

# REFLECTIONS

## REFRACTIONS

### of the University Lowbrow Astronomers

November 2002



The University Lowbrow Astronomers is a club of Astronomy enthusiasts which meets on the third Friday of each month in the University of Michigan's Physics and Astronomy building (Dennison Hall, Room 130 or 807). Meetings begin at 7:30 PM and are open to the public. Public star parties are held twice a month at the University's Peach Mountain Observatory on North Territorial Road (1.1 miles west of Dexter-Pinkney Road; further directions at the end of the newsletter) on Saturdays before and after the new Moon. The party may be canceled if it's cloudy or very cold at sunset. For further information call (734) 480-4514.

#### November 2002

- **Saturday November 9.** (Starting at Sunset). [Regular Open House at Peach Mountain.](#)
- **Friday November 15.** (Starting at 7:30 pm) ULA monthly meeting **Autumn's Astronomical Color Tour** A star hop by Mark Deprest
- **Monday night and Tuesday morning November 18 - 19** (Starting at Sunset) **2002 Leonid Shower** at Hudson Mills MetroPark contact Bernard Friberg at 734-761-1875 for more information!
- **Saturday November 30.** (Starting at Sunset). [Regular Open House at Peach Mountain.](#)

#### December 2002

- **Saturday December 7.** (Starting at Sunset). [Regular Open House at Peach Mountain.](#)



Get ready for the 2002 Leonids and what could be very nice storm, if predictions hold up and the moon is not too much of a problem, you could be witness to one of the great storms of the next 30+ years.

Lets all hope for clear skies and NO FOG!

*Patricia Totten captured dozens of brilliant meteors during the height of 2001's second Leonid storm. Reprinted with permission.*

## 2002 Predictions

New mathematical models were introduced during 1999, which successfully predicted the date and times the Leonid meteor stream would reach maximum hourly rates that year. Unfortunately, these same models failed to adequately model the intensity of the displays. Although slight improvements were made for the 2000 and 2001 displays, no model got a perfect score. With three years worth of strong displays behind them, astronomers believe they have a better understanding of the shape and particle distribution within the various rings of debris left behind by comet Tempel-Tuttle--the parent comet of the Leonids.

- **November 19, between 3:53 and 4:07 UT:** This favors Western Europe. Predicted rates range from 2000 to 4900 per hour. It will be produced by the ring of debris left by the comet during its 1767 return.
- **November 19, between 10:13 and 10:44 UT:** This favors the Americas. Predicted rates range from 5700 to 10000 per hour as Earth plows through the middle of the ring of debris left by the comet during its 1866 return.

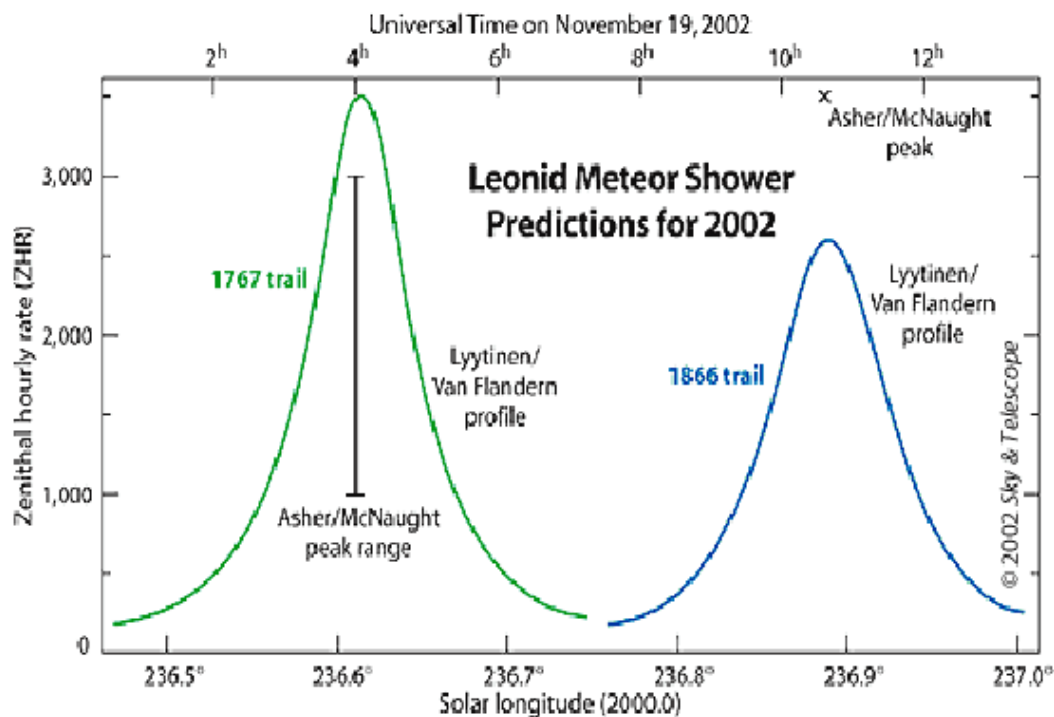
Lastly, I would like to point out that the moon will be a factor this year as it reaches its full phase the day after the Leonid display

