



# STAR STUFF

The Newsletter of the Ford Amateur Astronomy Club

December 1999  
Volume 8 Number 12



HIGH TIDES DECEMBER 22



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## THROUGH THE LOOKING GLASS, LIGHTLY

by Dean Musgrave

"Pushing glass" is a traditional and artful aspect of optics design with several centuries of history behind it. And yet, glass has its limitations. A glance through a window on an old house will quickly reveal that glass is not stable. And lifting a mirror of only a foot or so in diameter will readily demonstrate its considerable weight.

For some time, I have been intrigued by the possibility of superior materials for mirror fabrication. The aerospace industry uses a great variety of unusual materials since weight is of a critical nature. Everyone has a few horror stories such as the additional 20 pounds of electronics (which weighs 180 pounds

in a 9g turn) and how it eventually led to a fighter plane that was nearly one hundred pounds heavier!

Perhaps, somewhere in the world of foamed metals, ceramics, composites, advanced polymers, and so forth there might be a much better option for mirror fabrication than glass. This could result in amateur telescopes with greatly improved portability.

A recent issue of *Aviation Week and Space Technology* (8 Nov., 1999, page 21) confirms this suspicion with a paragraph on the Next Generation Telescope optics which will be tested this winter at NASA (Marshall Center). Supplementing this information with some searching on contract awards I find that five million dollars each was awarded to the U. of Arizona's well-know Steward Mirror Lab and to Composite Optics of San Diego back in 1997 with progress now well underway.

The immediate goal is mirrors 5 to 6.5 feet in diameter with weights of 45 to 100 pounds. Scaling on volume, I estimate that a mirror two feet in diameter would weigh around 3 pounds and a 15" mirror would be less than a pound! A longer-term goal (and one that I suspect is much farther from fruition) is a weight of around an ounce per square foot of area. Note that these materials must be strong enough to support ground-based testing and a Shuttle launch at 3 g's.

The tragic tale of weight begets weight can now be played out in reverse. A tube or support truss that actually telescopes inward for transport could, in tandem with the very light mirror, lead to a 15 inch F5 reflector in which the optical system would be easily lifted and placed in the back seat of a medium or large car. The mount would, of course, also become substantially lighter and hence "aperture fever" would be much easier to cure! (Well, maybe). In addition, the cool down time would greatly diminish.

Given the slow rate of transfer from high tech aerospace innovations to the commercial market, I would estimate a time lag of about a decade until something novel is available. Nevertheless, I do suspect that glass will eventually become the cheap, heavy, low tech option. ☆

## MERCURY TRANSIT

Photo by Al Bates



**STAR STUFF**

is a monthly publication of the Ford Amateur Astronomy Club, an affiliate club of the Ford Employee Recreation Association.

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Your submissions to STAR STUFF are welcome. Please write to the address above or contact the editor...

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**Ford Amateur Astronomy Club****Officers:**

President	Dan Kmiecik
Vice President	George Korody
Secretary	David Beard
Treasurer	Ray Fowler

**General Meetings:**

The Ford Amateur Astronomy Club holds regular general meetings on the fourth Thursday of each month (except the combined November/December meeting held the first Thursday of December) at 5:00 PM in conference room 1491 in the Ford Credit building in Dearborn, Michigan.

**Observing:**

The Ford Amateur Astronomy Club observes at Spring Mill Pond within the Island Lake State Recreation Area near Brighton, Michigan. The club maintains a permit for after-hours access. Weather permitting, the club observes on Friday nights, Saturday nights, and nights before holidays.

**Hotline:**

Observing schedules and additional club information is available by calling the Observing Hotline at (313) 390-5456.

**Club Membership:**

Membership in the Ford Amateur Astronomy Club is open to Ford employees and non-employees. Write or call for an application.

Annual -- now: \$ 25 renewal: \$ 20  
Lifetime -- \$ 100

Membership includes a subscription to the STAR STUFF newsletter, discounts on ASTRONOMY and SKY & TELESCOPE magazines, after-hours access to the observing site, and discounts at selected area equipment retailers.

