

# STAR STUFF

The Newsletter of the Ford Amateur Astronomy Club



## Improbable Bulls-Eye

by Dr. Tony Phillips

Picture this: Eighty-eight million miles from Earth, a robot spacecraft plunges into a billowing cloud almost as wide as the planet Jupiter. It looks around. Somewhere in there, among jets of gas and dust, is an icy nugget invisible to telescopes on Earth—a 23,000 mph moving target.

The ship glides deeper into the cloud and jettisons its cargo, the “impactor.” Bulls-eye! A blinding flash, a perfect strike.

...continued on page 2

### Ford Amateur Astronomy Club Yahoo User's Group

The club has initiated a [Yahoo User's Group](http://groups.yahoo.com/group/FordAstronomyClub/) to allow FAAC members to easily communicate with each other. Membership in the Group is restricted to active club members so we won't be inundated with tons of email. If you haven't already signed up, you can join the group at:

<http://groups.yahoo.com/group/FordAstronomyClub/>

Members of the Group can post messages seeking answers to questions, find out if anyone else is going observing, post pictures, etc. . . . The site also includes a calendar with upcoming events.

### President's Corner

by Don Klaser, President, FAAC

#### *Hot Fun in the Summertime !!*

-- with apologies to Sly & The Family Stone.

It's hard to believe that August is here already! The nights have started getting longer and the stars of summer ride above our heads (along with the mosquitoes!). Star parties near and far have filled our nights and days with new experiences, friendships, information, and astro-stuff. And in a few weeks the kids will be going back to school (insert high-fives from Moms here!).

The last Beginners Night/13th annual Island Lake Star Party is tonight, but as I write these words, dark, threatening clouds are building on the western horizon and the weather channel says rain is on the way \*@!!+\*!!@!!!. Next Friday, August 19, about a dozen of us will be heading up to Lapeer County to be part of the World Youth Day celebration. We'll be showing the wonders of the universe to about 300 attendees of high school age who will be gathered on a farm for a day and night of learning and fun. However, Friday is also the full moon, so I'm

thinkin' the number of wonders will be very limited; but I'm hoping they'll enjoy the experience all the same.

But wait, there's more !

The weekend of September 9 & 10 will be our opportunity to attend this year's edition of 'Astronomy on the Beach' co-sponsored by Kensington Metro Park and GLAAC. The program will be full of interesting seminars and presentations along with the chance to view through a variety of telescopes.

#### *It's a family affair.*

And rounding out the summer fun is the 3rd annual Great Lakes Star Gaze on the weekend of September 30 (OK - so the equinox was 9 days ago- I'm using poetic license here !) Jan and I will again attend this outstanding event. Last year's skies were great- rich blue during the day and clear and steady at night. In addition, the presentations were first-rate, with knowledgeable and interesting speakers. This is not an event to be missed if at all possible. In fact, the whole experience was so rewarding, I remember thinking...

*Thank you for letting me be myself again !*

Clear skies !

-- Don Klaser

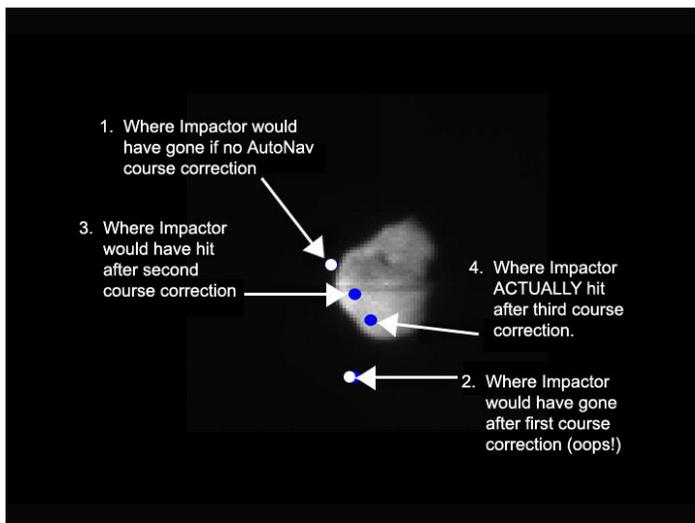
## Improbable Bulls-Eye ...