## History of Leonid Predictions

Since the 19th-century discovery that the Leonids were a recurrent meteor shower capable of producing storms of meteors, astronomers have not been particularly successful at predicting the strong displays. After tremendous displays in 1833 and 1866, predictions for 1899 and 1933 failed to pan out. Another prediction for 1966 indicated a display was "possible", but nothing prepared observers in the western United States for one of the greatest meteor displays in history.

Beginning in the 1980s investigations of the orbit of the Leonid parent comet revealed the effects of Jupiter's gravity. Suddenly, some of the failures of the past were revealed. The reason for the lack of strong displays in 1899 and 1933 were possibly due to the fact that Jupiter had tugged on the comet following the 1865 return. The result was a slightly different orbit, which did not enable Earth to pass close to the comet's orbit or its meteor stream in 1899 and 1933. In addition, changes in the orbit as it approached the sun for the 1965 return caused Earth to once again pass close to the stream orbit, thus apparently explaining the intense Leonid display of 1966.

Several astronomers published predictions for the Leonid returns of the late 1990s, with 1998 and 1999 believed to be the optimum years. Donald K. Yeomans (Jet Propulsion Laboratory), a person who has



The chart on the left shows the predicted peak times (UT) and Zenithal Hourly Rates (ZHR) for the 2002 Leonid Meteor Shower. It looks like our best bet for seeing this year's best show is between 04:00 and 06:30 on the morning of the 19th.

Let's hope for clear skies and no fog!

**Remember that the Lowbrows will be out at Hudson Mills Metro Park on that morning!**

extensively studied the orbital motion of the Leonid parent comet, Tempel-Tuttle, predicted maximum would occur on November 17, 1998, at 19:43 UT, with hourly rates of 200 to 5000. Peter Brown, a leading researcher into the mechanics of meteor streams, generally agreed with the time, but gave a more optimistic estimate of hourly rates between 1000 and 9000. But the display of 1998 surprised everyone. Instead of a possible meteor storm, observers were treated to a display of about 250 per hour. To make matters worse, the display peaked about 16 hours earlier than predicted.

Why did the predictions for 1998 fail? The model of how meteors were ejected by their parent comets and how their orbits evolved were not fully understood. The long-held assumption was that meteor activity would increase as the distances between the Earth and meteor stream decreased AND the distances between the Earth and parent comet decreased. Thus, the strongest meteor displays would seem likely to occur the year of or the year following the parent comet's closest approach to the sun, with the actual strength of the display depending on how many days had passed since the comet had passed the point where Earth crossed the stream orbit. The time of the display's peak was assumed to be the moment Earth passed closest to the comet's orbit.

With 1000 years of Leonid observations to draw from, why were the principles of their formation and activity levels not fully understood? The answer primarily lies in the poor quality of the available observations. The mechanism for meteor showers, which were comets, was only recognized a few years prior to the 1866 display. In addition, astronomers had uncovered enough of the historic Leonid displays to recognize the roughly 33-year period of that stream. Therefore, the 1866 display was the first to be predicted and looked for by astronomers in a large area of the Northern Hemisphere. Predicted storms in 1899 and 1933 never appeared so large-scale observing programs came away with nothing. So, with all of this in mind, it comes down to the years either side of 1966, and the years leading up to and including 1998 to bring about an understanding of how Leonid meteors are distributed in the orbit of their parent comet.