**LETTERS TO THE EDITOR**

Dear STAR STUFF:

The November issue of FAAC's Star Stuff indicated that the EMU Astro Club is "officially" disbanded. For clarification, a former club officer (note former) missed a registration deadline for University Office of Campus Life recognition, thus rendering the group ineligible for student government funding for the fall term. However, the club will be recognized for the winter term starting in January. Since the group is a student organization, this kind of thing has happened in the past, especially with students coming and going. Rest assured that the Physics & Astronomy Department continues to recognize the group and that activities and meetings are continuing as well.

Note, too, that the group continues to enjoy the use of Sherzer Observatory at 7:30pm Thursdays. On Thursday Nov. 11 we said farewell to Bob Justin who moved off to California Dec. 1. We'll miss his enthusiasm and generosity for astronomy around here for sure.

Thanks,  
Norbert Vance  
(734) 487-4146  
[norbert.vance@emich.edu](mailto:norbert.vance@emich.edu) ☆

**FULL MOON DECEMBER 22**

submitted by Lee Schauman

This year will be the first full moon to occur on the winter solstice, Dec. 22, commonly called the first day of winter. Since the full moon on the winter solstice occurs in conjunction with a lunar perigee (point in the moon's orbit that is closest to Earth) the moon will appear about 14% larger than it does at apogee (the point in it's elliptical orbit that is farthest from the Earth). Since the Earth is also several million miles closer to the sun at this time of the year than in the summer, sunlight striking the moon is about 7% stronger, making it brighter. Also, this will be the closest perigee of the Moon of the year, since the moon's

orbit is constantly deforming. If the weather is clear and there is a snow cover where you live, it is believed that even car headlights will be superfluous.

On December 21, 1866, the Lakota Sioux Indian tribe took advantage of this combination of occurrences and staged a devastating retaliatory ambush on soldiers in the Wyoming Territory.

In laymen's terms, it will be a super bright full moon, much more than the usual AND it hasn't happened this way for 133 years!

Our ancestors 133 years ago saw this. Our descendants 100 or so years from now will see this again. Thought you might find this interesting! ☆

**NOTHING BUT THE FAACs**

by George Korody

Welcome to recent new club members:

Orest Chornij – West Bloomfield  
Jih-Ying Jean Copper – Dearborn  
Kenneth J. Dunaway, Toledo  
Erik Fiedler – Detroit  
Yasumasa Fukase – Ann Arbor  
Charles W. Harp – Hartland  
Dean Musgrave – Dearborn  
Gerald Tomilenko – Southfield

We look forward to sharing in your astronomy experiences.

Congratulations are in order for Mike Kruskie who recently received his Astronomical League Messier Certificate for locating and observing 70 or more Messier objects. Mike is continuing his Messier search and intends to observe all 110 objects. The difficulty of this feat is compounded by the fact that you cannot use electronic means to locate the objects. Details about the objects and the equipment used must be recorded in a log. Additional information can be found at...

<http://www.astroleague.org/al/obsclubs/obsclub.html>.

Our Star Stuff Newsletter Editor Greg Burnett will enter the world of instructional education when he starts teaching an astronomy class for the Dearborn Adult and Community Education Program. Following are the details...

## INTRODUCTION TO AMATEUR ASTRONOMY

This class is a beginner's introduction to observational astronomy for the amateur. Topics covered include selecting and using equipment, including binoculars, telescopes, and cameras; locating and identifying objects in the sky; and where and how to observe various astronomical objects and phenomena. No prior knowledge of astronomy is assumed, but a fascination with our Universe is required! The class will meet at Edsel Ford High School in Dearborn on five Tuesday evenings from 7:00 to 8:30 P.M. on January 25 through February 22. The cost will be \$30 for Dearborn residents, \$34 for non-residents, and \$15 for seniors. Registration will open on January 4. Catalogs and registrations forms will be available at that time.

Anyone interested in taking the class should contact Greg at (313) 845-3586 or [gburnett@ford.com](mailto:gburnett@ford.com), or the City of Dearborn Adult and Community Education Department at (313) 730-0468. ☆

## TELESCOPE, SECOND TRY

by Andrew Clark

Last month I detailed my experience with a 3.5" reflector I had last August and how I concluded I needed something bigger. At this point I received something that makes me feel like a lucky kid, money from parents! Both my parents and my in-laws knew I was buying a telescope and gave me money to buy needed accessories. Well, If I didn't have to by the accessories, this had the added effect of freeing more of my own money for the telescope itself. With new requirements, I shopped around and finally selected the Orion SkyQuest XT8. This is an 8" reflector

on a Dobsonian mount. The simple design of the mount meant I wouldn't be doing astrophotography, but I was convinced this telescope would be easy enough for kids while being somewhat transportable. In fact, I checked the telescope length (48") against my trunk space.

