



★ STAR STUFF ★

The Newsletter of the Ford Amateur Astronomy Club

January 2003
Volume 12 Number 1



Editor: Jim Frisbie

In This Issue:

page #

- **Newcomer Welcome!** 2
- **Minutes of the December Meeting** by Jim Frisbie 2
- **Treasurer's Report** by Mike Bruno 3
- **A Message from the President** by Don Nakic 3
- **A Leonids MAC Experience** submitted by George Korody 4
- **Leonid Meteor Shower Report** by John Kirchhoff 5
- **Riddle of the Month** by George Korody 7
- **NASA's Space Place – Frisbees in Space** by Dr. Tony Phillips 7
- **MIT Names Minor Planet After Indian Whizkid** submitted by Abhijit Sengupta 8
- **Agenda for Next Meeting, January 23, 2003** 8
- **Astronomical Calendar** from the H. J. Buhl, Jr., Planetarium 8
- **FAAC Calendar** 8
- **FAAC Field Trip to the Detroit Science Center** 9
- **Saturn Collides with Crab** by George Korody 9
- **Astronomical Imaging SIG Update** by George Korody 10
- **Fish Lake Astro Imaging Workshop** 10
- **Advertisement from Club Sponsor: Riders Hobby** 12

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

Ford Amateur Astronomy Club
P.O. Box 7527
Dearborn MI 48121-7527

<http://www.boonhill.net/faac>

Submissions to STAR STUFF are welcome Please write to the address above or contact the editor:

Jim Frisbie
via tele #: 734-453-1422
or email: w8tu@peoplepc.com

Dead line is the 15th of each month for the following month of publication.

Officers:

President	Don Nakic
Vice President	Ken Anderson
Secretary	Don Klaser
Treasurer	Mike Bruno

General Meetings:

The Ford Amateur Astronomy Club holds regular general meeting on the fourth Thursday of each month (except the combined November/December meeting held the first Thursday of December) at 5:00 PM at the Family Service and Learning Center, 18501 Rotunda, Dearborn, MI 48124.

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.

Club Information:

Observing schedules and additional Club information is available by calling the Observing Hotline at: (313) 390-5456 or via the Ford Intranet: www.be.ford.com/astro/faac.html or the public Internet: www.boonhill.net/faac.


Club Membership:

Membership in the Ford Amateur Astronomy Club is open to Ford employees and non-employees. Write or call for an application.
Annual - New Member: \$25; Renewal: \$ 20 (before Jan 31 of each year)
Lifetime - \$ 150

Membership includes:

A subscription to the STAR STUFF newsletter and the quarterly newsletter the REFLECTOR published by the Astronomical League.
Discounts on ASTRONOMY and SKY & TELESCOPE magazines, after-hours access to the observing site and discounts at selected area equipment retailers.

Magazine Discounts:

Do not send money to FAAC for SKY & TELESCOPE or ASTRONOMY magazine subscriptions. We have a form that you send in with your subscription directly to the publisher to receive a \$10 discount. Pick up a form at the next meeting, or contact a club officer. 

SWAP & SHOP

For Sale: Digital Cameras for low cost Astro Imaging. Logitech QuickCam VC, 320x240 pixel, color, \$45; QuickCam Pro, 640X480 pixel, color, \$65. Both cameras with cables, software, and T-Adapters. Contact Jim at 734-453-1422.

NEW MEMBER WELCOME!

FAAC would like to take this opportunity to welcome the following new members:

- | | |
|----------------------|------------------|
| - Diane Worth | West Bloomfield |
| - Jon Blum | Farmington Hills |
| - Ed Isabell | Livonia |
| - Michael Harrington | Wayne |
| - Chris Strang | Taylor |

FAAC MEMBERSHIP RENEWAL FEE DUE

2003 Membership dues will be payable at the January 23rd meeting and by mail to the Club Treasurer through January 31. New Membership \$25 and Renewal \$20.

**MINUTES OF THE DECEMBER 5, 2002
FAAC GENERAL MEMBERSHIP MEETING
by Jim Frisbie**

The meeting was opened by President Don @ 5:00p,. Pizza & pop was enjoyed by all while attendees introduced themselves. Mike Bruno gave the Treasurer's report. The Secretary's report was approved as published. Old and New Business: Our Librarian is Dale Ochalek. Gordon Hansen will be taking over Pizza duties from Dale. The Library committee consists of Ed Halash and Tony Licata. Library volunteers are needed. Forty people were in attendance. Gold Seal books were offered for sale. George Korody reported on the Astro Imaging Special Interest Group. Approximately 32 people attended the first meeting. All went well. The next meeting will be December 9th at the Family Services Center. Up Coming Events: There will be a field trip to the Detroit Science Center on January 25th at 9 am. Ice Days will be held at Huron Metro Park on Saturday, Jan 18th starting at 4 pm. Leonids articles will appear in the next edition of Star Stuff. The FAAC Dinner Party will be held on Mar 15th at Kiernan's starting at 6 pm. George Korody gave the Technical Discussion on UFO sightings. The Main Program consisted of "Ask the Astronomer" held by Doug Bock and A Member Swap and Shop. The meeting was adjourned at 7 pm.

