



# STAR STUFF

The Newsletter of the Ford Amateur Astronomy Club

Volume 24, Number 6

June 2014

## In This Issue

### Page One

### Presidents Corner

### Inside Stuff

### 3 Treasurer's Report

### 8 Classifieds

### 9 FAAC Events Secretary's Report

### 10 Equipment Report

### 11 Lincoln Park Observatory Update

### 12 New Meteor Shower

### 14 Mars, April 20th, 2014

### 15 Picnic Flyer



## A Glorious Gravitational Lens

By Dr. Ethan Siegels

As we look at the universe on larger and larger scales, from stars to galaxies to groups to the largest galaxy clusters, we become able to perceive objects that are significantly farther away. But as we consider these larger classes of objects, they don't merely emit increased amounts of light, but they also contain increased amounts of mass. Under the best of circumstances, these gravitational clumps can open up a window to the distant universe well beyond what any astronomer could hope to see otherwise.

The oldest style of telescope is the refractor, where light from an arbitrarily distant source is passed through a converging lens. The incoming light rays—initially spread over a large area—are brought together at a point on the opposite side of the lens, with light rays from significantly closer sources bent in characteristic ways as well. While the universe doesn't consist of large optical lenses, mass itself is capable of bending light in accord with Einstein's theory of General

Relativity, and acts as a gravitational lens!

Continued On page 2

## Navigating The Summer Sky

### President's Corner

One question that comes up often on online forums is how a person might go about learning their way around the night sky.

Now that it's officially summer, I thought I'd address the topic using the stars and constellations of the summer sky.

The task seems more daunting than it really is. To begin... there are 88 official constellations — that's the same number of keys on a piano keyboard. But we can't see all of them. We can't see the most southern constellations from the northern hemisphere - somewhat reducing the list of what we'll be able to find in the night sky. There are a few constellations around the celestial north pole which are always above the horizon and those are visible (barring clouds) every night of the year.

Continued On page 4

*Abel 2218. Image credit: NASA, ESA, and Johan Richard (Caltech). Acknowledgement: Davide de Martin & James Long (ESA/Hubble).*



## A Glorious Gravitational Lens (continued from Page 1)

The first prediction that real-life galaxy clusters would behave as such lenses came from Fritz Zwicky in 1937. These foreground masses would lead to multiple images and distorted arcs of the same lensed background object, all of which would be magnified as well. It wasn't until 1979, however, that this process was confirmed with the observation of the Twin Quasar: QSO 0957+561. Gravitational lensing requires a serendipitous alignment of a massive foreground galaxy cluster with a background galaxy (or cluster) in the right location to be seen by an observer at our location, but the universe is kind enough to provide us with many such examples of this good fortune, including one accessible to astrophotographers with 11" scopes and larger: Abell 2218.

Located in the Constellation of Draco at position (J2000): R.A. 16h 35m 54s, Dec. +66° 13' 00" (about 2° North of the star 18 Draconis), Abell 2218 is an extremely massive cluster of about 10,000 galaxies located 2 billion light years away, but it's also located quite close to the zenith for northern hemisphere observers, making it a great target for deep-sky astrophotography. Multiple

images and sweeping arcs abound between magnitudes 17 and 20, and include galaxies at a variety of redshifts ranging from  $z=0.7$  all the way up to  $z=2.5$ , with farther ones at even fainter magnitudes unveiled by Hubble. For those looking for an astronomical challenge this summer, take a shot at Abell 2218, a cluster responsible for perhaps the most glorious gravitational lens visible from Earth!

Learn about current efforts to study gravitational lensing using NASA facilities: <http://www.nasa.gov/press/2014/january/nasas-fermi-makes-first-gamma-ray-study-of-a-gravitational-lens/>

Kids can learn about gravity at NASA's Space Place: <http://spaceplace.nasa.gov/what-is-gravity/>

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contact with NASA.*

# STAR STUFF

April 2014 - Vol. 24 No 6

STAR STUFF is published eleven times each year by:

**FORD AMATEUR ASTRONOMY CLUB**  
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## Club Information:

The Ford Amateur Astronomy Club (FAAC) meets on the fourth Thursday each month, except for the combined November/December meeting on the first Thursday of December - at Henry Ford Community College Administration Services and Conference Center in Dearborn. Refer to our website for a map and directions ([www.fordastronomyclub.com](http://www.fordastronomyclub.com)).

!The FAAC 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. The FAAC also has use a private observing site near Gregory Michigan and lake Erie Metro Park. See the FAAC Yahoo Group\* for more information.

