

# REFLECTIONS

## of the University Lowbrow Astronomers

October 2001



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 (313) 480-4514.

### Shadows on Jupiter

By Mark Deprest

### The AutoStar System Reviewed

By Bob Gruszczynski

### Dude? You're all Dewed Up!

Harry Juday has a solution

### The Old Gray Universe

By Lorna Simmons

### Star of the Class or Class of the Star

Mnemonics for Fun

**This Month:** Oct 13 Open House at Peach Mt.

Oct 19 Meeting at 7:30pm in Rm. 807 of the Dennison Bldg. Speaker - Milton French Eclipse 2001

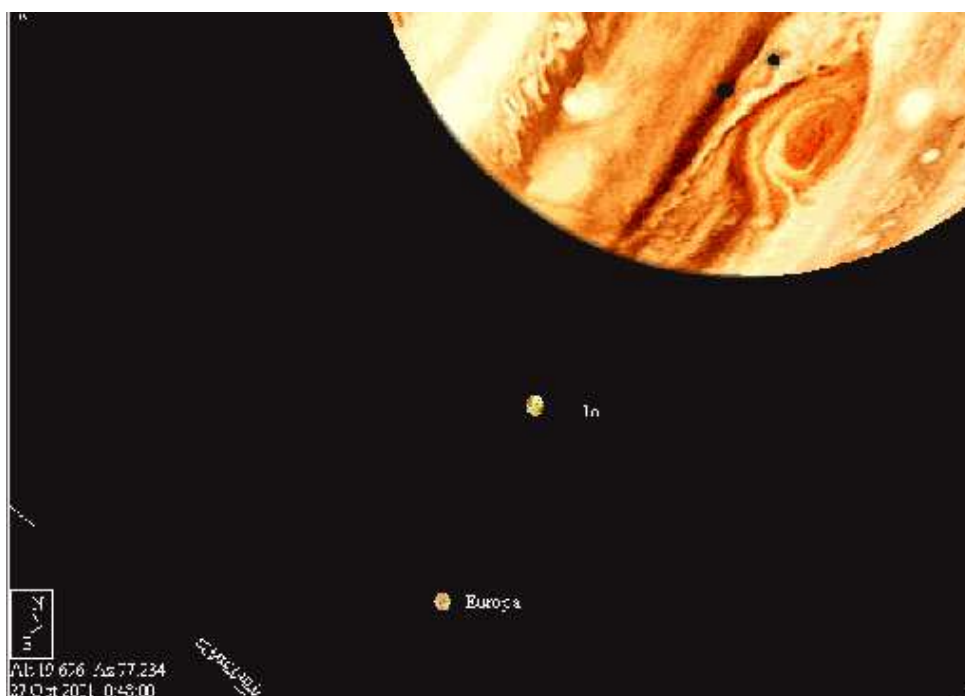
Oct 20 Open House at Peach Mt.

Oct 28 Great Space Day at U of M North Campus in the EECS Bldg

**Next Month:** Nov 10 Open House at Peach Mt.

Nov 16 Meeting at 7:30pm in Rm. 807 of the Dennison Bldg. Speaker - Clay Kessler's Astro photos

Nov 17 Open House at Hudson Mills Metro Park - Peak of Leonids Meteors



October 27, 2001 at 0:48 am the shadows of two of Jupiter's moons (Io and Europa) cast their shadows on the face of Jupiter and transit in tandem with the Great Red Spot!

This is just one of many MSE's (Multiple Shadow Events) in this year's Jovian apparition.

An article by Mark Deprest describes these event and some of the dynamics behind them.

Graphics produced by Guide 7.0 by Project Pluto

## Shadows on Jupiter

By Mark Deprest

Early in the 1600's Simon Marius and Galileo Galilei pointed the newly invented telescope toward the heavens and specifically at the planet Jupiter. What they saw was both amazing and sacrilegious, there seem to be small objects "orbiting" this giant planet, actually casting shadows on the face of Jupiter.

Late in 2000 Rex Graham, Senior Editor of "Astronomy" magazine, is glancing through his copy of "The Royal Astronomical Society of Canada's: Observer's Handbook 2001" edited by Rajiv Gupta, when he notices that in October of 2001 there will be 10 Double Shadow Transits (DST) of the Galilean moons. To him, this seemed like a rather large number of Double Shadow Transits to all happen in one month, time to check with the experts, the best of these is Reta Beebe of New Mexico State University and discipline leader of the International Jupiter Watch: Atmosphere Discipline. A quick little e-mail to her asking for a source to confirm this phenomenon, which got forwarded to Mark Vincent, Ph.D. one of Beebe's colleagues at NSMU and a former President of the University Lowbrow Astronomers of Ann Arbor, MI. Vincent then forwarded the e-mail to the, then current President of the Lowbrows, me. The e-mail went like this:

*Hi Mark,*

*I suspect you'd have a good answer to this request from Astronomy Magazine to Reta Beebe to me to you....*