TREASURER'S REPORT - 12/5/2002

by Mike Bruno

Balance on hand:	Checking	\$ 906.64
	<u>Savings</u>	<u>\$1,422.06</u>
Included in above	Scholarship	\$ 574.13
	GLACC	\$ 319.00
Cash Available		\$1,435.57

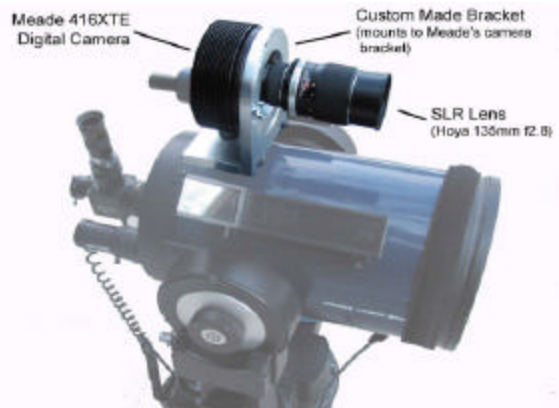
A MESSAGE FROM THE PRESIDENT

by Don Nakic

Happy New Year! I hope you had a pleasant and joyous holiday. It felt great to be reunited with fellow FAAC members at the last board meeting. I sense that this year will be a very busy year for the club. Already this month we have Ice Daze at Lake Erie Metro Park, FAAC General Meeting, Field Trip to Detroit Science Center, and the Fish Lake Astro Imaging Workshop. There are a lot more events planned for the year so please stay tuned. I think we can all agree that these are all tall tale signs of a fast growing and highly energetic club. I also think that everyone has elevated the club's level of enthusiasm and passion for the science and hobby of astronomy – my objective as FAAC President for 2002. I would like to thank everyone again for giving me the opportunity to aid in leading the club. It was a true learning experience.

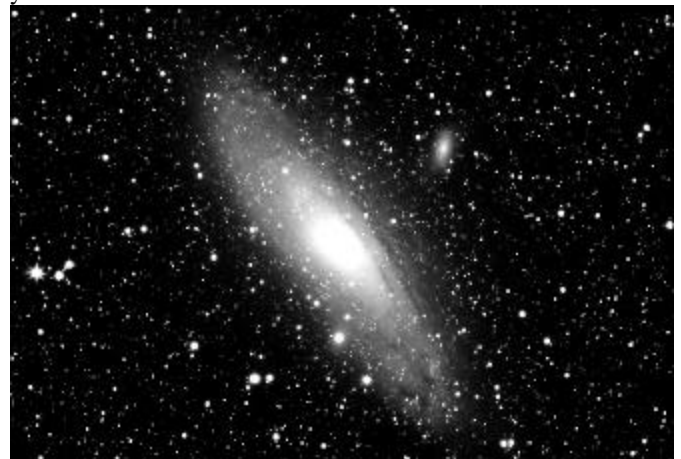
In addition to club activities, I have been busy with developing a technique for piggy-back CCD imaging that I spoke about in the last general meeting. This technique involves mounting an SLR lens to Meade 416XTE digital camera and then mounting the assembly to the top of the telescope. The telescope then serves as a guide scope during the exposure. Guiding is not necessary if you have a good polar alignment, wide field of view, and exposures of reasonable duration, approximately 12 minutes. With the camera fitted to a 135mm lens my field of view is 180 arc-minutes. Now objects like Andromeda can be captured in one exposure frame, before I needed to build a mosaic of 81 images when imaging at 19 arc-minutes through the telescope (8" SCT at f6.3).

To test the imaging technique, I went out on one of the clear nights we had during the Christmas break, albeit a bone chilling night. I conducted a drift alignment in my normal manner with the camera assembly attached to the telescope. I then focused the camera and took a picture. With a 30 second exposure I had an image of Andromeda (M31) and its neighbors M32 and M110. Suddenly my adrenalin was pumping so fast that I no longer felt the chill of winter's cold air



This was an image I longed to record since I entered the hobby five years ago. I made some tweaks to center the image and re-verified my focus. I then increased the exposure time to five minutes. Things were looking better and the image started to surface from the background. I studied the image and noticed no star trails. I further increased the exposure time to ten minutes. Although the image became more discernible I noticed two stars beginning to bloom. Blooming is a long streak that radiates out from a bright object, usually a bright star. This is the result of a pixel in the sensing chip that gets saturated by photons and bleeds off the excess energy to neighboring pixels. The best way to minimize this effect is to limit exposure time. So I increased the exposure time to only 12 minutes in order to achieve maximum signal-to-noise ratio and minimum blooming. The image looked good. I then followed this with another three exposures while keeping everything constant. I would later add the images digitally in a photo-processing software to create a single, 24 minute image. This approach increases the images signal-to-noise ratio to the level I wanted if I didn't have any blooming.

Below is an image of M31, M32, and M110 taken through piggy-back CCD imaging. I now feel confident that this technique will enable me to capture the many celestial objects that I could not take before due to my telescopes narrow field of view. My next technical challenge is to acquire a filter wheel to take color images ... I wish Christmas came twice a year.



Andromeda (M31), M32, and M110: 4 x 12 minute images stacked in Aip4WIN software

A LEONIDS MAC EXPERIENCE

By George Korody

The following is a unique Leonids meteor shower observing experience as reported by my long time Internet astronomy friend Robert Lunsford of San Diego, California. Bob is an official in the American Meteor Society (AMS), International Meteor Organization (IMO), and Association of Lunar & Planetary Observers (ALPO). His meteor notices are frequently shown on the Sky & Telescope WEB site at <http://skyandtelescope.com> and the S&T Meteor Alert mail list.