## A Trip Down Under

By  
Bob Gruszczynski

May was a hectic month, capped off with yet another short-notice trip out of town. While I was on assignment out of the office locally, a fire raged at our customer's site in Australia. The usual support folks were on vacation, and since I'm usually the "goto guy" for fires of all kinds, I got the "You're leaving for Australia on Sunday, make arrangements" speech on Thursday. Fortunately, immediate thoughts of the Southern Cross, Omega Centaurus, etc. displaced the "you know where you can put that ticket" thoughts, and I was winging my way west and south.

The plan was to book for two weeks and if things got wrapped up sooner, I could always shorten it up. The business details actually took a week and a half, with the extra half-week to make sure that things were totally up to snuff. Good thing, too, because, as you may have noticed, bad weather has a tendency to follow me around a bit. I had two weeks of pretty poor astronomy weather. Fortunately (or unfortunately depending on the view of the day) I was doing some pretty long hours to pin down the problem that my customer was seeing. It would not have left much time for astronomy anyway.

Now, I have been reticent to carry my ETX-70 onto an airplane after 9/11 (let alone into an airport security zone) even though things do go better as a business traveler. My plan was to see what was available for purchase in Australia, knowing that I would probably end up giving it away at the end of the trip. When the astronomy weather stayed so bad, I stopped looking for serious equipment, but found a really good pair of 7x50 binoculars for AUD\$65 which translates to about US\$35. I was prepared, just in case there was a night of good seeing.

It was Fall outside of Melbourne on the southern Australian coast, much like Fall here. Peeks of sunshine followed by periods of rain. When clear, the sky was amazingly blue, like the western US. When it rained, it reminded me of my time in central England, outside of London, drab and dreary. And, as anywhere, if you don't like the weather, wait five minutes. Two weeks to the day from when I received my marching orders, the skies turned a bright clear blue and looked like they actually wanted to stay that way. I had my last meeting with a very happy customer and I headed out the door for my ten minute drive to the Hotel. It was 6:00 PM.

I had a quiet dinner in a sushi bar close to the hotel and next to a very nice (but well lit) park. There was no fog on the bay, this was looking promising. I finished dinner and walked outside to be instantly greeted by a sky full of stars. WOW!!! I had had some keyhole peeks at the night sky earlier in the trip and I was kind of getting used to the Ozzy sky, but with all of its blazing glory, it was pretty overwhelming, and, quite frankly, UPSIDE DOWN! It took a while to get my bearings, seeing Leo and Virgo in the north and kind of out-of-whack. No Big Dipper to arc and spike, but I did manage to find Spica. They were already low in the northern sky and not really in a position to go galaxy hunting with a pair of 7x50's. Then I looked up, and almost fell down. A very different view of the Milky Way. From the park I spent some time searching for the SMC, LMC, and 47 Tucana, but I had real difficulty orienting myself with the sky and trying to see through the surrounding artificial light. I would find out later that Dorado and Tucana were both setting fast in the direction of the Geelong city lights.

Earlier in the trip, during a "keyhole moment" at the Hotel, I found that the balcony of my Hotel room was pretty well shielded from a lot of the artificial light. At this point I decided that the balcony was where I would spend the night observing. I made my way back to the Hotel, pulled one of the overstuffed side chairs out to the balcony and set to work. I brought my copy of David Levy's "Skywatching" with me and the latest copies of Sky & Tel. It was around 8:30. I looked up and immediately found the Crux, the Southern Cross. Hey, there's a star missing! Oops, the "false cross", an interesting asterism formed by two stars in Vela and two stars in Carina. Cool!

Well, Carina was a great place to start. I started with Eta Carinae, and NGC 3372, the EC nebula, along with NGC 3324, the Keyhole, a dark nebula inside 3372. Very beautiful, certainly on par with Orion and the Lagoon, in my opinion. Next was a beautiful open cluster NGC 3532. Do you mean this isn't the Jewel Box, oh my. But, wait, what's this? IC 2602, the Southern Pleiades as I found out later, another beautiful open cluster. Just scanning the sky reveals so much beauty. 10:15, time for a break. Wake up at 11:00, it's a bit chilly out here, but not too bad, grab some covers off of the bed & wrap up.