*Gotta Go, Meeting in a Minute,*

*-Mark Vincent*

*Dr. Beebe,*

*Sorry about bugging you with such a mundane question, but do you know what source would list shadow transits on Jupiter? I ask because in October 2001 there will be 10 double-shadow transits, according to the new "Observer's Handbook 2001," edited by Rajiv Gupta. Ten sounds like a lot, but I would like to check into it.*

*Thanks,*

*Rex Graham*

*Senior Editor, Astronomy Magazine*

Well, I did have a very good source for confirming this info, and this is the kind of project, that I like to do. I went to my favorite astronomy software Guide 7.0 by Project Pluto, for the info. Guide 7.0 would provide me with a text file of all the Galilean satellite events for any period of days needed. This file included the moon involved, the type of event (occultations, eclipses, transits, and shadow events), the date, and the start and end times of each event. This was more information than I needed, but for just the one month, it wasn't too difficult weed through the excess data, to confirm the 10 DST's. But, was this some kind of unusual event or was this something that happens on a regular basis? When I started leafing back through older copies of the "RASC's Observer's Handbook," I noticed that there was a pattern to these MSE's (Multiple Shadow Events), that approximately every 13 months or so, an increase in the frequency of the MSE's occurs.

So, I went back to Guide 7.0 and asked for a complete Jovian year (12 Earth years) worth of events, this produced a rather large file containing some 27,890 event records. I needed to weed-out a lot of data this time, so that all that I would have remaining were the shadow events. I used Microsoft Excel to create a spreadsheet that I could export into Microsoft Access, which I used to eliminate everything except the shadow events. This created a file of 8896 records that included both the start and end times of each shadow event. It was just a matter of picking out those events when the start of one shadow event was followed by the start of another shadow event without the end of the first. With that done, I now had a spreadsheet that showed 271 DST's and 3 TST (Triple Shadow Transits) for the Jovian year starting January 1<sup>st</sup> 1994 and running through December 31<sup>st</sup> 2005. I was able to confirm this 13 month pattern which is known as "Shadow Season" and it can last for about 35 to 48 days. During a shadow season Multiple Shadow Events can average a frequency of one every 2.36 days. DST's are the most common, but occasionally TST's are possible, the last TST that happened was on November 11<sup>th</sup> 1997, and involved Io, Ganymede, and Callisto. The next TST will occur on March 28<sup>th</sup> 2004 and the same three moons will be involved.

This list also produced an unusual event that I like to call an ODST or Overlapping Double Shadow Transit, which started on September 21, 1997 at 18:38 UT and lasting until 02:26 UT on September 22, 1997.

1. Europa's shadow first appeared on the face of Jupiter at 18:38 UT and Callisto's shadow began its transit at 19:22 UT.
2. Then Europa's shadow left the face of Jupiter at 21:29 UT, only to be replaced at 22:46 UT by Ganymede's shadow.
3. The shadows of Ganymede and Callisto made their way across the face of Jupiter until 00:14 UT when Ganymede's became the lone survivor of this "Shadow Dance." At 02:26 UT the shadow of Ganymede left the "dance floor."
4. While all this was going on the GRS (Great Red Spot) was making its cruise across the Jovian face, not to forget that the moons themselves transited also. Now that would have been a real treat to observe. But unfortunately from my point of view most of it happened while Jupiter was still below my horizon.

I'm sure by now that somebody is asking, is it possible for all four Galilean moons to cast their respective shadows on the face of Jupiter at the same time? Answer: No. In Fred Price's book, "The Planet Observer's Handbook, he shows a wonderful little formula that pertains to the correlation between the mean daily orbits of Io, Europa and Ganymede. That expression is:  $L_i + 2L_{ii} - 3L_{iii} = 180$  degrees. Which basically means that if Io and Ganymede are transiting then Europa is behind Jupiter. Price goes on to state that these three Galilean moons' motions are commensurate and that, "they are precise and permanent and the above relation always holds and follows from mutual gravitational perturbations between all three satellites." Callisto, however, does not have any effect on this mo

tion relationship, so the maximum number of Galilean Moon Shadows that can appear on the face of Jupiter at the same time is three.

Now the question is: Why the 13-month gap between "Shadow Seasons?" To answer this question you need to find out if all 4 of the Galilean moons cast a shadow on the face of Jupiter every time they orbit. We also need to know how often and for what length of time each moon casts its shadow on the face of Jupiter. It should follow that the longer and more often a moon casts its shadow of Jupiter's face the better the chance of a MSE.

The first question was answered in Fred Price's book, where I read that twice, for 3 years, in a Jovian year (12 Earth years), Callisto casts no shadow, nor does it transit or exhibit eclipses or occultations. This is because the distance of Callisto from Jupiter and the tilt of Jupiter's equatorial plane (which the Galilean Moons orbit very close to) can be great enough for not only its shadow, but also the entire moon to appear above or below the planet. Also, its shadow can at times only just graze the northern or southern limbs of Jupiter, so its time on the face of Jupiter varies from approximately 25 minutes to 4 hours & 50 minutes when it transits the equator. All of this coupled with a period of almost 18 days between transits means that there is a very limited amount of time for Callisto to be part of a MSE.