Bob was part of an international group (Multi-instrument Aircraft Campaign - MAC) that chartered the two specially instrumented airplanes complete with optical glass windows to fly to Europe to observe the first Leonids maximum there, then fly back to the USA in time to observe the second maximum here. Bob's pilot was none other than Gordon Fullerton, the pilot of Shuttle Mission III aboard the Enterprise. There is an excellent WEB site detailing this once-in-a-lifetime experience at <http://leonids.arc.nasa.gov/index.html>.

The 2002 MAC campaign officially started on Thursday November 14 with everyone meeting in the town of Lancaster. We spent nearly the entire day obtaining clearances for us and our vehicles at Edwards Air Force Base. There were also briefings with the flight crew detailing our flight path and the goals for the flight and safety issues. It was exciting to discover that our pilot for this leg and the entire journey to Spain and back would be none other than Gordon Fullerton, the pilot of Shuttle Mission III aboard the Enterprise. We all knew we were in good hands. That evening we took our first flight on board the DC-8. The jet was very comfortable and catered exactly to our needs. Extremely clear optical windows had been installed in place of the normal plastic to allow our instruments a clear view of the sky. To our dismay though the windows frosted over shortly into the flight, as they were not getting adequate ventilation. This would be a big problem to all experimenters, just not our flux team.

The next day back in Lancaster Pete Gural and I visited every Radio Shack in town and bought CPU fans. We only came up with 8 so we were forced to buy an additional 3 handheld fans from Walgreen's. We wanted to make sure the windows stayed clear in case the efforts by NASA's technicians did not resolve the problem. We arrived back at the base during the afternoon and prepared for our evening flight to Offutt Field, near Omaha, Nebraska. During the flight the windows remained clear and the fans were not needed. Our main objective of the flight was to determine our field of view so that the total area of the sky each camera exhibited could be determined. We would draw our star field on to a Bino star chart and then calculate the area of each drawing. Looking through the goggles was a bit like being in the last row of a walk-in theater. It gave us a large screen to view plus there were dark, blank areas along the sides and down the front. Stars down to magnitude 5 (pretty faint!) were easily seen despite the bright moon. Star patterns were a bit strange though as the red sensitive intensifiers displayed red stars much brighter than they normally were seen to the naked eye. For instance, zero magnitude

Vega was in my field but was not the brightest star. The brightest star was actually 2.2 magnitude Eltanin (Gamma Draconis) which is spectral type K5 (deep orange).

We arrived in cool (33F) Nebraska near midnight CST and had a long bus ride across town to our hotel. After we woke the next morning we took a long hike to the closest shopping mall to get some last minute shopping in before the long flight to Spain. We took off again around dusk and were intently observing as soon as possible. For this leg I switched to a low angle camera since Chris Crawford was having difficulty making magnitude estimates of meteors so close to the horizon. I had no problem with this except when the jet banked toward the left I had to quit counting since the ground was in my field of view. At approximately 5:48 UT we had our first excitement of the trip. An extremely bright fireball passed into the upper portion of my field. It was first seen by Chris but he was not wearing his headset to alert the crew. As soon as the initial shock wore off I quickly tried to notify everyone that we had a bright train on the left side of the plane. Unfortunately by the time everyone was aware of the situation the train had faded. This was good practice though and we would certainly be ready for the next one. It was interesting to see the angle of the Leonids passing though our fields change as the night progressed. While overall rates were low, there was still enough activity to keep us interested.

We touched down in overcast Madrid near 11am local time. It would not be until 1pm we finally reached our hotel room. As in all the military airports we visited, security was tight. I slept as soon as could and woke just in time for dinner. Since the skies were cloudy we had the choice of going out to the plane for 4 hours or just staying in the hotel. I decided to go to the plane to help Dave and Pete with the charts. There was one particular field we could not figure out. We had spent a lot of time on this the previous night and still could not figure it out. I reviewed the tape again noted the positions of the other camera fields. There was a bright star off to the right but nothing else was familiar. It turned out that bright star was none other than Polaris and that the "dipper" was just out of the field of view. Had the dipper been include it would have been easy. Anyway, we had a productive 4 hours and then it was off to bed at 4am. Some folks took this time to tour the city but I decided to get some sleep.

I woke some 4 hours later near 8am. Pete, Dave and I decided to tour the city. There's nothing like using the "Metro" at rush hour! We had heard of a particular spot to go shopping so we ordered tickets for that destination. The only problem though, halfway there the train stopped and everyone got off. Nothing like being lost in Madrid! We spent a few more full fares and ended up totally lost. Here are three guys who can read star charts of the heavens but cannot decipher a transit map! Well we finally figured out which lines were headed in and out of the city so we knew we could get back to our hotel eventually. We than struck out on foot and did some touring and shopping. Downtown was a nice area with many photographic opportunities. It was much more impressive than the suburbs where our hotel was located. After

developing blisters on our feet (at least I did!) it was time to head back to the hotel. We got there without a hitch. It was time for another nap. We rested until dinnertime. When we woke it was raining and we felt sorry for anyone who traveled to Spain to view the shower. After a filling meal it was time to pack and get ready for our big trip back across the Atlantic.