Observing schedules and additional info are available on our website, or via the FAAC Yahoo Group.\* Or call the FAAC Hotline, for info and leave a message, or ask questions: 313-757-2582. or send email inquiries to [info@fordastronomyclub.com](mailto:info@fordastronomyclub.com).

Membership in the FAAC is open to anyone with an interest in amateur astronomy. The FAAC is an affiliate of the Ford Employees Recreation Association (F.E.R.A.). Membership fees: ! Annual - New Members: \$30 (\$15 after July 1) Annual - Renewal: \$25 (\$30 after January 31)

Membership includes the STAR STUFF newsletter, discounts on magazines, discounts at selected area equipment retailers, and after-hours access to the Island Lake observing site. !Astronomy or Sky & Telescope Magazine Discounts !Obtain the required form from the FAAC club treasurer for a \$10 discount. Send the completed form directly to the respective publisher with your subscriptions request and payment. Do not send any money directly to the FAAC for this. !Star Stuff Newsletter Submissions

Your submissions to STAR STUFF are welcome! Send your story and/or images to the editor: [StarStuff@fordastronomyclub.com](mailto:StarStuff@fordastronomyclub.com) Email text or MS Word is fine. STAR STUFF will usually go to press the weekend prior to each general meeting. Submissions received prior to the 15th can be included in that issue

\* FAAC Members are welcome to join our Ford Astronomy Club Yahoo!Group. Messages photos, files, online discussions, and more! URL: [groups.yahoo.com/group/FordAstronomyClub](http://groups.yahoo.com/group/FordAstronomyClub).

*This months background photos courtesy of John Kirchhoff. Jupiter photo page 7; and moon background strip on page 1. See more of John's photos at:*

<http://www.flickr.com/photos/33926475@N06/with/4311533997/>

## Treasurer's Report

by Gordon Hanson

### Ford Amateur Astronomy Club

#### Balance Sheet

June 5, 2014, 2014

	<u>Jun 5, 14</u>
<b>ASSETS</b>	
<b>Current Assets</b>	
<b>Checking/Savings</b>	
10000 · Checking	1,103.40
11000 · FAAC Savings	
11100 · FAAC Club Savings	1,667.61
11200 · Equipment	1,204.36
11300 · Scholarship	560.76
11400 · GLAAC	4,359.56
<b>Total 11000 · FAAC Savings</b>	<u>7,792.29</u>
12000 · Petty Cash Account	98.88
13000 · CD's	
13100 · CD 200599272	1,059.51
13200 · CD 205196033	1,004.02
13300 · CD 89265268	1,106.97
<b>Total 13000 · CD's</b>	<u>3,170.50</u>
<b>Total Checking/Savings</b>	<u>12,165.07</u>
<b>Total Current Assets</b>	<u>12,165.07</u>
<b>TOTAL ASSETS</b>	<u>12,165.07</u>

## Navigating The Summer

### Sky(continued)

There is some overlap... we still see lingering constellations of the springtime and if we stay up late we see the approaching constellations of the fall.

My suggestion is to learn to find the three major circumpolar patterns (the ones we use over and over to find other objects) and then learn to find perhaps 4-6 "seasonal" constellations or asterisms.

While there are many more, you'll find that locating minor constellations is much easier once you've learned to find just a handful of major constellations. After a year or two, you'll be able to find those major constellations so easily that you'll begin to add additional constellations to your repertoire.

This means that for any given night of the year, you would be able to easily locate between seven and ten major constellations — enough to navigate the majority of the sky.

How you learn to find these familiar patterns is another matter and that's probably more the point of this article. There are some tricks whereby once you can find just one or two objects, you can find everything else.

Having done enough planetarium shows, I found that using "flat" charts to find my way around a hemisphere sky didn't always translate very easily. That's why the I think staring at the charts won't get you very far unless you actually head outdoors and learn to compare the real sky to the chart as you learn. Grab a blanket, head outside, lie down and look up (you won't need your telescope or your binoculars for this.)

My whole-sky image is set for about 11pm on the first day of summer as visible from Detroit.

*Continued On page 5*





## Navigating The Summer Sky(continued)

### The Circumpolar Region

One region of the sky is visible throughout the year — the circumpolar region. If you were to draw a line from Polaris down to the horizon and imagine that as a giant piece of string representing the radius of a circle... then draw that circle all the way around Polaris ... that gigantic circle would represent the circumpolar region of the sky. The stars in that section are always visible — they never set below the horizon as viewed from our northern latitude.