Wow! There's the real Cross. I found somewhere on the web the number of countries with this star grouping on their flag, and it is somewhat over ten. I can see why. And, what a contrast between the real Jewel Box and the Coal Sack. Bright vs dark. Awesome. The Jewel Box is very colorful and the contrasting stars are impressive.

Hmmm, Centaurus must be somewhere around here. Oh, straight up, it's on the Zenith. Now, where's this.....Omega.....Cent.....Hercules who?? WOW!!! In the 7x50's it looks like M13 does in my ten-inch. This thing is huge! Absolutely amazing. Just panning around this part of the sky for a while makes great viewing. But wait, eyelids getting heavy, must stay awake, gather photonzzzzz. Woke up again at 2:00.

Wow! Here comes the rest of the Milky Way, albeit backwards. There's Scorpius and Sagittarius, and more stars than you can shake a long focal length refractor at. I spent three more hours scouring the Scorp/Sag/Scutum sky. The list includes the usual suspects:

M4, 6, 7, 8, 9, 16, 17, 18, 19, 20, 21, 22, 23, 24, 54, 55, 62, 69, 70

NGC oh, the heck with it, every nebula and star cluster I could sweep up in the 7x's I saw. I finally went to bed around 5:00. Up at 8:00 to go into the office for the last time before heading to Melbourne for my final night's stay. What an awesome night of observing. I visited what I would consider the most beautiful areas of the Milky Way. I hope to get far enough south again to view these wonderful sights, and I hope that all of you get to do the same!!

## **Astrofest 2002** **by Tom Ryan**

This year, Astrofest was held on September 12 through the 15, the extra day on Thursday having been added last year because the event is so well attended. Although it gets bigger every year, it is seeing increasing competition from other events, notably the Black Forest Star Party. This event, which was held in Pennsylvania's first designated Dark Sky Park, occurred on the weekend preceding Astrofest, and drew off all of the club's adventurous observing members, leaving only Jack Brisbin and myself to represent the Lowbrows at Astrofest.

Astrofest is held at Camp Shaw-Waw-Nas-See, a 4-H camp near Kankakee, Illinois. This year marked the event's twenty-third year (Jack and I have 42 years of attendance between us), and the event has changed greatly over the years.

Early Astrofests, although they were not very well attended, featured fairly dark skies and lots of amateur telescopes. At the time, the Dobsonian revolution was in full swing, and the fallout from the idea that an amateur could have a portable 17" telescope was generating huge num

bers of technical innovations, all of them by amateurs, for amateurs. There wasn't a year that went by that didn't introduce radical new ideas for building telescopes. Both Jack and Bob Cox gave speeches in the lecture hall on how to build telescopes, and on new optical designs for amateurs. (I bought a completed, signed set of optics from Bob Cox for an experimental 8" erect-viewing relay scope at the swap meet there.) The swap meet was loaded with all kinds of amateur telescope junk; stuff that couldn't be found anywhere else. Building telescopes seemed to be the main theme, with observing available at night so people could compare the relative virtues of different scopes. And like the Burgess Shale, Astrofest yielded up some pretty unusual forms of telescopes, to the benefit of everyone today.

Recent Astrofests have been different, perhaps inevitably so, as the Dobsonian revolution winds down and amateurs become wealthier and more sophisticated. Attendance has soared, so that now the central field, which was once a menace to agoraphobics, is now filled and trailers are overflowing onto the parking lot. Light pollution is more of a problem, although I, as a non-observer, didn't have a big problem with that. The swap meet, however, was a ghost of its former self. Most people selling things there are commercial vendors, and at prices that are not much different from mail order. The only worthwhile glass that I saw for sale came from Ed Jones, who was selling Dall null lenses (which had to be refigured to work, but hey!, that's what it's all about).

The lecture was by science journalist Robert Naeye, who spoke on "Solving the Universe's Mysteries Through Extra Dimensions". This brings up a pet peeve of mine. I don't inflict the Lowbrows with articles full of information that I don't have personal experience with (I mean, did he think of this extra dimensional stuff himself? He's a writer and a lecturer!), and I wish that people who schedule lectures would realize that an ounce (just an ounce!) of original work is worth a ton of third hand reporting.

The other lecture was by telescope maker and innovator, Peter Ceravolo, who talked about his new planetarium software that he is selling(!).