We were all back on the plane by 2am and ready for some great activity. The plane was loaded to the max with people, equipment and fuel for our long trip. We would be encountering strong head winds so it was decided we would take off an hour early to make sure we were still in darkness when the second maximum occurred. Unfortunately our sister craft "FISTA" was having trouble getting off the ground. First of all one of the engines balked at starting. Once that was resolved then there were electrical problems. We waited as long as we could before deciding we had to take off solo. It took nearly the entire runway to get airborne (52 seconds exactly). I got a good laugh from the mission director Bob Curry saying we "were thundering down the runway like a herd of turtles." Since we were so heavy it took quite awhile to get above the clouds. Several of us could not log on immediately as there was intermittent clouds in our field of view. About a half hour into the flight there was a loud cheer as we heard that FISTA finally was also airborne. We were too far apart to do any coordinated high definition work between the two planes but all other experiments could still be undertaken.

Meteor activity was evident as soon as the cameras were activated. Unfortunately Dave Nugent's camera was pointed directly at the moon so he spent a good part of the first few hours helping everyone else out. My camera was aimed toward Canis Major and Puppis. I did not have the world's best intensifier, as the bottom center portion of the screen was more sensitive than the rest of the view. I had Dave Nugent adjust the gain to achieve the best possible results. I left the gain toward the high side in order to see the most activity. We were all seeing several Leonids per minute and occasional bright ones. From what I recall rates did not kick into high gear until 3:45 UT. From then and for the next 30 minutes I was seeing Leonids passing through my field of view every few seconds. Near the top of the hour there were several simultaneous Leonids and on one occasion there were three visible simultaneously. While there were occasional bright Leonids, a great majority of the activity appeared to be of the third and fourth magnitude (a bit on the faint side). In fact the brightest meteor seen during this period was a long-lasting Taurid. I had a bright train early in the session but it paled in comparison to the one I reported on the 17th. It seems that others were seeing better trains so I kept quiet. Shortly after the peak those on the right side of the plane (facing north) became excited as bright trains began drifting into their field of view. These suddenly became quite numerous, so numerous in fact that they thought that they were clouds. We had not seen clouds for quite some time now were suppose to be well above all cloud layers. The video team switched their main monitor to the "all sky" camera and it was then obvious we were seeing aurora. We all took short "time outs" to see this awesome sight on the monitor a few rows up from our team. Within an hour I did not need the monitor to see the aurora as it had reached my far south-facing camera. Nearly the entire sky was ablaze with shimmering aurora. It

was an awesome sight, especially for someone like me who has only seen faint glows low in the north on rare occasions. The Leonids were also active during all this excitement with several meteors appearing each minute. My field of view had now shifted eastward into Hydra and Crater. As we reached 10:00 UT and even 10:15 there was no enhancement of rates so it seemed that the second maximum would be late. It was toward the bottom of the hour that rates again kicked into high gear. Rates climbed steadily and peaked near 10:50 UT. It was near this time I saw five simultaneous Leonids and seven within a one second period. Although this peak seemed a bit stronger than the first, it was also a bit dimmer with no negative magnitude Leonids being recalled. Once again a great majority of the Leonid activity was of third and fourth magnitude. A noticeable drop in rates had occurred by 11:15 and activity was down to a few Leonids every minute by 11:30 UT.

It was still dark as we approached Offutt Field, Nebraska so we flew on to Wichita, Kansas. By this time though my brain was fried from recording all the meteors and listening to all the chatter on the headphones. Around 12:00 UT I quit for the night and enjoyed seeing the lights of Kansas City (where I was born) and a beautiful sunrise.

There was a press conference and a get-together scheduled for 10am but most of us were too pooped to stay awake. After a nice long nap I met Dave Holman and George Varros down in the Hotel restaurant for a great steak dinner. After another few hours of snoozing it was time to head back to Edward's AFB. FISTA was down for repairs so those folks would not be able to observe in dark skies during this last leg of our journey.

Meteor rates during the last flight were back to more normal levels. It seems that the Leonids and sporadics were producing rates of around 10 per hour. When we reached Edwards it was still dark so we flew to the coast to take advantage of the last bit of darkness. When we arrived at Edward's there was a fantastic scene as the full moon hung just the mountains in the west. The light orange moon in the purple sky was quite a sight and a special way to end our journey. The next few hours were spent dismantling the cameras and all the cables and removing them from the plane. After a last meal together at the Cactus Café we all parted and headed home with some new friends and many great memories.

LEONID METEOR SHOWER REPORT

By John Kirchhoff

This year's Leonid Meteor Shower was to be my third and perhaps last try to see an elusive meteor storm. I remember as a kid growing up reading in Sky and Telescope about the fantastic display of meteors out west in the 1960's. Two years ago I was primed to see a great display of meteors only to be