Obviously the other Galilean moons are also subject to variances in the length of time their respective shadows fall on the face of Jupiter, but to a lesser degree. Io, Europa and Ganymede create a shadow transit on every orbit. Ganymede's transit time can vary from 2.25 hours to almost 3.5 hours and its orbital period is about 7 days. Europa's orbital period is approximately 3.5 days and its shadow transits last between 2.5 hours and 3 hours. Io because of its close orbit to Jupiter shows very little variances in the length of time its shadow transits, about 2 hours and has an orbital period of about 42.5 hours. All of these factors play into the 13 months between Shadow Seasons and contribute to a number of sporadic DST's throughout the time between seasons.

When I am asked, what is my favorite thing to observe? The answer is always "the ever changing Jupiter, with its 4 Galilean moons." As you can see, (in just about any size scope), Jupiter and its moons are source of continuously changing views and for a few months every 5.93 years when Earth and Jupiter are coplanar even the moons can cast their shadows on each other. This will next happen in 2002 and it's a wonderful opportunity to visually compare the differences in the sizes and albedos of the Galilean moons.

For more information on Jupiter and its moons, I suggest "The Planet Observer's Handbook" by Fred W. Price and published by Cambridge University Press, "Jupiter: The Giant Planet" by Reta Beebe and published by Smithsonian Institution Press. You can also find a wealth of information from the Internet, where there are as many different websites about Jupiter as Saturn has moons.

## Meade Autostar Review

By  
Bob Gruszczynski

Meade makes several versions of the Autostar System, depending upon the telescope system used in conjunction with it. The setup that I will be reviewing is the Autostar model 494. Having used, and helped others use, the Meade Autostar #494 System with the ETX 60/70 series telescope, I thought that it would be useful to review the system for those who might be considering this system.

Starting out with the ETX 70 turned out to be a fairly simple process. I actually used the owner's manual (and found it to be useful)! Autostar operation itself is mostly straightforward and easy. There are a few "gotcha's" that can make life interesting. I will touch on those later. I used the normal initialization procedure to start with. When the telescope is assembled and ready for observation, flip the power switch to "on." Follow the procedure in the manual to set up the Autostar. The Initialization procedure is also set up in graphical form in an appendix in the manual. I found this to be much easier to follow. In a matter of minutes, I was ready to observe the skies.

The Autostar consists of several hierarchical layers of information. At the highest level is the "Select Item:" This allows the user to select between all of the different modes of operation. These items include Objects (all standard astronomical objects), Setup (all setup functions), Event (astronomical events such as sunrise, moonset, etc...), Utilities, Glossary, and a cool feature called Guided Tour. Each successive layer delves deeper into the function selected at the "Select Item" level. At this point, the "Mode" key is our friend. No matter how deep we get into the hierarchy, each successive press of the "Mode" key returns us to the next highest level in the structure. The best way to become familiar with the Autostar functionality is to play with it. I found it very easy to experiment, so don't be afraid. The best part is that if you or the Autostar become too confused, it is very simple to power off and start over.

**I give the Autostar high marks for user-friendliness. I figure that if I can use it, anyone can! Out of the box, I found that the Autostar 494 system was pretty much ready to use. In all cases, I followed the graphical initialization procedure shown in the appendix and was observing within minutes of turning the system on. Pluses are:**

- Very easy-to-follow instructions.
- Simple setup.
- Very accurate goto and tracking. An example, I took a quick trip to Grand Haven one weekend and took the 'scope with me. I made a quick setup one night as the clouds were rolling in fast. I noticed that the Autostar had missed each alignment star by several degrees. Then, as I did my "goto's" things were still off. I finally realized that I did not change my location in the Setup. Being the lazy goat that I am, I went ahead and moved the 'scope manually to the object I was looking for, and it tracked beautifully for the whole amount of time I spent on the object.

There are, however, some "gotcha's" that require a bit of patience. I will list them here:

- The scrolling two-line display can be unreadable in certain circumstances such as cold temps.

- After the telescope is aligned, the four arrow keys are used to move the telescope in alt. or az. The up/down arrow keys at the bottom of the controller are used to scroll through menu items at this point. If you try to use the up/down arrow keys in the middle of the controller for this, it will move the 'scope. However, the right/left arrow keys are still used to move through fields in the menu items. This is confusing.

- While "going to" an object, it is always necessary to hit the "enter" key after selecting the object before hitting the "goto" key. This is frustrating for us impatient goto-er's.

-The drive is particularly noisy.