After all this shopping, I now had to wait. The selected model was backordered! The Annual Island Lake Star Party occurred before my telescope arrived. Kids eagerly awaiting the arrival of Christmas morning only have to go through such anticipation pangs for one night. I had weeks of it! And it seemed like every night was beautiful and clear and full of stars taunting me. Can you imagine?

UPS now has a handy service, giving a tracking number you can watch a package travel across the country. There is a URL that lets you see each time its bar code got scanned. I knew when the package was shipped and I had a fairly accurate guess on when it'd arrive. This new information doesn't cure the anticipation pangs, by the way. It's more like seeing more Christmas presents get added beneath the tree.

The SkyQuest arrived in two boxes, the tube and the base. I opened and easily assembled the wooden dobsonian mount base with only a screwdriver and the provided allen wrench. When I opened the box with the tube, I had another crushing disappointment, damage! The elliptical secondary mirror had broken free during shipping. The edges were badly chipped and there was a major divot in the primary itself. Orion provides a toll free phone number that keeps Pacific Time, so even though it was late for me, they were still open. I could ship back the tube and mirrors and have them replaced without having to undo my work on the base. It would also be one less package to ship back.

I had a telescope that I couldn't keep, but little prevented me from testing it out over the weekend even in its damaged state. The image wouldn't be its best, but

I could at least use the weekend to assuage the trauma of having to return my new toy. A couple rubber bands returned the secondary to a reasonable position and let me see what my backyard would reveal. Here is my observation notes for the first two nights with the damaged telescope:

Date: 29/30 September 1999

Time: 23:50 EDT to 00:30 EDT

Location: Canton backyard

Telescope: 8" Reflector, 1200mm f/6

Eyepieces: 25 mm (48x), 9 mm (133x)

Seeing: Clouds covered about half the sky, but this was my first opportunity to use my new telescope. Since I will be returning it because of damage, I had to see what it could do. Therefore, I bounced around a lot.

Moon, near Last Quarter. I quickly found the trio craters of Ptolemy, Alphonsus and Arzachel. Moving north I enjoyed Archimedes and Apennines. I surveyed the edges of the Sinus Iridium and enjoyed the contrast of Grimaldi on the limb. Bright, but I've a moon filter someplace I should use next time as well as the Barlow. I'll have to get my equipment together next time.

Jupiter. Outstanding. Could see all four Galileans. There was clear banding apparent on the disk of Jupiter and I paid particular attention to how the darkest bands embraced the equator's whiteness.

Saturn. Beautiful. Maybe I'll return for closer look later.

b Cyg, Albireo. Obvious color difference. I enjoyed the nice collection of other stars around it, too.

M31, Andromeda Galaxy. A fuzzy blob which magnification didn't help. It continued to appear like it was always out of focus. Disappointing. I hope it's only from the mirror damage and not a problem with my backyard's light pollution.

Date: 30 Sept / 1 October 1999

Time: 23:50 EDT to 01:40 EDT

Location: Canton backyard  
 Temperature: Cool. 50s  
 Telescope: 8" Reflector, 1200mm f/6  
 Eyepieces: 25 mm (48x), 9 mm (133x),  
 2x Barlow

Seeing: There were frequent clouds covering less than half the sky when I started. My backyard receives plenty of light pollution from street lights, neighbor's garage lamps and traffic on Beck and Warren roads. The moon was in last quarter. I could see Albireo and several stars in Lyra. I had trouble picking out Hercules' keystone with naked eye.