disappointed by a rather meager showing in the Mid West. The sky was clear but the majority of the activity occurred half way around the world. We counted 20 or so meteors over the course of the evening., not a bad showing for the Leonids but certainly nothing to rival a good Perseid or Geminid meteor shower. Last year's display promised to be remarkable, the pundits forecast a great display for us in the Mid-West and the sky was beautifully clear all day Saturday. I couldn't wait to get to Lake Hudson and get ready for the show. Little did I realize that 10 miles from our site the fog rolled in from the south thicker than the fog in any of my wife's favorite horror movies! We spent the next four hours driving aimlessly through the soup looking for some clearing somewhere. I finally ended up back home hoping that the fog would roll through before dawn. Needless to say from my vantage point it never did, in fact, the fog continued all day Sunday too. I was crushed to hear that if only I had driven North / South/ or East I could have seen the best meteor show of my entire life. This year I vowed that I would do anything in my power (and financial resources) possible to see the meteors. I studied the weather reports, I called our local weather forecaster, and I may have cast a few tea leaves hoping that this would be the year to be in the right place at the right time. The weather report for our location looked bad from 10 days out and didn't really get any better as we closed in on the appointed time and date. After consulting our weather guru and checking the forecast I decided there would be no option other than to head west (and south) to Peoria, IL. My observing buddies, Dan and Frank, agreed to meet me at my home around 6pm. Frank agreed to do the driving, he has a nice roomy Ford conversion van. After a mad dash gathering up the camera gear and binoculars we took one last look at the Clear Sky Clock to confirm the weather and headed west at 7PM. We noticed the moon was out albeit hazy but we quickly lost what clear sky we had as we sped west on I-80 towards Chicago. The trip was uneventful other than the weather became progressively worse the further west we traveled. We decided to turn south at Joliet and immediately started to run into rain, a light mist at first but the rain increased steadily as we headed towards Bloomington. I couldn't help but think that sometime during the last 5 hours the weather Gods had played yet another trick on us and the clearing we were hoping for had vanished. We were sure wishing for a mobile internet connection. Hey, I'm from Michigan and I know the weather is fickle to say the least! We made a pit stop in Bloomington and had an unexpected surprise. There was a TV at the rest stop with updated weather info including a satellite map. The map showed we were through the worst of the weather and clear sky just to the south and west of us. Much encouraged we jumped back into the van and sped down the road. The wind had changed from out of the south to a good westerly breeze and it wasn't long until we noticed the sky becoming progressively clearer. We decided to turn west on 136 and headed to the Illinois River and the town of Havana. The sky was really clear now and air was really drying out. The haze under the farmer's mercury lights had vanished and after jogging southwest again along the river we ended up at Site M Illinois Fish and Wildlife Area. We found a nice parking lot on a elevated area and piled out of the van shortly before 3am. We were immediately serenaded by a chorus of coyotes that seemed to take exception to the intrusion . The coyotes continued to be our accompaniment off and on thru the balance of the evening.

After the long drive we couldn't wait to get started. I set my camera gear up, strapped a dew heater on the lens and set up my folding recliner. The sky was perfect except for the bright full moon high in the west. I could just barely see the 5th magnitude star in the bowl of the Ursa Minor. The sickle of Leo was up in the east and was positioned in the darkest part of the sky. " There's one" I heard Dan say " There's another" Frank chimed in. Rats, missed them both! Dan saw another meteor and then I finally saw my first followed quickly by another. Wow, very fast compared to Geminids and Perseid meteors. Time went by in a flash with approximately 30 meteors tallied the first hour. The moon seemed to wash out the faint meteors, the 30 were made up mainly of 1-3 magnitude. Dan and Frank were struggling with dew/frost on the camera lens but the dew heater worked great on mine. I was running 5 minute star trail exposures using Fuji 800 and a f/2.8 28mm lens. I kept checking the set up for infinity focus and f stop, I wanted to make sure I didn't repeat any past mistakes. I kept my camera centered around Jupiter as it is close to the radiant and would be easily identified in the photos. Just after 4 am all three of us saw the brightest meteor of the evening near Jupiter. We saw it from start to finish as we had just looked at a preceding meteor in the same area of the sky.



"WOW...AWESOME...I GOT IT!! LOOK AT THE TRAIL!"

It was a brilliant -8 or better gram of space rock that slammed into our atmosphere at 30 miles per second. The best part was the long lasting trail that was evident for over 5 minutes. The trail had a reddish hue at first that gradually faded from view. I'm certain that the meteor would have cast a shadow had we looked at the ground. It really made the drive worthwhile. After the spectacular start of the second hour we were really pumped up for more fireworks. The meteors seemed to show up in bunches with minutes of absence followed by a small flurry of activity. The count for the second hour was up, but only slightly, with 40 or so meteors noted. Once again quite a few 1st to 3rd magnitude and not many faint ones. About half of the meteors noted left a trail lasting up to several seconds. As five am approached I decided to pop a new roll of film in the camera and get ready for the big show. The article in S&T suggested that the max would be around 5:30 and I didn't want to fumble around changing film. It was a great idea but I

failed to insert the film leader far enough into the take up spool (thought I learned my lesson when I did the same thing to my wedding pictures). End result - no pictures for roll #2. My failure as a photographer did not diminish the excitement during the last 90 minutes of the show. The intensity of the display increased and by 5:30 we were seeing meteors at a rate of 5 to 7 every minute. I noted several multiple meteors , the best being a flurry of four that perfectly framed the radiant and sickle of Leo. Many meteors left smoke trains due to their high speed of entry. Once again most meteors were in the first to third magnitude class as the moon hindered our observation of fainter meteors. The peak appeared to last 20 minutes or so and by 6am the pace dropped considerably. By 6:30 we agreed to pack things up as it appeared the show was over and we were cold and tired. We did get a chance to see a very bright ISS cross the southern sky and also noted Venus rising in the east as we loaded up the van. My last memory as I climbed into the van was a final trio of Leonids equally spaced and equal in brightness crossing the bowl of the Big Dipper headed north. A wonderful ending to my most memorable meteor expedition!