...continued from page 1

As incredible as it sounds, this really happened on the 4<sup>th</sup> of July, 2005. Gliding through the vast atmosphere of Comet Tempel 1, NASA's Deep Impact spacecraft pinpointed the comet's 3x7-mile wide nucleus and hit it with an 820-lb copper impactor. The resulting explosion gave scientists their first look beneath the crust of a comet.

*That's navigation.*

Credit the JPL navigation team. By sending commands from Earth, they guided Deep Impact within sight of the comet's core. But even greater precision would be needed to strike the comet's spinning, oddly-shaped nucleus.



*Comet Tempel 1, as seen by the Deep Impact impactor's camera. Three last-minute AutoNav-controlled impact correction maneuvers enabled the Impactor to hit the bulls-eye.*

On July 3<sup>rd</sup>, a day before the strike, Deep Impact released the impactor. No dumb hunk of metal, the impactor was a spaceship in its own right, with its own camera, thrusters and computer brain. Most important of all, it had "AutoNav."

AutoNav, short for *Autonomous Navigation*, is a computer program full of artificial intelligence. It uses a camera to see and thrusters to steer—no humans required. Keeping its "eye" on the target, AutoNav guided the impactor directly into the nucleus.

The system was developed and tested on another "Deep" spacecraft: Deep Space 1, which flew to asteroid Braille in 1999 and Comet Borrelly in 2001. The mission of Deep Space 1 was to try out a dozen new technologies, among them an ion propulsion drive, advanced solar panels and AutoNav. AutoNav worked so well it was eventually installed on Deep Impact.

"Without AutoNav, the impactor would have completely missed the nucleus," says JPL's Ed Riedel, who led the development of AutoNav on Deep Space 1 and helped colleague Dan Kubitschek implement it on Deep Impact.

En route to the nucleus, AutoNav "executed three maneuvers to keep the impactor on course: 90, 35, and 12.5 minutes before impact," says Riedel. The nearest human navigators were 14 light-minutes away (round trip) on Earth, too far and too slow to make those critical last-minute changes.



## STAR STUFF

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**STAR STUFF** is published eleven times each year by the

**FORD AMATEUR ASTRONOMY CLUB**  
P.O. Box 7527  
Dearborn MI 48121-7527

PRESIDENT:	Don Klaser
VICE PRESIDENT:	Ed Halash
SECRETARY:	Dale Ochalek
TREASURER:	Gordon Hansen
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### CLUB INFORMATION

The Ford Amateur Astronomy Club holds regular general meetings on the fourth Thursday of each month, except for the combined November/December meeting held on the first Thursday of December. Meetings are held in the Administrative Services and Conference Center building at Henry Ford Community College in Dearborn. Refer to our website for a map and directions.

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

Observing schedules and additional information are available by calling the FAAC Observing Hotline at 313-390-5456, on the Ford Intranet at [www.be.ford.com/astro/faac.html](http://www.be.ford.com/astro/faac.html), and on the public internet at [www.boonhill.net/faac](http://www.boonhill.net/faac)

Membership in the Ford Amateur Astronomy Club is open to anyone with an interest in amateur astronomy. The Ford Amateur Astronomy Club is an affiliate of the Ford Employees Recreation Association (F.E.R.A.).

Membership fees are as follows:

Annual – New Member:	\$30	(\$15 after July 1)
Annual – Renewal:	\$25	(\$30 after January 31)
Life Membership:	\$150	

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

### MAGAZINE DISCOUNTS

Do not send money to the FAAC for *ASTRONOMY* or *SKY & TELESCOPE* magazine subscriptions. Obtain a discount form from the club secretary and send the form directly to the publisher with your subscription to receive a \$10 discount.

