, even being 10 times further away, can shine through the wispy gas. It will take a dark sky to see it, though, as even larger scopes have trouble resolving stars and usually show just a milky haze.

There are many more magnitude 8-10 open clusters shown on the chart and since you're in the area (and already cold) you might as well give them a try. It's always a challenge to pick these small guys out against the star fields of the Milky Way.

More likely seen is NGC 2261, Hubble's Variable Nebula. Just over a degree south-southwest of NGC 2264, this 5' patch can be seen in most scopes. At a dark site, the nebula displays its triangular, fan like shape, even in a scope as small as 4 inches.

It has probably been mistaken for a comet more than any other object in the sky. Discovered by William Herschel December 26, 1783, its variability wasn't noticed until 1916 by Edwin Hubble, and thus the object has been known by his name ever since. This one is on my personal "to do" list.

You'll need a bit of aperture (10-12" or more) and a nice wide field eyepiece to get 45' Collinder 106 to stand out from the stellar background. This group of 70 stars range in brightness from 6th to 10th magnitude (and dimmer) including several double star systems.

Now we come to the other show piece on this tour: The Rosette Nebula (NGC 2237) and its accompanying open cluster (NGC 2244). As common with star-forming nebulas, there is a combination of dust and gas swirling in vast combined clouds of material. The dust here, like the Cone Nebula, is both a reflection and emission nebula. The red hydrogen emission is almost impossible to see visually, but an OIII or UHC filter and a dark sky will give a spectacular view in most any scope 4 inches on up.

Several of the stars in NGC 2244 are far more luminous, much more massive and far hotter than the sun. STF 927 has an 8.2 magnitude primary and a 10.3 magnitude secondary 5 arc seconds away. The primary is 20 times more massive, 40364 times more luminous and 6.5 times hotter than our Sun. And this is not the hottest star in the cluster. No wonder there is a large hole in the middle of the nebula.

There are several large open clusters immediately adjacent to the Rosette Nebula: NGC 2552, and the Collinder clusters Cr 97, 104, 106 and 107 range in size from 18 to 35 arc minutes. All are located 1.4° to 0.8° north and east of NGC 2244, and three (Cr 97, Cr 106 and Cr 107) are fairly bright, and one would think easy to see. But their light is spread over such a large area, they become a challenge to pick out against the surrounding Milky Way.

So if you find yourself photon starved this winter, brave the cold on a clear night and give this part of Monoceros a try.



*The Cone Nebula and Christmas Tree Cluster in Monoceros. The "cone" of the Cone Nebula is the dark spike plunging into the nebula at the bottom center.*

*Photo: Brian Ottum*



*This image of Cr 97 is from the Digital Sky Survey. It covers a 45' x 45' patch of sky. Can you pick out 25' Cr 97?*



**Doug's Deep Sky Challenge****NGC 1990--Fact or Fiction?****Round 2**

By Doug Scobel

Back in the January 2009 issue of Reflections I wrote an article presenting evidence and my opinion regarding the existence/non-existence of NGC 1990. NGC 1990 is cataloged as a 50 by 50 arc minute diffuse nebula surrounding the star Epsilon Orionis, named Anilam, the center star in Orion's belt. It was first observed by Sir William Herschel in 1786. I'm not going to re-hash everything I describe in that article, but in a nutshell I conclude that NGC 1990 is beyond the reach of visual observation, and quite possibly it does not exist at all! To make more sense of the new evidence I'm presenting here you may wish to read that article first. You can find it here: <http://www.umich.edu/~lowbrows/reflections/2009/dscobel.30.html>

As I imply in the sub-title, I have new evidence to present. Some for, some against.

**New Evidence For**

Some time ago I stumbled on a web post by (I'm assuming amateur but maybe not) astronomer Stephen R. Waldee, who apparently found my article on our web site. In his post he quotes me early and often, and disagrees with my conclusion, but he mentions me along with the likes of Steve Coe and Steve Gottlieb. Flattery indeed! His post is very detailed and logically presented, meaning there is far too much to repeat here. So I'll paraphrase. Waldee comes down on the side of NGC 1990's existence, and in great detail describes how he observed it. You can read his full post here: <https://groups.google.com/forum/#!topic/sci.astro.amateur/634RRTEtG54>