RIDDLE OF THE MONTH

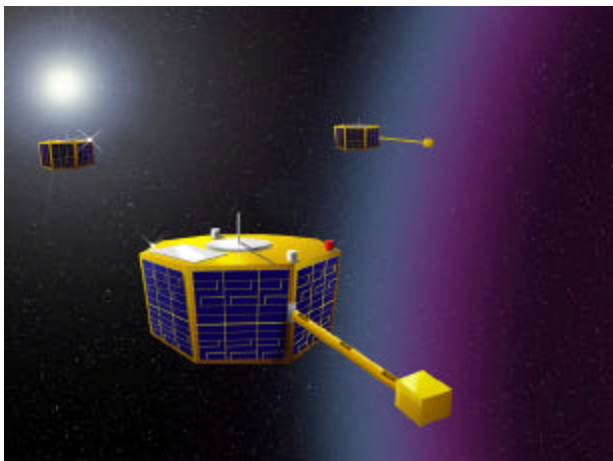
Submitted by George Korody

What is another name for astronomers?



FRISBEES IN SPACE

by Dr. Tony Phillips



When Pete Rossoni was a kid he loved to throw Frisbees. Most kids do-it's pure fun. But in Pete's case it was serious business. He didn't know it, but he was practicing for his future career in space exploration.

Grown-up Pete Rossoni is now an engineer at NASA's Goddard Space Flight Center. His main project there is figuring out how to

hurl spacecraft into orbit Frisbee-style.

The spacecraft are small-about the size of birthday cakes. "This wouldn't work with big satellites or heavy space ships like the shuttle," notes Rossoni. But a cake-sized "nanosatellite" is just right.

Nanosatellites-nanosats for short--are an exciting new idea in space exploration. Ordinary satellites tend to be heavy and expensive to launch. The cost alone is a deterrent to space research. Nanosats, on the other hand, can travel on a budget. For example, a Delta 4 rocket delivering a communications satellite to orbit could also carry a few nanosats piggyback-style with little extra effort or expense.

"Once the nanosats reach space, however, they have to separate from their ride," says Rossoni. And that's where Frisbee tossing comes in.

Rossoni has designed a device that can fling a nanosat off the back of its host rocket. "It's a lot like throwing a Frisbee," he explains. "The basic mechanics are the same. You need to impart the spin and release it cleanly-all in about a tenth of a second." (The spinning motion is important because it allows the science magnetometer to measure the surrounding field and lets sunlight to play across all of the nanosat's solar panels.)

The ST5 nanosats are designed to study Earth's magnetosphere-a magnetic bubble that surrounds our planet and protects us from the solar wind. But their primary goal, notes Rossoni, is to test the technology of miniature satellites.

"We haven't done anything like this before," says Rossoni. Soon, however, the concept will be tested. A trio of nanosats is slated for launch in 2004 on the back of a rocket yet to be determined. The name of the mission, which is managed by JPL's New Millennium Program, is Space Technology ST5.

Can groups of nanosats maintain formation as they fly through space? Will their internal systems -miniaturized versions of full-sized satellite components-satisfy the demands of both the harsh space environment and critical science measurements? Is Frisbee-tossing as much fun in orbit as it is on Earth?

ST5 will provide the answers. Read about ST5 at <http://nmp.nasa.gov/st5> . Budding young astronomers can learn more at http://spaceplace.nasa.gov/st5/st5_tortillas1.htm

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

MIT NAMES MINOR PLANET AFTER INDIAN WHIZKID

Submitted by Abhijit Sengupta

A boy has literally had his niche carved in the galaxy for his brilliant invention. The Massachusetts Institute of Technology (MIT), US, has named '12509 Pathak' - a recently spotted minor planet between Mars and Jupiter - after Madhav Pathak - a grade X student.

"We feel proud to name the minor planet discovered by LINEAR program in honor of students and teachers recognized by Science Service Program", says a letter from the Lincoln Laboratory US.

February 9 First Quarter Moon 6:11am
 February 11 Saturn near Moon - evening
 February 15 Jupiter near Moon - evening
 February 16 Full Moon 6:51 pm (Snow Moon)
 February 23 Last Quarter Moon 11:46am
 February 25 Mars near Moon - morning
 February 27 Venus near Moon - Morning

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

FAAC January 23, 2002 General Membership Meeting 5:00 pm to 6:45 pm Agenda

- Introductions	Don Nakic	20 min
- Reports: Treasurer's Secretary's	Mike Bruno Don Klaser	5 min
- Old/New Business	Don Nakic	30 min
- Upcoming Events	Don Nakic	15 min
- Technical Terms	Ken Anderson	15 min
- Election of Officers	All	20 min

FAAC CALENDAR

Activity	Date	Time
- Ice Days	Jan 18	4 pm
- General Meeting	Jan 23	5 pm
- DSC Field Trip	Jan 25	9 am
- FAAC Board Mtg	Feb 13	5 pm
- General Meeting	Feb 27	5 pm
- FAAC Board Mtg	Mar 13	5 pm
- FAAC Dinner	Mar 15	6 pm
- General Meeting	Mar 27	5 pm
- FAAC Board Mtg	Apr 10	5 pm
- General Meeting	Apr 24	5 pm
- FAAC Board Mtg	May 8	5 pm
- UMD Star Party	May 9	9 pm
- General Meeting	May 22	5 pm
- FAAC Board Mtg	Jun 12	5 pm
- General Meeting	Jun 26	5 pm

EDITORS NOTE:

I would like to take this opportunity to thank Greg Burnett and Janice Kessler for their long standing contributions to Star Stuff. Greg has shared his well written "Observations" column with the club over the past years. Janice has provided many editions of "Constellations for Beginners" to the delight of newcomers and some of us not so newcomers. Thank You both for your tireless contributions.