**Overall, I have found the ETX 60/70 to be a versatile and inexpensive 'scope, and have logged many miles and objects with the '70. I give the Autostar #494 4 out of 5 stars. As usual, Your Mileage May Vary. Clear Skies!!**

## EFFECTIVE AND VERY INEXPENSIVE DEW SHIELD MATERIAL !

by Harry L. Juday

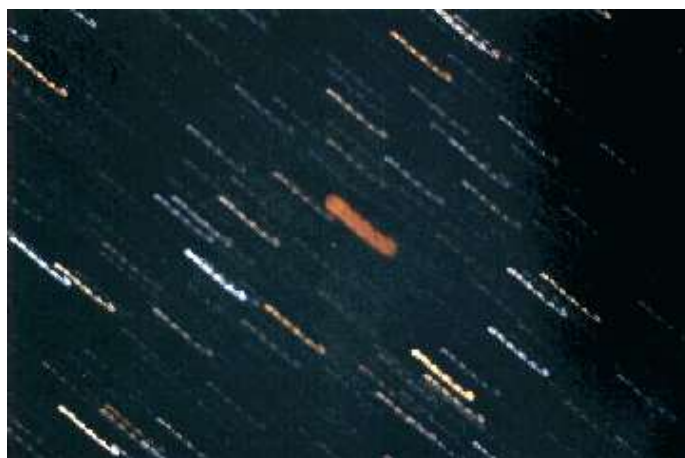
We have been lucky this summer with rather dry viewing nights, on the ones we've had that is. However, late summer and fall can bring out the dew, and fog up the seeing pretty fast. Although I have a number of the great Kendrick dew zappers for my 8" SCT, eyepieces and even the eyepieces on our 10x70 binos, I needed something for my 18" Dobs. I found what I think is a very good material, that I find works very well in absorbing moisture, can be pieced together for large applications (OK, it may not be the prettiest looking when it's pieced), but it WORKS, and it is VERY INEXPENSIVE !!! It is called "Flex-Foam", made by "Fiber Craft Materials Corp" of Niles, IL. It comes in approx. 12" x 18" x 1/16" sheets, can be easily cut to shape, glued, stapled, wrapped around the end of a scope or spotting scope, velcro'd, rubberbanded, or whatever suits your fancy. Also, it is available in BLACK ! It is a spongy mat'l so it is non-reflective, and is non-toxic, should anyone decide to bite it. I found it at "Michael's" in the children's craft area. It is (or was), less than \$1.00/sht. It seems ideal for smaller applications. I use it on my spotter scopes and the objective end of the binos and have never had them dew up. And it can get pretty damp at my place during the right weather conditions (I occasionally get fogged out). I did piece together a long strip to use as a dew shield for the end of the 18", however that does have a slight drawback. Although it really picks up the moisture, and seems to do a great job preventing dewing, it sagged a bit when it got real damp. To cure that, I purchased thin plastic strips, (24" x 1 1/4" x 1/64) at Ryders, glued two of them together (following the curve of the shield) sprayed them black (Krylon Ultra Flat Black - great paint for astronomy item use), and I velcro them to the inside of the dew shield. It has solved the sag problem. So, if you are looking for an easy to make, inexpensive material for dew shields, you may want to give it a try.

If there are any questions : juday1@gte.net

## ELUSIVE CHAIN NEBULA CAPTURED ON FILM

By Harry Juday

The accompanying photograph is of the fabled but elusive "Chain Nebula". Most Astronomers, both Amateur and Professional have not had the pleasure of viewing this elusive object. It is only visible on clear dark nights with extremely unusual seeing conditions as the accompanying star trails suggest. Although there have been persistent rumors of the existence of this rare stellar formation it has been viewed so seldom that it is even listed as NSTS 087 in little known British Astronomer Sir Dufort Whackensee's equally little known "No Such Things in the Sky" catalog of everything that ain't up there.



Seriously. This is of course M 57, the Ring Nebula in Lyra. I took this photo on July 5, 1997 at our then home in Frankfort Ky. using Kodak PJM Pro Ektapress film at 1000 asa. This is a 30 min. unguided exposure with 17mm lens projection using my Celestar 8" SCT and a Nikon F3 camera body. The outcome is the result of the spur gear drive/motor unit jumping approx. every 5 min (jumping/hooking/etc.).

Actually, I have taken some passably decent photos of the Moon, Jupiter & Venus with this setup, as long as the exposures are under 5 min. and I catch the jump cycle correctly.

## The Old Gray Universe, She Ain't What She Used To Be

By Lorna Simmons

When you are gazing out at the near Universe through your huge Super-Duper Mini-Keck Maxi-Scope with all of its highfalutin attachments, you are probably viewing the Universe through rose-colored filters. There are no familiar shapes to greet your eyes farther out in the vast stretches where the denizens of the Hubble Deep Field lurk. In the very-near universe, barred spirals are found in abundance, but barred spirals are more irregular in appearance the farther back you look in space and time beyond a redshift of  $z = 0.3$ . As a result, beyond the redshift

of 0.5, barred spirals have become remarkably chaotic and fail to appear clearly, if at all. Even elliptical galaxies have their limit, eventually giving way to irregular wisps of nebulosity the deeper into space you look. Deep, deep, deep in the Hubble Deep Field, irregular galaxies predominate. Then again, farther back in the Hubble Deep Field, the viewing is so very difficult that, even with the Hubble Space Telescope, we can only guess about the galactic formations which might be found. Using even the finest telescopes in existence, we are all back to faint fuzzies all over again -- astronomical *deja vu!*

The shapes of galaxies seem to change significantly and systematically, seemingly more orderly (in our way of thinking) the nearer one looks in the Universe. There are a lot of elliptical galaxies with their jewel shapes glistening in the deep sky. However, even these have an evolved condition from irregular to regular as the distance between them and us lessens. Eventually, elliptical galaxies seem to return to spiral patterns after an extended period of time. At least, that appears to be the way galaxies have gravitationally evolved in the Universe, from disorder to order, unstructured to structured.