Another visual observation of NGC 1990 was made by noted amateur and telescope maker Mel Bartels. In his post here <http://www.bbastrodesigns.com/6inchF2.8/6%20Inch%20F2.8%20Telescope.html> he describes how he made a 6-inch f/2.8 (yes, that's f/2.8 my friends!) Newtonian, and observations he's made with it. Think of it – a 4 degree true field with 6 inches of aperture. Wow! [Time out. A 6-inch f/2.8! I'm wondering how hard it would be to convert Smurfette, my homemade 6-inch f/4.5, to f/2.8. After I retire and I have more free time I might have to consider it.] Okay, I'm back. If you go to his post you'll see that Bartels provides a number of sketches he's made using his ultra-wide-field RFT, and the last one depicts none other than NGC 1990. Not exactly centered on Epsilon, but close to it.



*This image and all insets from it that appear in his article are copyright Stanislav Volskiy, used with permission. I encourage you to explore the full resolution image here: <http://apod.nasa.gov/apod/ap151123.html>*

**New Evidence Against**

On November 23, 2015 the Astronomy Picture of the Day web site featured an astoundingly deep image of the Orion/Monoceros region. Above is a low-resolution version of it.



It is a total of 212 minutes of exposure and it goes much deeper than the image I referred to in my original article. Barnard's Loop is bright and detailed, unlike any image I've seen to date. The Flame Nebula is very bright, and the Rosette Nebula at upper left is partially burned out. Look how bright nebula IC 434 (behind the Horsehead Nebula) is. Check out the Witch Head Nebula at lower right. Also, the image portrays nebulosity in both the red and blue ends of the spectrum - emission and reflection nebulae are displayed equally. The entire region is swimming in nebulosity. This is one deep image!

So let's get to NGC 1990. It's described as a 50 x 50 arc minute glow surrounding Alnilam. Here's a full resolution inset from Volskiy's image:

*It certainly looks like there's some blue nebulosity surrounding the star, doesn't it? But before we conclude that the blue glow is NGC 1990, let's look at a few other bright stars in the image.*



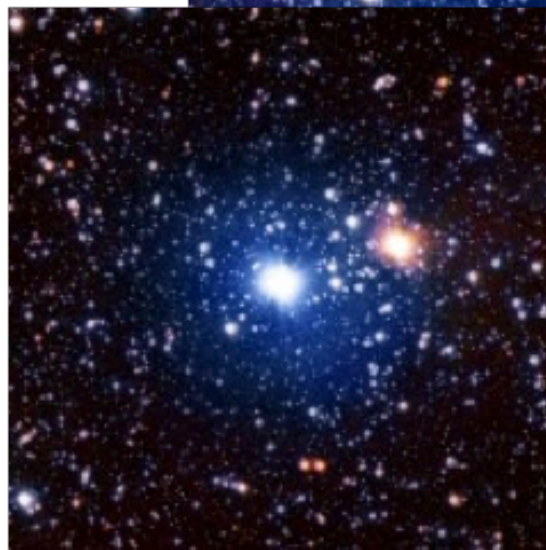
*Here's Mintaka (the westernmost star in Orion's belt):*



*Here's Bellatrix:*



*Here's Saiph:*



*And here's Pi 5 (in Orion's shield)*



In fact if you zoom in on all the brighter stars in the image you'll see that virtually all of them display a blue (orange in the case of Betelgeuse) glow around them. This blue glow surrounding all the brighter stars can only be explained as optical artifacts due to the overwhelming brightness of the stars. You'll even see such artifacts in Hubble images. Alnilam doesn't look any different from any of the other bright stars. It is my opinion that the blue glow surrounding Alnilam in Volskiy's image is not evidence of nebulosity there.

Even more telling is how deep this image goes. Here's an inset of the region around Alnilam that covers more sky:

Despite NGC 1990 being described as being more or less centered on Alnilam, ironically that's one of the few places in the image that is devoid of nebulosity. It is pretty much surrounded by nebulosity, but it all but disappears as you get close to the star. There is virtually nothing centered on it.

### This Observer's Conclusion

What stands out to me is that the area directly centered on Epsilon Orionis is one of the few places in Orion where there is almost no nebulosity seen! Virtually all of the rest of the constellation has at least some nebulosity. Yet nothing right there. If folks are seeing something there visually, then they should be able to see all the rest of the nebulosity (Barnard's loop, the Witch Head, etc.) without even trying. Bartels sketched some of this nebulosity, including Barnard's Loop, but as you can see in Volskiy's image Barnard's Loop is many times brighter than anything directly surrounding Alnilam.