ASTRONOMICAL CALENDAR

January 2003

All times are Eastern Standard Time or Eastern Daylight Saving Time, whichever applies.

January 18 Full Moon (5:48am Wolf Moon)
 January 19 Jupiter near Moon - morning
 January 25 Last Quarter Moon 3:33am
 January 27 Mars near Moon - morning
 January 28 Venus near Moon - dawn
 January 29 Mercury near Moon - dawn

February 2003

February 1 New Moon 5:48am
 February 2 Jupiter at Opposition -up all night

FAAC DINNER - SATURDAY, MARCH 15th

The annual FAAC Dinner will be held Saturday, March 15th, at Kiernan's on Michigan Ave. in Dearborn. Cocktails at 6 pm, (cash bar), dinner at 7:00 pm, and prizes!. Bring an Astronomy Grab Bag valued at \$3 for exchange. Tickets are available from the Club Treasurer. See you there!

Crestwood School District - Ensign Planetarium

Public Shows

1501 Beech-Daly

Dearborn Heights, MI 48217

(313) 274-3711

All shows begin at 7:00 pm

February 12: *The Romance of the Great Observatories*

Major discoveries have taken place in the darkest, coldest, loneliest nights on remote mountain tops

March 12: *The Earth-Sun Connection*

We love our star, but it changes on a daily basis. Find out what it's doing and how we are affected

April 19: *Earth Day and Astronomy Night*

Raise your consciousness as we explore issues facing the space program and our own views of the night sky

May 14: *The Latest in Space Exploration*

Find out what we're sending and what we've gotten back from our exploring probes

June 11: *Our Guest Star - Kristina!*

Kristina Nyland shines as our special guest star as she returns from U of M for a presentation on the latest in astronomy

FAAC FIELD TRIP - DETROIT SCIENCE CENTER

Saturday, January 25, 2003

The FAAC members should arrive at the New Detroit Science Center starting at 9 AM on Saturday, January 25th, 2003. They may park on the street of Warren, or pay \$3.00 for the Science Center parking lot, which is watched. The Planetarium show will begin at 9:30 - 9:40 AM, and the Digital Dome Planetarium will be open for a complete tour and inspection of FAAC members at the end of the show. The Science Center opens at 10:30 AM, and FAAC members are free to wonder around the Center and see the free Science Stage and DTE Energy Sparks Theater presentations. The Cafe opens at 10:30 AM for food and drink. Pop machines are available at \$1.00 for water, pop, or Lipton Lemon Brisk Ice Tea, or there are juices in the machines on the 2nd level near the Science Stage. The Cafe is more expensive than the pop machines for bottled drinks, but the Cafe has a fountain machine with \$0.25 refills, a deal!

SATURN COLLIDES WITH CRAB

By George Korody

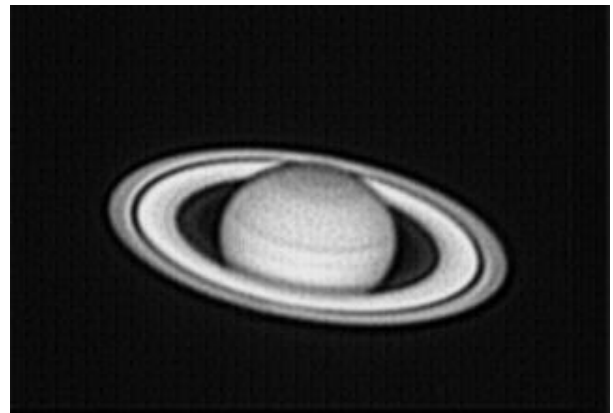
Now that I have your attention let me explain. On January 4-5, 2003, the planet Saturn appeared to collide with the Crab Nebula (M-1) as it moved slowly westward through the constellation of Taurus, crossing over top of M-1. This event is depicted in a picture taken several days later and shown on the Astronomy Picture of the Day WEB site at. While occultations of more distant celestial objects by planets is not rare this event was

interesting in that it involved two of our more popular objects observed in amateur telescopes.



In addition to the above event, in December Saturn was the closest it has been in 30 years and its rings are now fully opened. Saturn will still be very close to us for the next few months and is in a good position for viewing because it currently takes a high track across the sky. It rises shortly after sunset and is visible all night. This is a great time to observe the finer details of the planet and its rings.

I recently took the CCD pictures shown here of Saturn and the Crab Nebula with the newly activated 14" telescope and mount in my observatory. The large dark open area in the rings is the popular Cassini Division, that can be seen easily in small telescopes. Also, a weaker dark area called the Encke Minima can be seen in the middle of the outer ring. This area should not be confused with the Encke Division, that cannot be seen in this picture and is extremely difficult to observe. The Encke Division sits between the Encke Minima and the outer edge of the outer ring. There is an excellent WEB site at <http://home.fiam.net/ericj/encke.html> that discusses and illustrates the Encke Minima and Encke Division.



RIDDLE OF THE MONTH - Answer...

Men-o-Nights !

ASTRONOMICAL IMAGING S.I.G.

By George Korody

The third meeting of the Astronomical Imaging S.I.G. will be held at the Ford Family Service and Learning Center in the Training Conference Room on Tuesday, January 21 from 5:00 PM to 7:00 PM. The main topic of discussion will be on film image acquisition led by Vic Singh. All FAAC Club Members are welcome to participate.