Vega, I used Alpha Lyra as my starting and orientation point in tonight's observations. From there I could explore the other stars in Lyra. I was going to try to explore Hercules, but it wasn't very obvious and I decided to reexplore Lyra anyway.

e Lyr, I could see epsilon 1 and 2 easily. When I went to higher magnifications, the quality degraded and I wasn't able to split either of these. There did seem to be a faint star somewhat between the bright pair. I did a quick sketch of the dozen stars in the field.

d Lyr, Wow! This was inside a small cluster of over 20 stars! I tried to make a sketch. My only note on color contrast was that the central very bright star was much yellower, but I'll be returning here again soon! (Later Note: The cluster is called Steph 1, OCL 137, or Lund 870. d Lyr is considered a double with an orange and blue-white pair. d2 Lyr is a variable and the fainter of the pair?)

M57, I shifted towards g Lyr and knew what I was looking for. Quickly I spotted the smokey circle. The central hole wasn't obvious at first. I zoomed to 133x and the shape was much more obvious.

M56, I hopped past 17 and 19 Lyr. This is a real 'faint fuzzy', but I'm getting much better at noticing them. Even when I went to 133x, it stayed just a smokey blur, but I think between the seeing and light pollution, that's the best I'll do.

b Cyg, Albireo. What a beauty! Incredible color contrast. I wanted to move beyond Albireo to Brocchi's Cluster, but didn't find it and I think high clouds were effecting my seeing.

a UMi, Polaris. At least I didn't have to worry about drift while I was changing eyepieces! When I went to 266x (using the barlow), I finally noticed the companion. The magnitude difference is tremendous and the glare of Polaris just swamps the other.

Saturn, I do not like the fuzziness the barlow seems to introduce. The view was crisp at 48x. When at 133x, the drift gave me trouble.

Jupiter, 3 moons, all on one side. I noticed the darkest band, red, closer to the equator while another red band above that. (Southern Hemisphere?) The nearest moon was two Jupiter diameters away. The other moons had similar separations. All crisp and bright.

Moon, going to 133x and 266x was wonderful! I'd move to one side and let things drift, viewing the entire time. Approx. Last Quarter and when just rising appears tipped so lower half is lit. I noticed how flat the brighter portions appeared, although Grimaldi gave interesting contrast. Tremendous number of craters in southern highlands. 4 in a row along terminator (Warner?). I loved the gate between the Apennines and Caucasus. 3 craters nearby, Archimedes, Autolychus and what?, were nicely visible, although not directly on the terminator. Still, they had long shadows. Plato stands out with its darker floor. I was going to investigate the brighter splashes that should include Piton when clouds rolled in. By this time there was substantial clouds covering most of the sky and I stopped observing, but this portion of the moon is where I want to return next time!

With mixed feelings, I returned the telescope. After such a long wait and the start of some wonderful night viewing, I didn't want another telescope drought. However, I'm also more than ready to

have an undamaged instrument. Now I know I'll be able to enjoy views from my backyard, even though it suffers from the typical ills of such a location. I'll still want to transport my telescope to darker skies on occasion, but there will be some nights I'll be too lazy. ☆

## HEARD ON THE NET

by Bob Lambeck

from the sci.astro.amateur newsgroup...

Since the 1999 Leonids were a non-event in Michigan, I thought the readers might take heart in Charlie Miller's recounting of his 1966 experience:

I was a 20 year old physics major at Marshall University in Huntington, West Virginia when I read a story in the November 1966 issue of Sky and Telescope magazine saying that year's Leonids might be an especially nice display. Some astronomer had written an article about how the Leonid meteor shower records indicated that an unusual peak in the meteor shower rate seemed to occur every 33 years. The previous peak had been seen in 1933 so 1966 seemed like a possibility. There was not much hype in 1966.

I talked the entire staff of physics professors and the other physics students into going out to a remote mountain top that night of November 16th. It was a dark, moonless night with temperatures in the mid 20's. By 3AM only a few meteors had been seen and the group was cold, sleepy, and growing restless -- people began to defect. By 4AM there was only one professor, a Dr. Tom Parnell now with NASA, and me left in the observing group. We vowed to stick it out until dawn. Around 5AM we started seeing a few meteors and by 5:30 the meteor shower had become a meteor storm. Meteors were appearing in every part of the sky -- perhaps 50 per second. An awe inspiring display. Although we had set up camera equipment, we became so engrossed in just watching the display that we forgot to tend to the cameras.

The display continued until it was interrupted by morning twilight.