For those of us who once memorized the Hubble Tuning Fork diagram, a long time ago, new ideas must now emerge to take its place. Even the Hubble Tuning Fork diagram galaxies fail to appear clearly beyond a redshift of  $z = 1$ , traveling back in the Universe, away from us. Beyond the redshift of  $z = 1$ , the Hubble Tuning Fork diagrams are meaningless for more than one-third of the galaxies found.

Right now, astronomers and astrophysicists are "working on it" and, perhaps, will come up with some answers to take the place of the Hubble Tuning Fork diagram. At least the space density of the brighter galaxies has not changed, showing that the number of such galaxies has remained almost the same over time. But, more likely, we must remain satisfied with the irregularities of the distant universe and get on with our scientific lives, accepting the astronomical and astrophysical uncertainties as facts of life.

So, hang onto your Mini-Kecks for a while, because things are not about to change radically or soon -- at least, not in the near universe. Of course, it might help to cross your fingers for a while, just to make sure. Then again, some telescope maker might create something much grander, so that you can renew your faith in the changed and changing structure of the Universe's galaxies. Perhaps we all must accept change as the way things should be and get on with our astronomical delights. As the wise old saying goes: "The more things change, the more they stay the same."

## Mnemonics for the Harvard Spectral Classification Scheme

By Jesse S Allen , Reprinted with permission

The modern stellar spectral classification scheme (also known as the Harvard Spectral Classification Scheme) was created by Annie Jump Cannon through her examination of spectra from 1918 to 1924. Originally, the scheme used capital letters running alphabetically, but was later reordered to reflect the surface temperatures of stars. In order of decreasing temperature, these types were O, B, A, F, G, K, and M. Three additional categories also in the scheme: R, N, and S types, were later realized to represent stars with peculiar heavy-metal abundances. Other types (Q for novae, W for Wolf-Rayet stars, *etc*) are not encountered frequently. According to astronomical myth, Henry Norris Russell suggested the following mnemonic to assist students in remembering the scheme:

### Oh Be A Fine Girl, Kiss Me!

There have been many efforts since to improve on this mnemonic. The motivations are various: to include the R, N, and S and even W stellar types, to find a mnemonic for the vast number of astronomers who would really not want to be kissed by a girl, by the feeling that really we can't let Russell have the last word on this subject, or just as a fun homework assignment for students. Owen Gingerich (CfA) holds an annual contest in his "The Astronomical Perspective" course , and a summary of many winning submissions was published in his article "The Great Mnemonics Contest" in Phyllis Luggner, ed, ASTEROIDS TO QUASARS: A SYMPOSIUM HONOURING WILLIAM LILLER (Cambridge University Press, 1991). The Committee on the Status of Women in Astronomy also held a competition on the subject in 1995 and Russell's mnemonic (subject to the substitute of Guy or Gal for Girl) remained the most popular of the submissions. Our humble efforts, which draw on all these resources, plus many suggestions from others, are presented here.

### The Traditional

1. Oh Be A Fine [Guy/Gal/Girl] Kiss Me (Right Now [Smack/Sweetheart]).
2. Oh Begone, A Friend's Gonna Kiss Me (Right Now Smack).
3. Only Boys Accepting Feminism Get Kissed Meaningfully.

### Political

1. Official Bureaucrats At Federal Government Kill Many Researchers' National Support
2. Only Big Astronomy Federal Grants Keep Money. Research Needs Support!

### The Joys of College

1. Oh Boy! Another Failing Grade Keeps Me Reconsidering Night School.
2. Oh Bother, Astronomers Frequently Give Killer Midterms.
3. Oh Bother, Another F's Gonna Kill Me.
4. Oh [Beautiful/Brutal/Big] And [Fine/Fearless/Ferocious] Gorilla, [Kill/Kidnap] My Roommate Next Saturday.

5. Old Boring Astronomers Find Great Kicks Mustily Regaling Napping Students.
6. Obese Balding Astronomer Found Guilty Killing Many Reluctant Nonscience Students.

### Appeals to Physics and Astronomy

1. Observationalists Basically Are Fine Generous Kind Men (Really Not Sexist  
(credited to Wendy Haugen-Bauer, Wellesley College)
2. Oh Backward Astronomer, Forget Geocentricity;  
Kepler's Motions Reveal Nature's Simplicity.  
(Ohhhh... it rhymes!)
3. Organs Blaring and Fugues Galore, Kepler's Music Reads Nature's Score.  
(Oh... so does this one. Do I get impressed too easily?)
4. Out Beyond Andromeda, Fiery Gases Kindle Many Radiant New Stars.
5. Orbs, Bright And Fair, Generate Kinder Memories: Revolving Nighttime Skies.
6. Only Bright Astral Fires Going Kaput Make Real Neutron Stars.