Fish Lake Astro Imaging Workshop The Art and Science of Photography and CCD Imaging

January 31 - February 2, 2003

The "Fish Lake Astro Imaging Workshop" field trip takes place **January 31, 2003 through February 2, 2003** at the Eastern Michigan University's Kresge Environmental Education Center, located 7 miles northeast of Lapeer, MI. KEEC is located in an area where skies allow viewing of faint astronomical objects such as clusters, comets, galaxies and more. Telescopes typically from 4" to 14" in aperture will be operating both Friday and Saturday night, weather permitting. If you do not bring a telescope, several of them will be available to look through. Those attending this unique Fish Lake experience are encouraged to bring photographic gear and/or CCD imaging systems, if they have them, to share ideas and information with others, or to learn "tricks of the trade" from veteran observers. Cost is **\$50.00** per person for 3 meals, 2 nights stay, observing, workshops, talks, hikes, and more. **To attend, print out, complete, and return the [Registration Form](#)** (.pdf format) **before January 27, 2003 - Note: The registration fee is non-refundable.** Registration limit is 60 persons. Full Friday night through Sunday noon attendance is assumed and *strongly encouraged* (but not required) so no variance on meal plan or fee is offered.

NOTE: [This fee is non-refundable](#)

Make checks payable to: **Eastern Michigan University**

Registrations must be received by January 27, 2003. Mail-in registration ends Friday, January 24, 2003. (postmark on or before).

Trip Highlights

FRIDAY, January 31:

- Registered folks arrive at Fish Lake any time after 5 p.m.; check-in at kitchen area.
- Observing/imaging all night, skies permitting, with a wide variety of portable telescopes.
- Talks and discussion groups, if cloudy. Dorm stay-over - no meal.
- Coffee, hot chocolate in kitchen area.

SATURDAY, February 1:

- Breakfast served at 10 a.m.
- Solar observing and photography, if clear
- Nature trails to explore (many biological and geological features to see).
- Workshops and presentations (a *schedule of presenters will be posted here by early January*)
- Dinner served at 5 p.m. (vegetarian plate available, too)
- Observing/imaging all night, skies permitting.
- Talks and discussion groups, if cloudy

SUNDAY, February 2:

- Breakfast served at 10 a.m. for anyone still moving :)
- Clean up
- Departure from Fish Lake around 12:00 noon

Other Notables....

The Fish Lake dorms offer comfortable beds and bathroom facilities but you will need to bring:

-sleeping bag and pillow...there are beds, just no sheets

-towels and toiletries...the showers are hot, just no linens

The dorm is divided into men/women wings plus a common area with fireplace. You should also bring a red flashlight, and **warm winter** clothing (it gets *cold* at night this time of year). Optional items to bring include telescope, binoculars, camera equipment, playing cards, snacks, notebooks, pop, etc. Lapeer is about 10 minutes from Fish Lake and offers a delicious selection of fast food if you need your fix. Notice in small print: Though not a problem in the past, the University and EMU Astronomy Club are not responsible for lost or stolen items - keep an eye on your stuff. Our general policy is, "if it ain't yers, DON'T touch it!".

Make sure you check-in at the registration desk in the kitchen area (see map) upon arrival. Only registered guests are allowed on the grounds! **This trip is open to anyone with an interest in astronomy but especially to those with an interest in astronomical imaging since the trip is designed with them in mind.** Fish Lake has been a fun and enjoyable experience for EMU's introductory astronomy students for many years....it's meant to be fun for all, from novice to veteran observers.

To reach Fish Lake, take US-23 / I-75 to I-69, east to Lapeer, MI, or M-24 north to Daley Rd. (just 1 mile north out of Lapeer). 3 miles east on Daley Rd. and 1 mile north on Fish Lake Rd. just past Vernor Rd.. Our site is located at the east end of KEEC's service drive...look for the green EMU KEEC sign at the dirt drive entrance. Drive SLOWLY up the service drive with parking lights only if arriving after dark. Print out the available map for reference.

Additional information available from [Mr. Norbert Vance](#) or [Mr. Jeff Thrush](#).

[Map to Fish Lake \(KEEC\)](#)

Map may take several seconds to load - 95K GIF file

[Registration form](#)

.pdf format

(Flier updated by alumnus Heather Tarvis, Senior Electronic Artist, Meridian, Inc.)

Return to [EMU Astronomy Club page](#)

Pictures of [Astronomy at Fish Lake](#)

© *copyright, 2002*

Ford Amateur Astronomy Club
Star Stuff Newsletter
P.O. Box 7527
Dearborn, MI 48121-7527



RIDER'S[®] HOBBY SHOPS

Store Hours: M-F 10am-9pm SAT 10am- 6pm SUN Noon-5pm	Gen. Manager: John Kirchhoff Website: http://www.riders.com Email: riderslivonia@prodigy.net	30991 Five Mile Rd. Livonia, MI 48154 Tele: 734.425.9720 Fax: 734.425.2029
--	--	---

- Save an extra \$40.00 on Meade's ETX 90 RA telescope! For a limited time this telescope is being offered for the incredibly low price of \$159.99! To take advantage of this special offer you must visit our website at www.riderslivonia.com and print the coupon showing the special savings. Advertised price in the store is \$199.99
- Meade special pricing and eyepiece promotion extended through February 28.
- Celestron special pricing and eyepiece promotion extended through February 28.