### STAR STUFF NEWSLETTER SUBMISSIONS

Your submissions to *STAR STUFF* are more than welcome! Send all items to the editor at [skyfog@comcast.net](mailto:skyfog@comcast.net) preferably in MS-Word format, but in-line email text is fine too. *STAR STUFF* will usually go to press the weekend prior to the week of each general meeting. Submissions received prior to that weekend will be included in that issue.

Having proved itself with comets, AutoNav is ready for new challenges: moons, planets, asteroids ... wherever NASA needs an improbable bulls-eye.

Dr. Marc Rayman, project manager for Deep Space 1, describes the validation performance of AutoNav in his mission log at <http://nmp.nasa.gov/ds1/arch/mrlog13.html> (also check [mrlog24.html](http://nmp.nasa.gov/ds1/arch/mrlog24.html) and the two following). Also, for junior astronomers, the Deep Impact mission is described at <http://spaceplace.nasa.gov/en/kids/deepimpact/deepimpact.shtml>

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*

## Astronomical Imaging S.I.G.

by Jim Frisbie

The August meeting of the Astro Imaging S.I.G. will be held, Thursday, September 8, 5:30 pm at Henry Ford Community College in Dearborn.

The topic for the meeting will be announced later. All Club members and their guests are invited.

We will meet in the Roseneau Conference Rooms at the Administrative Services and Conference Center. (Same room as the FAAC General Meeting). If you approach the Faculty parking lot gate with your car, it should open allowing you to park close to the building.

## Welcome New Members!

The Ford Amateur Astronomy Club welcomes the following new members:

- Leland Onkka

We hope your membership will be rewarding and enjoyable. Let us know how we can help you enjoy amateur astronomy.

## 14.5 Inch Telescope

by Jeff Hine

### MY TRIBUTE TO THE EARLY COULTER TELESCOPES

Being a planetary observer, I had a slightly different set of design goals in mind when building my new telescope:

1. I wanted the scope to be a reflector, eliminating any chromatic aberrations to poison my views.
2. I wanted the scope to have a large primary mirror as to support high power viewing, at least to 1000x if the seeing permitted.
3. I wanted a long focal ratio so that I would have the smallest central obstruction possible.
4. I wanted a full thickness mirror to avoid "potato chipping" when viewing close to the horizon (here in Michigan, we are pretty far north)
5. I wanted the scope to fit into my Dodge Stratus.

My final decision turned out to be a 14.5" Dobsonian telescope.



I was certainly not looking to build a flimsy ultra-light DOB. I needed to have a durable scope that I could pack up in the morning, dead tired, without worry.

I was fortunate in finding an original Coulter mirror that had been hand re-figured to a very fine and extremely smooth finish. It has a strehl ratio of greater than .980. This mirror is a full 2.25 inches thick and weighs thirty-one pounds. I used PLOP to design a 9-point mirror cell. This mirror is perfect for this project, because the weight offsets the length of the truss poles. The very best part of this mirror is the focal ratio. With a focal ratio of f/7, the mirror allows for a very small secondary mirror of 2.38" and an obstruction by area of less than 1.5%.

The rocker box and mirror box for this scope are made from Appleply. Appleply is plywood made with fifteen layers of wood instead of the usual five. It stays flat and does not warp easily. I ordered it with exterior glues between the plies to ward off the dew (Did I mention I live in Michigan?). In order to have the strongest, flex free joints, I used all dovetail construction. No screws or nails are used in any wood-to-wood joint. I often read online that you cannot cut dovetail joints in plywood. After a few test cuts, I found a way to do it with no tear-out at all. Dovetail joints are the strongest type of joint one can use in wood joinery. They have 12x the strength of the box joints often seen on CNC telescope parts. All the wood parts received five coats of polyurethane as further protection from dew.



Once I started building the project, I had an idea concerning the humble origins of the mirror for this scope. For those of you that have been astronomers long enough to be around when Coulter telescopes were quite popular, you will remember the distinctive Coulter blue scopes. I felt that since this mirror was one of the rarer full thickness Coulter mirrors, I would honor the original maker by making this telescope a nice Coulter blue. I did not want anything gaudy, like an electric blue. Once I started the project, the blue theme seemed to take on a life of its own. I started out by staining the mirror box and rocker box blue.