### For the old film buffs

1. Overseas [Bulletin/Broadcast]: A Flash! Godzilla Kills Mothra! (Rodan Named Successor).

### Appeals to Mechanics

1. Oil Buffers A Fragile Gasket, Keeps Motors Running Nearly Smooth.

### Alternative Cuisine

1. Oh, Bring A Fully Grown Kangaroo, My Recipe Needs Some!  
[This 1969 prize winner claims to be a haiku, but poetic purists point out the match to the haiku form is imperfect]
2. Oven-Baked Ants, when Fried Gently, and Kept Moist, Retain Natural Succulence.

### Ecology

1. When Obstreperous Beasts Approach, Fragrant Geraniums Knowingly May Receive Night's Stigmata.  
[A rare mnemonic that includes W (Wolf-Rayet) stars]
2. Old Bottles And Filthy Garbage Kill Many Rare Natural Species.
3. Oregon Beavers Attack Famous Gardens, Killing Many, Rangers Now Shooting.
4. One Bug Ate Five Green Killer Moths.

### Submissions which defy categorization...

1. Occupied Baker's Assistants Forget Giant Kitchen Mouse, Receive Nasty Scratches.
2. Only Bungling Astronomers Forget Generally Known Mnemonics!
3. Only Boring Astronomers Find Gratification Knowing Mnemonics!
4. Our Brother Andrew Found Green Killer Martians.

## Astronomy on the Beach

By Paul Walkowski

Its 11:15 pm on Friday evening, the sky is steadily deteriorating until only the zenith and surrounding 30 degrees show any stars. I am packing my eyepieces in their cases; the dew is dripping off my wooden scope. I carry on a light conversation with my dad, in his early 80s, concerning the good number of children who looked through the telescope tonight, especially when none were to be found when we set up the scope at 6:30. It had started as an overcast day, gradually cleared to spectacular skies at sunset, and then clouded up first from the south, then the north, and then it became foggy everywhere but up. We noted that in the two other years that he attended, there were hundreds, maybe thousands more people and many more scopes as well. It could be the weather, but I wondered if it was the name recognition for astronaut Jack Lousma and astronomer and writer David Levy in other years that drew in the crowds. There was a twinge of guilt that I hadn't done everything humanly possible to publicize the evening, but I really lack connections to high places in the media. Dad noted that it was getting cool and only the older kids remained, but no TV camera crews. I smiled to my self and remarked that when you want blood and guts and gore on the TV at 11:00 pm you don't walk bring your camera crews to a field to watch a bunch of astronomers look through telescopes.

How would you narrate the event anyway? Perhaps in muted tones like a golf match after an important putt? What would you show on the video? A telescope being manually panned across the sky (in camera floodlights?) surrounded by a circle of curious onlookers who clap politely on cue when the scope's owner says "Yup, I've just centered NGC-9749 in the eyepiece".

My mind flashed back to the organizing meetings in the Metro Park Nature center building way back when there was still snow on the ground.

"We want some big name recognition speaker to draw in the crowds," the committee person chimed. Heads nodded and a murmur of excitement went through the room. Well maybe not blatant excitement, because astronomers are a practical sort and don't waste energy on superfluous enthusiasm, but their eyes appeared clear and you could see the gears whirring.

Someone volunteered to look into it and get back to us the next meeting. Everything seemed bright and sunny when it was announced that a French woman astronaut had agreed to come to speak to us...well, it could be on any subject, astronauts drew crowds, and that's what was important. Long after politicians had sold out to telling folks all they wanted to hear and more, Astronauts were still the American Dream. These folks were golden. Untouched by politics and boardroom banter, they could speak



their minds and kids mysteriously set their sights on the sky after hearing them talk. If you studied hard and kept your nose clean--well it just doesn't get better than that.

At 7 pm it was warm and humid. Just the slightest breeze moved across the lake from the west as I unloaded the wood scope onto the park ranger's golf cart. I was anxious to get started, and broke a sweat as I raced ahead of the cart to look for the other lowbrows. Unloading took 10 seconds. There is nothing to setting up a Dob. You plop down the rocker box on level ground where it is stable. Put the tube in the bearing holes. Attach a Telrad and an eyepiece. No cables, no electronics, nut-in funny. And go talk to your friends while the mirror cools off.

Dave Snyder was sporting a new camera and taking pictures of the goings on for next year's web site. Mark Deprest was already set up to the right of the grass with Doug Scobel next to him. I introduced my dad and we chided each other about last year's "Astro Flush" star party near Chicago. "Next time we'll bring playing cards," we concluded. Chris Sarnicki came along and set up his 12.5 inch as well, his scope sporting a new "For Sale" sign. The momentary panic subsided when I remembered that Chris just wanted a larger scope, not to exit the hobby.

"Where was Bernard?" I queried.

"Vacation" the others echoed in unison. To no one in particular I thought aloud that a star party without Bernard was like Michigan without the marching band.

I wished that Mark Cray could have brought his 5" refractor, but his work schedule prevented it. Everybody's loss, I'm afraid. His scope always had the longest line of kids and parents. His telescope LOOKS just like you'd expect a classical telescope to look, and from the inside or the outside the view just stole your breath away!