The three constellations you'll want to find in this part of the sky are:

The three constellations you'll want to find in this part of the sky are:

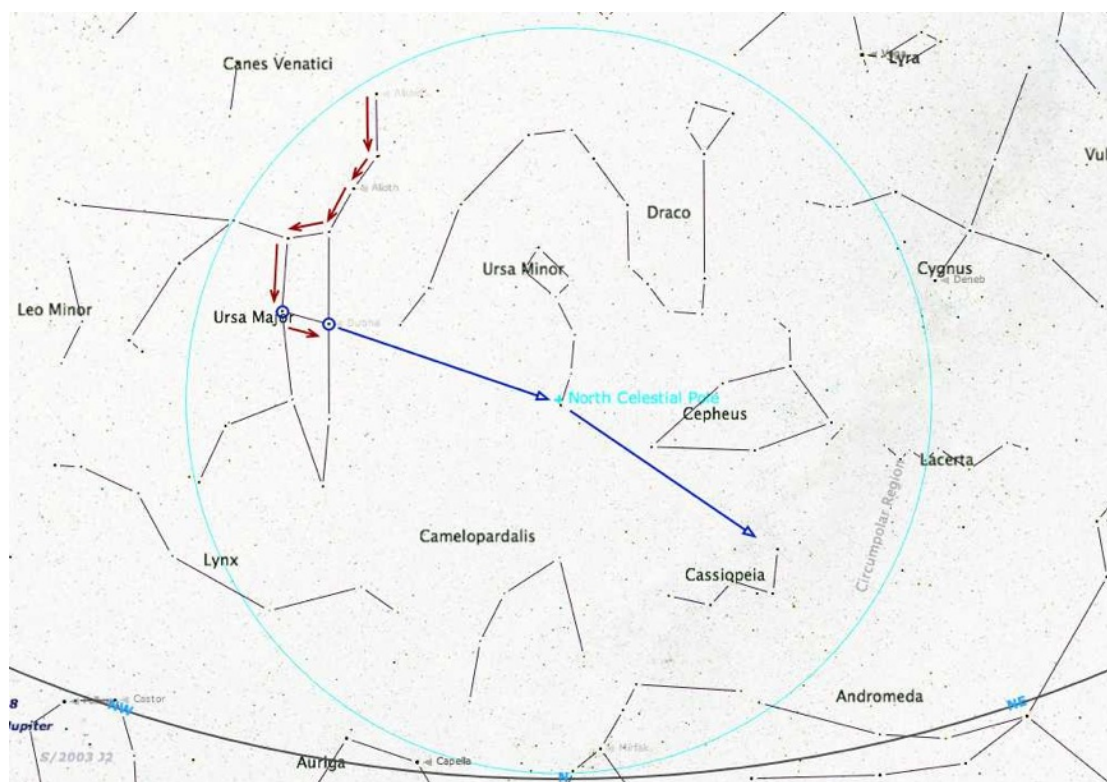
1. The Big Dipper (really an asterism within Ursa Major — the Great Bear)
2. The Little Dipper (really Ursa Minor — the Little Bear)
3. Cassiopeia (the queen)

The most familiar pattern in that region is the Big

Dipper which isn't really a constellation — it's an asterism. Asterisms are familiar patterns which aren't "officially" constellations (but are often confused for being constellations). Most people can find the Big Dipper readily — it is one of the most recognized patterns in the sky.

Using the last two stars of the "bowl" of the dipper (the side opposite the handle), you can draw an imaginary line which ultimately points to Polaris to locate the Little Dipper. Polaris is about 2/3rds of a degree away from the north celestial pole. The actual position of the pole is on a line drawn between Polaris and Kochab (Kochab is the last star in the little dipper and the end of the bowl... completely opposite from Polaris). It is located on that line approximately 40 arc-minutes away from Polaris. Though 40 arc-minutes doesn't seem like much, the width of the moon is usually about 30 arc-minutes from edge to edge (varying by about 10% depending on whether the moon is closer to perigee or apogee during the lunar month). But that means if you could cut & paste the image of the moon ... you could put it between Polaris and the true north celestial pole and still have just a tiny bit of room to spare.