The most interesting thing that I saw this year came from a company called Coronado Filters. They are selling a remarkable piece of space technology in the form of a hydrogen alpha filter. It consists of a Fabry-Perot interferometer and optical filter to isolate the H-alpha line when viewing the sun. It worked beautifully (it has a very narrow bandpass), but it was a product of government research, and is not exactly an amateur's innovation. On the brighter side of things, many more people will view the sun with one of these than they would with Henry E. Paul's quartz monochromator.

When I asked Jack what new things he saw this year, he said that the Astrodog hot-dog stand had added chili to their menu. He probably already knew about the Coronado filters from S&T advertisements.

Jack and I did have a chance to indulge our telescope making bent. Some amateurs arrived with a home built 12" trischiefspiegler (the only kind available), and Jack and I compared its images to those in a 155mm f/6 AstroPhysics refractor. The images in the 12" were much brighter, even at f/20, than those in the 6" refractor, but the seeing wasn't good enough to tell if the images were any sharper. This, of course, is a testament to the quality of the refractor. Both scopes, being unobstructed and well baffled, had very dark sky backgrounds. The refractor's image looked to me to be a bit more three-dimensional, but this could be an artifact of my brain. The eye has about two diopters of color error (an incredible amount!), so everything we see is surrounded by a huge purple halo that the brain image-processes out. (You don't normally see the individual rods and cones either, for the same reason, unless you're a French painter of the 1880's and heavily into absinthe. Purple halos in refractors will gradually fade from sight, if you look long enough.) The three-dimensional impression that I got from the refractor could have been my brain's interpretation of an unbalanced amount of color error in the image. (Hey! There could be a product idea here!).

All in all, this year's Astrofest was different, but still worth attending. I saw many old friends, and made several new ones. Ex-Lowbrow Brian Close said that, because of the lack of amateur scopes, this would be his last Astrofest. I hope not.



*Tom Ryan is the author of many articles for the University Lowbrow Astronomers' newsletter.*



# My Mak-Newt

## By Jim Forrester

Last December, my wife and I drove south to visit her aunt and uncle in central Florida and to spend several days camping in the Everglades. We might have flown, but his would have made taking my six inch mak-newt telescope along very difficult. After a two-day drive we arrived in Lady Lake, Florida and the following night I set up my Intes MN61 telescope in a suburban backyard. This scope is supposed to produce refractor-like views, comparable to a TMB 105 or an AstroPhysics Traveler, but at less than a third the price. I knew the design was capable. I had looked through a Ceravolo 5.7 inch Maksutov-Newtonian on Peach Mountain a couple of years previously and had been very impressed, but it too carried an impressive price. The design combines the deeply curved corrector plate of the Maksutov with the small secondary of the Newtonian. The secondary is mounted to the inside of the corrector, thus eliminating any spider vane interference. The secondary obstruction is about 18%, not at all noticeable or so the theory goes.

I had gotten the scope in August, and between pressure at work and bad luck, I had done only a little observing, and that usually through sucker holes. Being the new guy with the new scope it was, of course, my fault when an open house got clouded out. After the "Fog of the Century" wiped out the Leonid Star Party, I began to wonder if I would ever have a good night of observing.

I was finally set up under clear, steady skies. No clouds, nowhere. But would the scope perform? I should not have worried. A few months before, Sky and Telescope published a wonderful photograph of Jupiter with one of its moons casting its' shadow on the planet below. I thought to myself "No telescope I'm likely to own will show me anything like this." I was wrong. Finding Jupiter at 30X with three of its' moons was such a clear, bright sight I increased the magnification to 72X. What I saw had me reaching for a 2X barlow. There was one of Jupiter's moons (I later learned it was Ganymede)--a bright, sharp disc against a very black sky. And on the top of Jupiter's clouds, near the planets' horizon was the shadow of that moon. I was amazed and elated. I boosted the magnification with all the glass I owned at the time to about 370X. The view, while larger, was not really improved--some sharpness was sacrificed, though not much, the air being remarkably steady.

I tried some deepsky objects--M42 showed the trapezium but much of the nebula was lost in the sky glow. No nebulosity showed in M45 either and M1 was impossible (as it always had been for me) to find at all. So I returned to Ju

pter and by this time the moon had begun its' transit. I was quite happy to stay with the giant planet until it was time to pack up the gear for the night.