We set up folding chairs and explained to passersby how it took about 6 months of on and off again work to finish my well-varnished scope (right after the comet Hyatachi passed by and inspired me). I told and retold the story about my first scope. A \$30 overpowered garage sale department store scope that I loved to hate and how I learned about how much fun Dobs were at Lowbrow open houses. A well-attired gal from the EMU club made the rounds of most of the scopes with a camera and a notepad taking all the vital statistics: aperture, focal ratio, and design type. She breathlessly explained that photographing scopes and their owners was part of her hobby.

I took a few moments to go to the concession stand and picnic area where the talks had already started. Another GLACC member was already half way through with building his comet. George Korody, Dave D'Onofrio and Bob McFarland, all GLACC organizers were standing by in the wings. John Kirchoff was working at the Riders booth, explaining the ins and outs of the Schmidt Cass with the GPS to a passerby who

nearly fainted when the \$3000 price tag fluttered so that he could read it. We said hi and exchanged glances. I tried not to drool on the new Super wide FOV Lanthanum eyepieces that he had lined up on the table and promised myself that I would momentarily borrow one after the crowds thinned out around midnight. Both Riders and The Nature Company were passing out hundreds of astronomy scavenger hunt sheets to the kids. The crowds were building. It was beginning to look like a shark feeding frenzy at the vendor tables as the sun set quietly in tones of azure across the lake. The wind had died down, and I expected that mosquitoes would certainly follow.

It was time for the next speaker as I strolled back to the telescopes. Very few in front of the concession stand this year, and not as many on the grass either. Maybe 75 this year to last years 125 scopes. The crowds looked thinner too, perhaps less than a thousand, but it was still early. A balloon drifted noiselessly over the lake to the north of the telescopes in the early twilight. I sipped bottled water and munched on popcorn as we slid into darkness. The kids started milling excitedly around the scopes asking questions and prodded me into setting up on the moon so they could work on their scavenger hunt. Darkness at last! I waited a year for this--all the kids excited about seeing something new, as though it was the first time in the history of the world that someone looked at the Moon or Mars through a telescope.

My mind flashed back to my first view through a telescope at the BAA (Buffalo Astronomical Association) when I was in high school. It was a bitter cold winter night. The snow was deep and crunched as we walked up to a square hut in the middle of a rural field. Was this an observatory or a shed? The roof opened to reveal an unhandsome black sonotube with a 16" reflector that resembled a WWII cannon more than a telescope. After some fussing around and setting up a 2 story stepladder it was my turn to see... well just tell me, what was I going to see? But they were obscure, so I tentatively climbed up the ladder in what seemed like gale force winds and gasped. Good God! It was Saturn! As big as an orange! Just hanging there with 2 rings around it just like the photo I had memorized in my "Big Stamp Book of Space" when I was 5 years old.

Well one thing led to another, and I majored in physics in college. Learned that physicists starved and got no respect in grad school and switched to engineering. At age 46 I built my first decent telescope from scratch (by now a lifetime ambition), and here I was pointing the scope at the moon for another generation of kids who could only say, "Wowww! Waay Cool! Just like in the pictures! Mom! Dad! You've got to see this!"

The pace picked up and I took kids to my old friends: The Ring Nebula- (Just like our sun? Yup. And it exploded? Uh-huh. And the ring is the star's atmosphere leaving the scene, real

quick like? Yes. And our sun is going to do that too? Well, in millions of years, long after we are out roaming the stars like John Luke Picard.) Alberio- (What colors are the stars? Well one is real blue. And the other? Kinda white or light yellow, maybe... wait a minute, do stars have colors? How come I never noticed this before?) The M-81 and M-82 galaxies- (So these are galaxies? Yes. Just like the Milky Way? Yup. And they spiral around the center, like a top. Certainly. And there are two of them right close together? Of course, but they are so far away they are probably a hundred or more light years apart. Ma, you GOTTA see this.) And the great globular cluster in Hercules- (A Hundred thousand or more stars? Yes. All bunched up together like a bunch of bees? Absolutely. And they don't hit one another? Well there is still lots of empty space between them. And most of them are double, triple and quadruple stars? Yes, that's what scientists who study these closely tell us. How do I get a neat job like looking at stars? Study science and math in school. All Right! That beats reading Tom Sawyer.)

The lines by each scope got longer and longer. The pace of the evening quickened. Children brought me their brothers and sisters and parents to look through the scope too. Most parents were curious, but more concerned as to where their children went off to if they turned their head for 10 seconds. But every now and then an adult let out an exclamation of surprise as they looked through the eyepiece. Yes! - That is why I came. What a reward!

The rewards come unexpectedly. I remembered setting up on the moon at sunset near Long Lake, Michigan and showing a neighboring family the view. The older kids said that they felt like they were floating above the moon when they looked, and a 3 year old fussed impatiently for his turn. His parents asked if he could look too, just to humor him. Well he stared and stared and at first wouldn't answer when we asked him if he saw the moon through the telescope. Then he turned to his mom, and with perfect clarity announced his hypotheses--"the moon has bubbles." Hey, based on his experience, what better conclusion could he draw? Keep an eye on that kid, he'll go far.