Once I saw how good the blue looked and how close it was to the original Coulter Blue, I decided to go all of the way and make the entire scope blue. As it turns out the truss poles are now anodized blue, the UTA assembly is all blue. Even the Feather Touch focuser is anodized blue.

Most Dobsonian telescopes that I see use Kydex for the UTA. Unfortunately, Kydex tends to come off the UTA in the sunlight at a star-party. For this project, and in keeping with my original parameters of keeping this project as light as possible, I decided to make the UTA entirely out of aluminum except for the rings, which are Appleply. The aluminum light shield becomes a strength adding part of the structure, not just a shield held on with double-sided tape.

Almost all Dobsonian telescope makers paint the inside of the mirror boxes and UTA a flat black, in order to keep reflections down to a minimum. I found the results of a great reflectance test online, that showed the “blackest stuff on earth” is black velvet called Fidelio. It has been measured to be twice as dark as commercial flocking paper. I lined the mirror box and the UTA



with this double black velvet. It is so black, that even in bright sunlight, there is virtually no light reflected. I replaced the screws on the secondary with thumbscrews, so that collimation can be completed with no tools at all (and thus no tools to drop on the primary mirror!).

Another unique feature of this project is the mirror cell. To the normal features of a mirror cell, I have added two useful features. The first is oversized collimation knobs. One of the frustrations that many astronomers face, especially in cold weather is trying to collimate optics while wearing gloves. I chose to place oversized knobs on the collimations screws of the mirror cell. The second unique feature is a stainless steel sling. Most Dobsonian mirror cell slings are made from nylon webbing. Unfortunately, the nylon usually stretches and you are forced to do a “touch up” collimation during the night. To prevent such unnecessary collimation, I chose to use aircraft stainless steel cable. This cable has an extremely strong tensile strength, and must encounter a force of 2700 pounds before it will stretch one millimeter. No touch up collimation has been necessary after the initial collimation.

Those who have newer Feather Touch focusers are aware of one useful feature that has been added over the older focusers. That feature is collimation set screws to collimate the focuser to be perfectly perpendicular to the optical axis. Usually if your focuser does not have such setscrews to adjust the focuser plate, shims need to be placed under the mounting plate to square the focuser. Since I felt that adjustment screws on the focuser mounting plate are so useful, I placed three setscrews in the focuser mounting plate to perfectly square focuser to the optical axis. I chose three setscrews, as that is far easier to adjust than the four setscrews that the new Feather Touch focusers presently use. It just makes more sense, and saves time.

Trying to keep weight down on this scope, I decided to use aluminum side bearings, as they are both stronger and lighter per volume than wood side bearings. I used the Obsession Telescope cast aluminum side bearings. I tried to anodize these bearings, but cast aluminum is notoriously difficult to anodize,





so these cast bearing ended up being powder coated to match the rest of the color scheme for the project. The second reason I chose Obsession Telescope bearings is the unique slight camber on the bearing surfaces on the Obsession bearings. If you look closely at the bearing castings, you will note that they are not perfectly square. They have a slight camber of three degrees, opposites on both sides. The advantage of this slight camber is the mirror box will self-center. Using a router, I was able to match exactly the cambered surface of the cast bearings. This resulted in a mirror box with no side-to-side play.

The trusses for this project are 1.25-inch diameter, aircraft aluminum. Some had argued with me that I did not need to use such thick poles, and that  $\frac{3}{4}$ " diameter poles would have been fine. That may be true, but one of the design parameters for this project was to make this assembly as stiff as possible. Tapping on the scope results in vibrations that damp out in less than half a second. I may later fill the trusses with Great Stuff to reduce the vibrations to zero. I did not want the problem of wood truss holders contracting at different rates than the truss poles (as I have seen too many times at star-parties), so the truss holders were machined from aluminum. This way the poles always slide right in without sticking or play.