The next day found us on the road driving the 300 miles to Everglades National Park. The park, though on a line only about 50 miles from Miami, is a wild place--full of waterfowl, alligators and mosquitoes. December and January are the most bug free months in the park. Most winters are cool enough to make them almost disappear. Last December, being unusually warm, was not one of those years. If you are one of those persons the only mosquito in a hundred miles will find, camping and observing in the Everglades will feel suicidal. For the most part, though, the bugs were no worse than an average summer night on Peach Mountain.

We were camped on the shore of Florida Bay. The sky south over the water and to the west was very dark. But to the northeast the Miami Nebula played role the Ann Arbor Nebula plays here--you just have to wait until earth rotates the objects of your observing desire out of the sky glow. The skies were not a great deal darker than Peach Mountain, but the air was very steady and transparent and a great deal warmer than home in December.

Being relatively new to observing (and having a rather flat learning curve), I was finding many objects for the first time. The parade overhead of M34, M35, M36, M37 and M38 (though not in that order) was wonderful. I was able to catch M15 before it disappeared in the west. M42 was a wonderful sight. I had known there were four stars in the trapezium. But I saw six over Florida Bay. At 250X, the extra two stars were clearly there, though fuzzy. I've since learned there are actually eight stars in the trapezium, but as they're rarely seen, I don't feel too bad missing them.

The nebula itself was very bright, providing a lovely frame for the trapezium. An OIII filter brought out more detail in the nebula, but as the brightness was cut back, I can't really say it was a better view. What was a better view in the OIII filter was NGC 2237--the Rosette Nebula-- in Monoceros. The cluster (NGC 2244) that lies as a couple of line of stars in a kind of doughnut hole in the middle of the nebula can be seen in binoculars, but the nebula reveals itself as a large, spectral object in the OIII filter. Some nebulosity in the Pleiades was visible at 56X. And finally M1 was finally right where it was supposed to be nearer the end of the lower limb of the Taurus asterism. The OIII filter turned something that was barely there into a marvelous tangle of wispy tendrils. We drove back to Lady Lake Christmas Eve. December 28 found me observing from the backyard again, this time over the rooftops to watch the Moon's occultation of Saturn. The pair was well over the houses when Saturn slipped behind the slim dark limb of the nearly full Moon. Again, the Intes provided a bright image of great contrast even though the target was quite low in the

sky. The Moon slid below the line of houses just before Saturn was to reemerge, but I felt no regret as I had finally been able to put the scope through its' paces with terrific results.

Some notes on the scope--I obtained my MN61 from Bill Burnett of Internet Telescope Exchange in Montana. The scope comes with an optical certification. (My mirror checks out at 1/7.5 wave with a 96% strehl ratio.) The F6 focal ratio gives good deep space and terrific planetary views. While the scope is built like a tank, I did manage to knock it out of collimation. If you ship it back to them, ITE will recollimate the scope--they recommend you not do it yourself. If you are stubborn and abit adventurous AND FOLLOW THE DIRECTIONS THAT COME WITH THE SCOPE you can do the collimation yourself. You can get a crayford of helical focuser. I have the helical (I got a deal) and it was very stiff. I cleaned it and put a tiny bit of synthetic gun oil on the threads. It worked wonders and the focuser is now very smooth. Be careful, though. Solvents ruin paint jobs and optics. Best practice is to remove the focuser to clean it. Use as little lubricant as possible. Oil simply attracts grit and the more you use, the more dirt you collect sooner.

Finally--This is a very good telescope. As it weighs almost 10kg, be sure to have a mount and tripod sturdy enough to carry it. Coupled with its' length (about a meter), this scope is not airline carry- on luggage. Which brings us to the end of this article and the beginning of the next--my TMB105 refractor.



## An Editorial by Jim Forrester

We Lowbrows are currently re-working our by-laws to bring them up to date with the current operation of the club and to help us operate more smoothly. A statement of general purpose could help us narrow our focus and concentrate our energies. Some of the following points could be included:

1. Astronomical education for the membership and the public.
2. Visual observing opportunities for the membership and the public.
3. Politically engage to fight light pollution and increase funding for astronomical research.
4. Provide service and support to the U.M. Astronomy Dept.

The Peach Mountain open houses along with the annual Leonid star party and the maintenance and operation of the 24 inch telescope and observatory are great club successes. Educationally our bright spots are the club web site and newsletter. This may be the limit of our energy. If it is, we should be clear with ourselves about these limits.