Now I'm not about to tell someone that they are not seeing what they say they are seeing. My eyes, though well trained, are quite average when it comes to teasing out low-contrast details in the eyepiece. Add age to the equation and well, I think you get the picture. Bottom line is I'm no Steve Coe, Stephen Waldee, or Steve Gottlieb. Nor am I privileged enough to observe under pristine skies like they have (the 2007 Okie-Tex Star Party notwithstanding). So am I about to conclude that it does not exist simply because I've never seen it? Certainly not. I've observed with Lowbrows who see things I cannot see. It happens.

So are they seeing something there? Perhaps. But perhaps not. If indeed they are seeing something there then what is it? It certainly does not show up even in Volskiy's image. Is it a case of seeing something just because they desperately want to see it? It wouldn't be the first time someone sees something simply because they expect to see it. On the other hand, there is that quite faint (compare it against the brightness of the Witch Head Nebula at lower right) nebulosity to the west and south of Alnilam. Is that what folks are seeing? If that is being detected visually, then it still cannot be NGC 1990, simply because it is supposed to be centered on the star, not offset by half a degree or more.

Given the lack of photographic and consistent observational evidence for its existence, and to the contrary, evidence against it, I remain skeptical. I still come down on the side of its non-existence, but that's just one average observer's opinion.

Now that Orion is rising in the east these evenings, give NGC 1990 and the surrounding area a try. I'd like to know – what do YOU see?

# I Walked On Mars!

*In Virtual Reality*

By Don Fohey

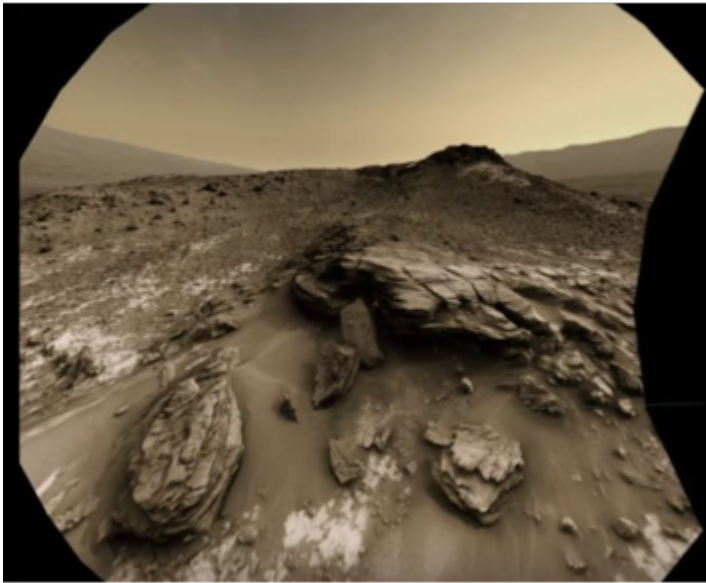


Photo: <https://www.youtube.com/watch?v=Y2DW51qF8BE>



Photo: <https://www.youtube.com/watch?v=mdg6b7JV3rg>



Photo: <https://www.vive.com/us/>

I was invited to see a high end virtual reality system. It was an amazing experience to be standing on Mars in the middle of Gale crater. I have seen pictures before but virtual reality 3D makes it real! My first impression as I turned and looked all around was the desolation. The curiosity rover was nearby and I walked over to it and studied every detail, able to walk all around it and inspect it from every side. Pictures don't give you a feel for the size. Standing before it and looking at its camera straight in the "eyes" really does give you the satisfaction that you have personally seen this wonderful rover. I was able to "walk" over to various rock outcrops and inspect them, again from every angle. It was interesting to look at the flat rocks almost paving the surface. I could see Mount Sharp in the distance and the obvious path the rover would drive on its way out of Gale crater. I am looking forward to additional sets of data to be added so that I can experience the slopes of Mount Sharp. If you get a chance to experience the new virtual systems take it. The system I saw was with the HTC Vive. You wear a headset, which has a high definition camera for each eye and has sensors that tell the system where you are looking and where you are moving. You hold two hand controllers to select various options and interact with the virtual world. To get a real sense of what the system can do visit <https://www.vive.com/us/>

## *Artsy-Meaningless Slide Show*

**Friday, December 16, 7:30 PM--Room G115 Angell Hall, 435 South State, Ann Arbor, MI--**Long-time club member **Fred Schebor** provides a presentation every 3 or 4 years, which is a display of images of and about our club, all set to music and special effects. This is one talk most everyone can enjoy as the show is all pictures and music. Don't miss this only every so many years event! (Also known as the Lowbrow Monthly Meeting.)