First light with this project involved cutting the truss poles to the correct length. That is not an easy job in Michigan, with 90% of the nights being either cloudy or partly cloudy. I did manage to find Vega in a clear spot between the clouds. At first there was not enough in-focus, so I ended up shortening the truss poles. After several tries, the poles ended up being 69 inches long. With a rocker box height of 12 inches, and a mirror box length of 14 inches, the height of the telescope turned out to be 8' 6" tall. After finding the proper length of the truss poles, the next object to view was Jupiter. It was completely awesome. Contrast was excellent, and many nice details, clearly seeing four distinct cloud bands along with light blue and brown cloud tops. It was one of the best views of views of Jupiter I had ever seen.

Finally, I tried the scope on Epsilon Lyrae, which many know as Double-Double. The tight pair of binaries was easily split in this scope. Pointing this telescope is a pleasure. Movement on both axes is buttery smooth. Once the telescope it pointed to the object, there is no backlash what so ever. Point it and it stays in place. Touch it with a deliberate action and it moves to where

you want it to be with no effort.

The last thing I have left to do is add the Servo-Cat/Argo Navis GOTO system. I built in the encoder mounts during fabrication, so I will have little to do when my system arrives.

This scope has been a pleasure to use. It is not so big, that I cannot transport it in my car, but it is not so small, that I would have to miss the wonderful DSO's the night sky has to offer. For those of you attending this fall's Great Lakes Star Gaze, I cannot wait to show you guys some great views!

I would also like to thank my daughter Tanya, and her friends Kristi and Beth. I hope you girls had fun.

## AstroPHysics PHun PHacts

by Vicki Burnett

*(Adapted from a presentation "The Sun" given in Speech 1610, Spring Semester '05, OCCC)*

Our closest star is our Sun. Many people do not even realize the Sun is a star, albeit it is an "average star," or a yellow dwarf.

Other "Sun" facts:

It is 93 million miles from the Earth (an Astronomical Unit);  
The light takes 8 minutes to reach Earth;  
It is halfway through its life expectancy (of 10 billion years); and  
It does not "burn," but runs on nuclear fusion ( $E=mc^2$ ).

The Sun creates beauty, the Sun creates energy, and the Sun creates danger.

**Beauty** -- Our Sun, through solar wind particles streaming into our atmosphere, create some of the most beautiful sights on Earth called Auroras. The solar wind particles interact with the Earth's magnetic field at the poles creating these splendid light shows.

Sunspots are also beautiful, occurring and peaking during 11-year cycles. Many solar flares take place during the peak of this cycle.

An Eclipse is another beautiful sight. This is when the Moon moves between the Sun and the Earth, cutting off light momentarily from the Sun and casting a shadow on the face of the Earth. Although the difference in size between the Sun and Moon is immense, because of its location the Moon has the deceptive appearance of perfectly covering the solar disc.

**Energy** -- Our Sun also creates energy. Photovoltaic systems capture light energy from the Sun's rays and convert it into electricity; solar-thermal panels have become highly efficient; and wind energy projects around the world now generate enough energy to power nine million typical U.S. homes.

**Danger** -- Finally, the Sun creates danger. One way is through solar flares. A solar flare is a violent storm on the surface of the Sun. It can cause interruption in radio communication, and wire communication circuits are sometimes affected.

The Discovery Channel Video, Planet Storm, in "The Storm to End All Storms," explains how a solar flare could totally destroy the ozone layer. Dr. Bruce Tsurutani from NASA's Jet Propulsion Lab says that "Without the ozone layer, which protects Earth from the Sun's UV rays, the food chain would

collapse," (plant life would die) and "A giant flare would basically produce a mass extinction on the Earth" (radiation poisoning).

A final word from "The Storm to End All Storms":

Our Star is 4.5 billion years old but we have only been observing the storms on its surface for two decades. In search of more information, astronomers have found stars within our galaxy that are similar to the Sun but produce flares nearly 10 million times more powerful. A solar flare a fraction of this size would cause a catastrophe on the Earth. But there is no way of knowing if this has already happened in the distant past or if it will happen again tomorrow." "Our atmosphere gives us shelter from our unpredictable star; so far, we have been lucky."