Then I noticed that the crowds were thinning and the sky was closing in. There was the race for the last few objects so kids could get their scavenger hunt prizes and go home. I started to catch my breath.

My dad asked to see the Ring Nebula; he didn't want to bump a kid out of a place in line earlier, so he waited quietly in the dark. I obliged.

"How do they know it exploded?" He asked.

I weasel worded a vague answer about experts studying just these things for their whole lives and seeing stars in different stages of development and collapse. He seemed satisfied.

I bid my good bys, screwed the wheel barrel handles to the sides of telescope, and headed for the parking lot. It always

seems to take longer to load up at the end of an evening of observing. A bitter sweet experience at best. Being a morning person, I am tired out of my mind and look forward to the sleep, but like a kid I hate to stop doing something that brings me pleasure. I'd been on my feet for around 4 hours, but they flew by as though it were 20 minutes. I wanted to stay and try out that Lanthanum eyepiece, but didn't remember until I was in the car on the way home. Dad and I talked about the prospects for fishing and the events of the day. The traffic was unbelievable on US-23 for midnight Friday evening.

Dad and I came back on a heavily overcast Saturday night to hear Mr. Stephen Edberg Talk about the Cassini mission--just for an hour, mind you. Apparently we missed Randy Rubis talk, he is the JPL's Solar System Ambassadors to Michigan. We chatted with Lorna, and dad said he remembered her voice from Peach Mountain last year. No telescopes at all on Saturday, for good practical reasons. I recalled bringing my scope both nights in the past. My mind flashed back to the organizational meeting when I first heard that the lady astronaut was not coming, prevented by the demands of her training schedule was what I understood. And the Cassini talk was quite good. He'd been working to get the project going since 1990 and with Saturn a mere 3 years away, he was practically in a lather of enthusiasm. I would have like to stay and talk, but that's not why I come to Astronomy on the Beach every year. It's the kids, the lights in their eyes, and the bubbles.

### **TELESCOPE FOR SALE:**

Sky View Deluxe 90mm Equatorial Refracting Telescope

- \*German-type equatorial mount
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- \* Polar axis finder scope
- \* Slow-motion control cables (2)
- \* Counterweight
- \* Counterweight shaft
- \* Optical tube mounting rings (2)
- \* 6 X 30 crosshair finder scope
- \* Finder scope bracket
- \* Mirror star diagonal (1.25")
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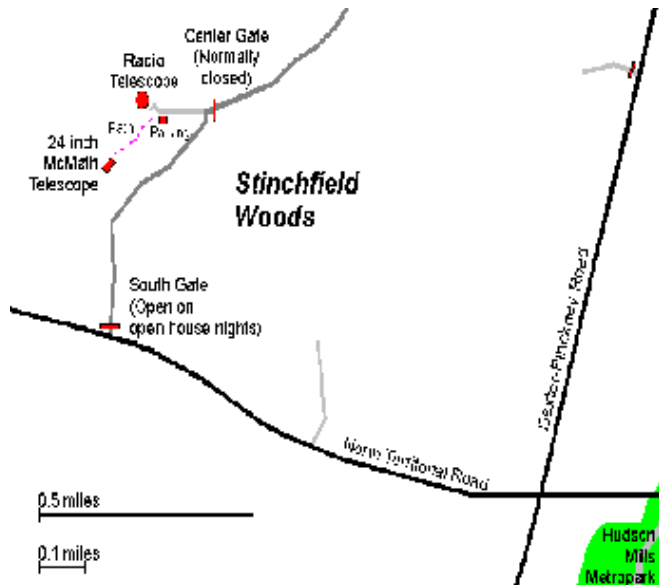
Call: Pat Andring (H)734-878-2455

(W)734-936-9243 email: [andring@umich.edu](mailto:andring@umich.edu)



## 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 Deprest (734)662-5719** [msdpresed@mediaone.net](mailto:msdpresed@mediaone.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:

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	Paul Walkowski	(734)662-0145
	Doug Warshow	(734)998-1158
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	Bernard Friberg	(734)761-1875
Parking Enforcement	Lorna Simmons	(734)525-5731
Keyholders:	Fred Schebor	(734)426-2363
	Mark Deprest	(734)662-5719

## Lowbrow's Home Page:

<http://www.astro.lsa.umich.edu/lowbrows.html>

Dave Snyder, webmaster

<http://www-personal.umich.edu/~dgs/lowbrows/>



Above: Paul's telescope in development and construction phase. Paul comes up with a unique way to make transporting his telescope to the observing site.... Add Feet? Will Travel!



Left: Sometimes you just have to get completely into your work, or if your own girth prevents it, you get someone to help!

Photos by Paul Walkowski  
Below: Paul and his father wait patiently for night fall at Kensington Metro park



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Lowbrow's WWW Home Page:  
[www.astro.lsa.umich.edu/lowbrows.html](http://www.astro.lsa.umich.edu/lowbrows.html)  
Check your membership expiration date on the mailing label !