# *Eight Months To Go...*

*...Give Or Take a Few Days*

By John Manney

I am counting the days until the coast-to-coast total eclipse of the Sun which will occur on August 21, 2017.

On July 20, 1963, my family and I watched a beautiful partial eclipse from our home in New Jersey. 400 miles to the North, in the state of Maine, a total eclipse was visible. On the evening of eclipse day, we watched a TV special report on the total eclipse. At the end of the broadcast, the commentator said that the next total solar eclipse in our area will be in 2024. I did a little math – 2024 would be 61 years into the future. I would be 76 years old. This idea was so unreal that I couldn't process it. So, the idea of watching a total eclipse near home got filed in the "Probably Never" section of my memory bank.

Fast-forward to the 21st Century... I learned that the next opportunity will be in 2017, not 2024. Always check what you hear on TV!

With only one year to go, I have begun to make my plans. Preparing for observation seems simple – bring eclipse glasses and enjoy the event. I would love to make movies of other peoples' reactions to the eclipse – but only if I could do it without missing it myself.

Logistical preparation won't be so simple. A huge unknown is the number of people who will take to the roads to view the eclipse. Our road system will jam up if too many people try to use it at the same time. Would it be best to bring all our supplies and settle in well before the event? Would it be realistic to try to relocate if the weather forecasts are unfavorable? Will the designated observing fields be overcrowded? I was not able to find many reports of traffic conditions at previous eclipses. Amazingly, for the past 20 years, few developed areas have been in paths of totality. On August 11, 1999, a total eclipse was visible in Europe. There were traffic problems, particularly after the eclipse, when everyone tried to go home at the same time.

To get started, I have made a reservation for a motel in Marshall, Missouri. Marshall is a fairly small town in the Western part of the state. In Missouri, the weather prospects get better as you go West. Marshall is very close to the center of the path of totality. While other opportunities may come up, this will be a decent "fallback" plan.

I plan to pass out eclipse glasses as Christmas presents. They will be useful in any part of the "Lower 48", and may stimulate interest in the adventure. It would be great to get family and friends to join in the experience. Of course, they would have to realize that things could get inconvenient, and that the weather is never certain.

This will be an interesting year!



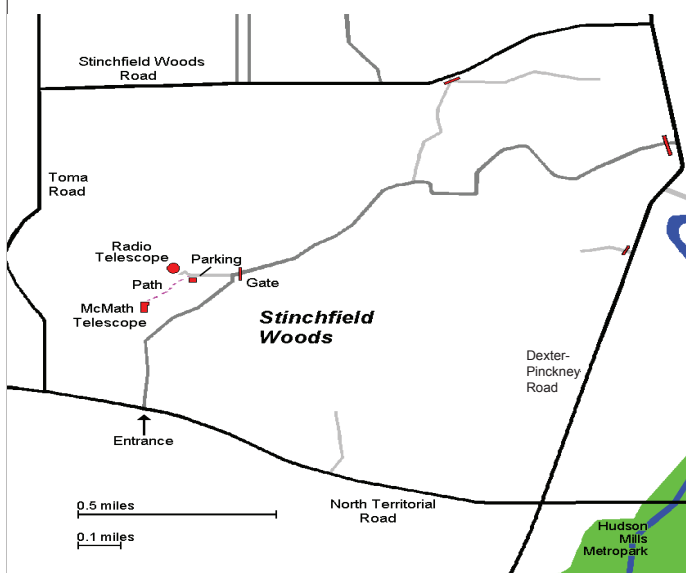
***The November Super-Moon***  
*inspired more than a few of the members to hold their cell phones up to the eyepiece just to see what would happen. This happy result was sent in by Amy Cantu. "I was just holding my iPhone 5s up to the eyepiece of my 8" dob. Eyepiece was the Explorer Scientific 82 series 18mm."*



**Places & Times**

Monthly meetings of the University Lowbrow Astronomers are held the third Friday of each month at 7:30 PM. The location is usually Angell Hall, ground floor, Room G115. Angell Hall is located on State Street on the University of Michigan Central Campus, between North University and South University Streets. The building entrance nearest Room G115 is the east facing door at the south end of Angell Hall.