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## Minutes of the FAAC General Meeting

by Dale Ochalek

**July 28, 2005**

Meeting convened at 5:30 pm. Don Klaser started up the usual member introductions and observation go-round. Jim Frisbie admitted to a "hidden" purchase of new Celestron 80 ED. There was a brief discussion of the Ford classic and antique car show, at PDC building, where Ken Anderson had a new Coronado scope/filter piggybacked on Bob MacFarland's SCT, from 11am to 1 pm. Greg and Vicki Burnett, and Dale Ochalek had solar-filtered scopes there as well. Perhaps 100 people or more came through on the scorchingly sunny day, lining up to look into the sun.

The previous month's meeting minutes were approved. According to Gordon Hansen, the FAAC treasury remains good shape - see newsletter report for more details.

Next, Tony Licata offered his Technical Discussion, which featured some beautiful pictures from his family's Heimburg, Germany trip. His wife is German, and they were there visiting family. As they were in the "middle of nowhere," there were dark skies, but alas, no observing equipment. Tony then had an idea and put together a low cost trial "suitcase" observatory for trips, which he detailed with explanation and pictures.

The main presentation featured Gary Strumolo - and his "A Cameraman's Ring Annoys Tot" show. From the anagram form, this can be cleverly decoded as "Ancient Astronomy Anagrams." Gary explained how of anagrams were often used to code and mark discoveries, such as those by Galileo and contemporaries, and gave interesting examples.

Other topics:

Planetarium Team - Mike Bruno to check with HFCC for more information, for next meeting.

Island Lake Star Party - August 13, "bring your own" picnic during daylight hours; this coincides with our Beginner's Night, at Mill Pond, Island Lake Park.

Club Library - Gary Stahl was not present, and the question was raised as to what to do to turn books in, in such a case. Don Klaser offered to investigate alternatives.

Richmond Airport Outing - July 8, 9. On Friday evening only a few people were there, but on Saturday, with the fireworks, there

were about 15 people. Site is desirable for darkness, location, grounds maintenance, possible rest room use. They like us there, but we need to investigate a mutual, on-going arrangement. Site committee will convene to come up with a proposal.

GLAAC - September 9-10. Bob MacFarland handed out a comprehensive flyer and schedule, which includes daytime presentations on Saturday for the first time, for those who cannot attend the talks, because of equipment concerns at night. We will be looking for volunteers to man the FAAC table at the event, starting at next meeting.

Astroimaging SIG - Jim Frisbie announced a new discussion topic - for the August 12 meeting - which will be presentations, and critiques, of your best astrophotos. Bring your 10 best, and prepare for praise, or ...

FAAC email server - Still no server function. Doug Bock has been contacted, and he is still trying to work with the server owner to fix things. There was some discussion with intent to uncover alternatives, and Gordon Hansen offered to investigate the possibility of forming a Yahoo group.

Walk-ins - Contact an officer to find the new combination to be used at Island Lake for our gate lock there. Don Klaser emphasized the need to keep our combination secure. And George Korody described the recent mishap concerning the misuse of our lock and key.

Ken Anderson showed off a handsome Universe photograph book, that he found on sale at Border's books (\$10). Bob MacFarland mentioned finding a nice \$25 hard case for lenses/accessories at Home Depot, etc.

Meeting adjourned at around 7:20 pm.

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### FOR SALE...

**Meade 12" LX200 GPS SCT with UHTC** Only used six times! Includes: Kendrick Dew Removal System, two 12 volt battery power sources, dew shield, Baader film sun filter. Over \$4000 of equipment! Best offer over \$3000

Contact Don Sommers at 248-553-7042

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### FOR SALE...