I would like us to take an active role-AS A CULB-in putting legislation foreword at the state level to regulate outdoor lighting. Court battles are a bit easier to win with the state government in your corner. Working more actively with the astronomy dept. can be a sensitive proposition as they have job and career responsibilities that have to take precedence over anything we may wish to do.

We currently have (as far as I can tell) five individuals with ongoing responsibilities in the club: the president, treasurer, observatory director, and newsletter editor and web master. These are time consuming activities and seem to encompass just about all the ongoing work the club does. Establishing an executive committee of these individuals, with other officers the club may need and at-large members willing to take on specific tasks could provide immediate council and material support to the other members of the committee. An example of support would be helping the newsletter editor round-up articles. An example of council is being available to discuss astronomy dept. requests of the club. Too many of our officers have felt themselves toiling alone. This causes resentment, burns out our most talented people out and weakens the club.

*Jim Forrester and his Mak-Newt is a man with opinions and the ability to express them!*

## Leonid Prospects - 2002 November 19, ~4:00 and ~10:40 UT

A number of models predict strong peaks in the UT early and late morning hours of November 19. The first maximum is thus in good position for European observers unless they are located geographical longitudes east of roughly 30° and observers in northern Africa. The second peak will be visible from the entire North America.

The understanding of the dynamics of meteoroid streams requires a gap-less profile of the activity. The International Meteor Organization collects visual meteor observations from all over the world to derive complete activity profiles of meteor showers. In 1998, a total of 70000 Leonids were collected, in 1999 more than 350000! Even if you cannot observe from one of the most favorable locations, *your observations will be very useful for the global picture of the Leonid meteor shower.*

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Dust trail	McNaught, Asher	Lyytinen et al.	Vaubailon	Jenniskens
7-rev (1767)	03:56 UT ZHR = 1000	04:03 UT ZHR = 3500	04:04 UT ZHR = 3400	03:48 UT ZHR = 5900
4-rev (1866)	10:39 UT ZHR = 6000	10:40 UT ZHR = 2600	10:47 UT ZHR = 3000	10:23 UT ZHR = 5400

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Hello All,

A note of thanks to all of you who sent kind words for Joni and I regarding the Black Forest Star Party. It was our pleasure to share our experiences with you all from our first year out there. It was an even greater pleasure to see all of the smiling Lowbrow faces out there sharing the experience with us this year. Hopefully there will be many more!

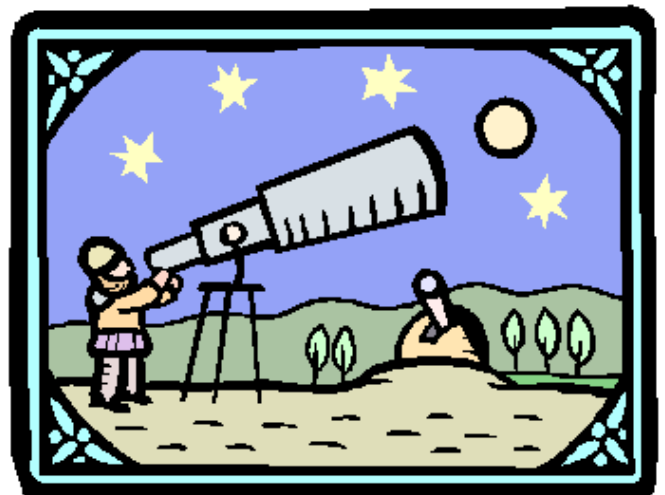
Regards,

Bobby & Joni G

### A Little Note from the Editor

I just wanted to say , "Thank You" to everyone who has been contributing to the newsletter these last few months. Some of you might know that I was about to "step-down" as newsletter editor a few months ago because of some personal reasons. You folks have made my job a little easier and you all deserve a "BIG THANK YOU!" from the rest of the club.