Peach Mountain Observatory is the home of the University of Michigan's 25 meter radio telescope as well as the University's McMath 24" telescope, maintained and operated by the Lowbrows. Located northwest of Dexter, MI; the entrance is off North Territorial Road, 1.1 miles west of Dexter-Pinckney Rd. A maize and blue sign marks the gate. Follow the gravel road to the top of the hill to a parking area south of the radio telescope, then walk About 100 yards along the path west of the fence to reach the McMath Observatory.



**Public Open House / Star Parties**

Public Open Houses / Star Parties are generally held on the Saturdays before and after the New Moon at the Peach Mountain observatory, but are usually cancelled if the sky is cloudy at sunset or the temperature is below 10 degrees F. For the most up to date info on the Open House / Star Party status call: (734)975-3248. Many members bring their telescope to share with the public and visitors are welcome to do the same. Peach Mountain is home to millions of hungry mosquitoes, so apply bug repellent, and it can get rather cold at night, please dress accordingly.

**Membership**

Membership dues in the University Lowbrow Astronomers are \$30 per year for individuals or families, \$20 per year for students and seniors (age 55+) and \$5 if you live outside of the Lower Peninsula of Michigan.

This entitles you to the access to our monthly Newsletters on-line at our website and use of the 24" McMath telescope (after some training).

A hard copy of the Newsletter can be obtained with an additional \$18 annual fee to cover printing and postage. Dues can be paid at the monthly meetings or by check made out to University Lowbrow Astronomers and mailed to:

**The University Lowbrow Astronomers  
P.O. Box 131446  
Ann Arbor, MI 48113-1446**

Membership in the Lowbrows can also get you a discount on these magazine subscriptions:

**Sky & Telescope - \$32.95/year or \$62.95/2 years  
Astronomy - \$34.00/year, \$60.00/2 years or \$85.95/3 years**

For more information contact the club Treasurer at:

lowbrowdoug@gmail.com

**Newsletter Contributions**

Members and (non-members) are encouraged to write about any astronomy related topic of interest.

Call or Email the Newsletter Editor: **Jim Forrester (734) 663-1638** or [jim\\_forrester@hotmail.com](mailto:jim_forrester@hotmail.com) to discuss length and format. Announcements, articles and images are due by the 1<sup>st</sup> day of the month as publication is the 7<sup>th</sup>.

**Telephone Numbers**

- President: Charlie Nielsen (734) 747-6585
- Vice Presidents: Larry Halbert  
Dave Jorgenson  
Don Fohey  
Ken Ruble
- Treasurer: Doug Scobel (734)277-7908
- Observatory Director: Jack Brisbin
- Newsletter Editor: Jim Forrester (734) 663-1638
- Key-holders: Jim Forrester (734) 663-1638  
Jack Brisbin  
Charlie Nielsen (734) 747-6585
- Webmaster: Krishna Rao

**Lowbrow's Home Page**

<http://www.umich.edu/~lowbrows/>

**Email at:**

[Lowbrow-members@umich.edu](mailto:Lowbrow-members@umich.edu)

*A NOTE ON KEYS: The club currently has one gate key. The officers are negotiating with the University for additional copies. The Observatory Director usually has this key. All three Key-holders have keys to the Observatory.*





## University Lowbrow Astronomers

University Lowbrow Astronomers  
P.O. Box 131446  
Ann Arbor, MI 48113  
lowbrowdoug@gmail.com

### Reflections & Refractions



### Website

[www.umich.edu/~lowbrows/](http://www.umich.edu/~lowbrows/)



*Nick Scobel took this photo of a Scarlet King Snake stargazing. We're often told humans are the only sentient beings on the planet, yet this reptile with a brain the size (if it's lucky) of a small pea manages to do what most humans on the planet find beyond their abilities--Contemplate the night sky. True, the snake physiology only allows it to observe in warm weather, but in season they are out almost every evening. And while they're not very good at recording their observations, most humans don't bother. You may think this species to be good company, but they are very shy and generally stay hidden when people are around. Additionally, they're almost dead ringers for the lethal Eastern Coral Snake and mistaking which is which can make for a very sad end to an observing session.--ed.*



University Lowbrow Astronomers  
P.O. Box 131446  
Ann Arbor, MI 48113