As I drove home in the brightening dawn, I could still see large numbers of meteors as I looked through the car windshield. I began to contemplate the fact that I would have to wait 33 years to see the next Leonid meteor storm. To a 20 year old, an event occurring 33 years in the future is pretty much incomprehensible. College, graduate school, marriage, kids, career -- most of my life would go by during those 33 years. But as mind boggling as it was, I made a check mark in my mental calendar as to what I would be doing on November 17, 1999.

The next day at school, no one believed us when we told them about the huge display. In fact, there was some outright hostility that we would make up such a story. However, a month or so later there was a report in another issue of Sky and Telescope magazine that confirmed our story. East coast observers had seen a display that produced 100,000 meteors per hour but west coast people did even better -- 140,000 per hour.

I now live in Austin, Texas and mid November evenings tend to be cloudy so I will be going to a dark observing sight near Ozona -- about 200 miles into the drier, west Texas Edwards Plateau area. I will take my laptop and download the Internet weather reports and satellite maps just in case I have to make a last minute dash to clearer skies. Laptops and satellite maps -- tools I could never have imagined in 1966. Thirty three years -- who would have believed that much time could ever pass. Maybe I will go ahead and make plans for 2032 -- just in case.

Now Charlie relates his 1999 Leonid experience:

The trip to Ozona in west Texas was a nice trip -- the weather was perfect, the skies were dark, and the coffee was hot. The only thing missing were the meteors. Virtually nothing but sporadics all night until about 5AM when for an hour or so, a few Leonids were seen. Perhaps 40 in

that time frame. None bright. A very anticlimactic end to a 33 year wait. ☆

## MEETING MINUTES

by Dave Beard

The December 2, 1999, F.A.A.C. General Meeting was called to order by president Dan Kmiecik at 5:00 p.m. The members started right in on the pizza and pop provided by Bob Fitzgerald and George Korody. The roundtable discussions ensued as members mentioned their recent viewing experiences and new equipment, etc. Members present were counted at 45.

John Kmiecik announced that he would be taking over the reins of the F.A.A.C. newsletter in January.

Dan passed out the club officer nomination forms to the members. Members can also email F.A.A.C. at [FAAC1992@hotmail.com](mailto:FAAC1992@hotmail.com) with their nominations.

Dan also passed out a copy of the Astronomical Events Calendar, and a copy of the Astronomer's Journal. These can be purchased through the club for \$18 and \$7 respectively.

The treasurer reported that we currently have \$1112.77 in savings and \$1414.53 in checking, of which \$835.83 is for the Scholarship fund.

Vice President George Korody mentioned that we need to get the word out about the Scholarship fund, and passed out forms to be distributed. The deadline for next year's applications is February 28<sup>th</sup>.

Bob McFarland mentioned that the Lake Erie Ice Days Festival is coming up and the club will be giving the "Astronomy 101" presentation at 4:00 pm on the 15<sup>th</sup> of January. Members are encouraged to come and set up their scopes weather permitting. Also, the rangers at the Metropark have said that they would have the park open to astronomers for the following Thursday's lunar eclipse

which begins at 10:15pm. Ranger staff will be available, and there will be a building open to warm up in!

The meeting was then presented with a slide show given by member Greg Burnett on the Mercury occultation. ☆

## NEXT GENERAL MEETING

The next meeting of the Ford Amateur Astronomy Club will be held on Thursday, January 27, 2000, at 5:00PM in conference room 1491 in the Ford Credit building in Dearborn.

The annual elections of club officers will be conducted and, as always, pizza and pop will be provided.

The Ford Credit building is the low building immediately northeast of (but not attached to) Ford World Headquarters. The building is secured with a card entry system. The easiest way to enter for meetings is to park in the lot east of the building and enter thru the lower east or lower northeast doors. At 5:00p no one seems to have much trouble entering, because many people are leaving about that time. At the lower east door there is a manned security desk. Identify yourself, and say you are attending a Ford club meeting, and the guard will admit you. The meeting room is on the lower floor, on the east side of the building, about mid-way along the north-south corridor. Usually, signs will be posted to direct you to the room. ☆

## CALENDAR OF EVENTS

### Jan 15

Lake Erie Metropark "Ice Daze." The club will present "Astronomy 101" at 4:00PM.

### Jan 20

Lake Erie Metropark Lunar Eclipse. The museum will be open during the eclipse.

### January 27

FAAC General Meeting

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