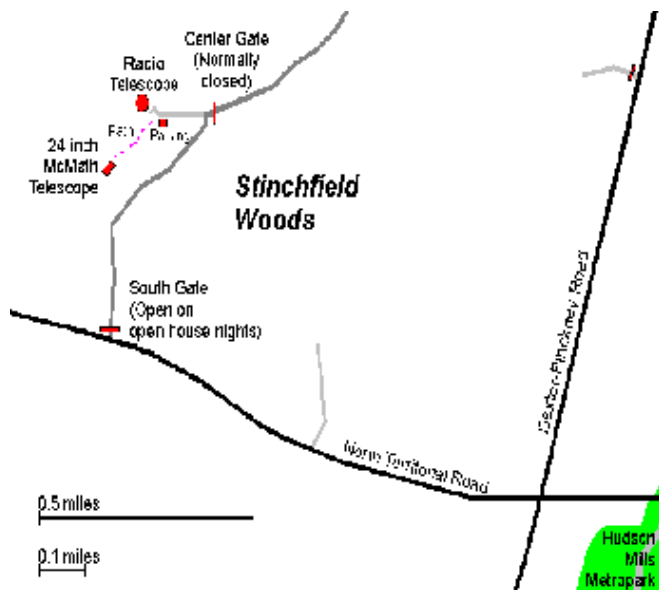
If you want to have the kind of newsletter that you can be proud of you ALL must contribute. Remember this is not MY newsletter its yours, help keep it that way! Thank You, again to everyone who contributed.





## Places and Times:

Dennison Hall, also known as The University of Michigan's Physics and Astronomy building, is the site of the monthly meeting of the University Lowbrow Astronomers. It is found in Ann Arbor on Church Street about one block north of South University Avenue. The meeting is held in room 130. Monthly meetings of the Lowbrows are held on the 3rd Friday of each month at 7:30 PM. During the summer months, and when weather permits, a club observing session at Peach Mountain will follow the meeting.



Peach Mountain Observatory is the home of The University of Michigan's 25 meter radio telescope as well as the University's McMath 24 inch telescope which is maintained by the Lowbrows. The observatory is located northwest of Dexter. The entrance is on North Territorial Road, 1.1 miles west of Dexter-Pinckney Road. A small maize-and-blue sign marks the gate. Follow the gravel road one mile to a parking area near the radio telescopes. Walk along the path between the two fenced in areas (about 300 feet) to reach the McMath telescope building.

## Public Star Parties:

Public Open House/Star Parties are held on the Saturday before and after each new Moon at the Peach Mountain Observatory. Star Parties are canceled if the sky is cloudy at sunset or the temperature is below 10 degrees F. Call 480-4514 for a recorded message on the afternoon of a scheduled Star Party to check on the status. Many members bring their telescopes and visitors are welcome to do likewise. Peach Mountain is home to millions of hungry mosquitoes - bring insect repellent, and it does get cold at night so dress warmly!

Amateur Telescope Making Group meets monthly, with the location rotating among member's houses. See the calendar on the front cover page for the time and location of next meeting.

## Membership:

Membership dues in the University Lowbrow Astronomers are \$20 per year for individuals or families, and \$12 per year for students and seniors (age 55/+). This entitles you to the monthly REFLECTIONS newsletter and the use of the 24" McMath telescope (after some training). Dues can be paid to the club treasurer **Charlie Nielsen** at the monthly meeting or by mail at this address:

**6655 Jackson Road #415  
Ann Arbor, MI 48103**

## Magazines:

Members of the University Lowbrow Astronomers can get a discount on these magazine subscriptions:  
Sky and Telescope: \$29.95 / year  
Astronomy: \$29.00 / year

For more information contact the club Treasurer. Members renewing subscriptions are reminded to send your renewal notice along with your check when applying through the club Treasurer. Make the check payable to "University Lowbrow Astronomers".

## Newsletter Contributions:

Members and (non-members) are encouraged to write about any astronomy related topic of interest. Call or E-mail to Newsletter Editors at:

**Mark S Deprest (734)223-0262 [msdeprest@comcast.net](mailto:msdeprest@comcast.net)**  
**Bernard Friberg (743)761-1875 [bfriberg@aol.com](mailto:bfriberg@aol.com)** to discuss length and format. Announcements and articles are due by the first Friday of each month.

## Telephone Numbers:

President:	D.C. Moons	
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*Skygazers worldwide got a treat in 2001 as the Leonid meteor shower put on its best display in 35 years. This five-image composite by Kazuyuki Tanaka in Japan shows nine Leonids radiating from the Sickle of Leo (center). The Beehive Cluster is at the top. Reprinted with permission.*



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