**Meade 10" LXD55 Schmidt Newtonian** telescope Autostar guided, German Equatorial mount, "T"- adapter, Super Plossl 26-mm eyepiece, 1.25" and 2" eyepiece holders, battery pack for 8 "D" cell batteries, 25ft. 110v. power cord. Bought in 2002 for \$1200, will sell for \$1000, or possibly trade for another scope.

E-mail inquiries to: [eddyelectro@talkamerica.net](mailto:eddyelectro@talkamerica.net)

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### FOR SALE...

**Right-Angle Viewfinder** (8x25) for Meade ETX-90 telescope (Meade part # 825). Brand new. Sells at Scopetronix for \$50. My price \$25.

Contact Jon Blum [Derml@aol.com](mailto:Derml@aol.com) 248-553-4944

## FOR SALE...

**Meade ETX Spotting Scope**, 5 inch, Paragon Plus tripod, 26mm Super Plössl, 9.5mm Orion Epic, 13mm Orion Superwide Lanthanum. Nearly new, must sell. Could sell individually.

Contact Jack Fournier at 248-219-6222

## Astronomical Calendar

by Jim Frisbie

### August

23 Tu Mercury: Greatest Western Elongation (18 degrees) pm

23 Tu Mercury to lower left of Saturn-dawn

24 We Moon near Mars

26 Fr Last Quarter Moon 11:18 am

31 We Moon to upper left of Saturn-dawn

### September

1 Th Jupiter near Venus-dusk

2 Fr Crescent Moon to the left of Mercury-dawn

3 Sa New Moon 2:45 pm

6 Tu Crescent Moon near Jupiter and Venus-dusk pm

11 Su First Quarter Moon 7:37 am

17 Sa Full Moon 10:01 pm "Harvest Moon"

21 We Moon rises near Mars-pm

22 Th Autumnal Equinox 6:23 pm

25 Su Last Quarter Moon 2:41 am

28 We Moon near Saturn-dawn am

*All times in Eastern Daylight Time.*

This information was obtained from the Henry J. Buhl, Jr. Planetarium in Pittsburg, PA.

## Immediate Job Opening: STAR STUFF Editor

by Greg Burnett

This will be my last *STAR STUFF* for the foreseeable future, since I will be going back to school this fall to continue training for my second career. I will still have my day job, so there just won't be enough time to do all the things I'd like to do, including serving as editor of *STAR STUFF*.

I've enjoyed editing the newsletter for the past ten months, and I'm sure my successor will do the same. It is a challenging and rewarding endeavor.

If you would be interested in taking over this position, please contact me at [skyfog@comcast.net](mailto:skyfog@comcast.net).

## Treasurer's Report - July 28, 2005

by Gordon Hansen

### Bank Accounts

Checking	\$	240.17
Savings	\$	2,400.35

**TOTAL Bank Accounts** \$ **2,640.52**

### Cash Accounts

Cash Account	\$	83.22
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**TOTAL Cash Accounts** \$ **83.22**

### Asset Accounts

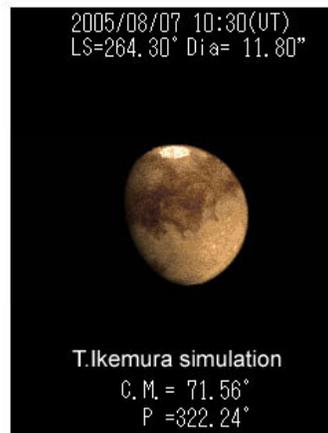
FERA Ticket Sales	\$	-
GLAAC	\$	795.00
Projector	\$	474.97
Scholarship	\$	303.60
Swap Meet	\$	-

**TOTAL Asset Accounts** \$ **1,573.57**

**OVERALL TOTAL** \$ **4,297.31**

## Astrophotography

by John Kirchoff



235mm SCT f/64 240sec avi@10fps 1750 frames 352x288  
2 degree wedge prism IR block ToUcam  
Trans 7/10 Seeing 6/10 John Kirchoff Hudson, MI USA

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**See us at the Kensington MetroPark  
"Astronomy on the Beach" Sept 9-10**