*Continued On page 6*



## Navigating The Summer

### Sky(continued)

Using those pointer stars from the Big Dipper and following the line to Polaris... continue beyond Polaris roughly the equivalent distance and you'll end up at Cassiopeia. Cassiopeia is a "W" shaped constellation but it's located directly in the band of the Milky Way. In very dark skies it's actually a bit difficult to spot because there are so many stars in that area that it's difficult to pick out the stars which belong to the "W". I find that it's much easier to pick out in just a tiny bit of light pollution.

In the the rest of the sky, the familiar shapes which are relatively easy to find include:

4. Boötes (the herdsman)
5. Virgo
6. Corona Borealis (the northern crown)
7. Hercules
8. The summer triangle. But finding the southern triangle then leads to
9. Cignus (the swan)
10. Lyra (the harp)
11. Aquila (the water-bearer)

These are fairly easy to learn and I'll walk through them.

## Looking West

We can start high in the sky with the Big Dipper asterism.

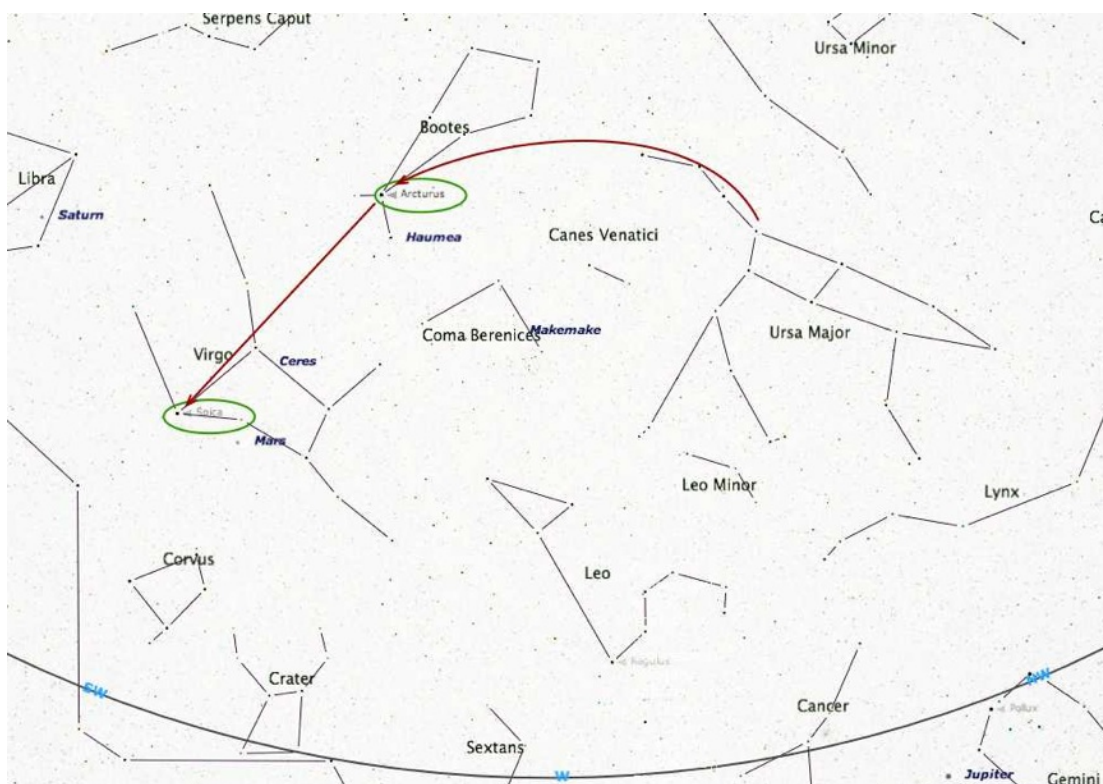
Remember the rhyme: "Follow the arc to Arcturus"

Arcturus is the brightest star in Boötes (pronounced like Bō-ăh'-tāys) the herdsman. Not counting his legs, his body resembles the shape of a kite (with Arcturus being at the tail) or an ice-cream cone (with Arcturus being the bottom of the cone).

Then continue the rhyme: "Drive the spike to Spica"

Just continue downward below Boötes and the bright star you will find is Spica in the constellation Virgo.

*Continued On page 7*



## Navigating The Summer Sky(continued)

### Looking High

Returning to Boötes, we can find two more constellations. In the planetarium, we use the analogy that Boötes is an ice-cream cone with single scoop of ice cream on it... but now imagine there was a second scoop of ice-cream which fell off landing upside-down... and that would be the constellation Corona Borealis, the "Northern Crown". The constellation is a semi-circle of stars immediately "left" of the ice-cream cone.

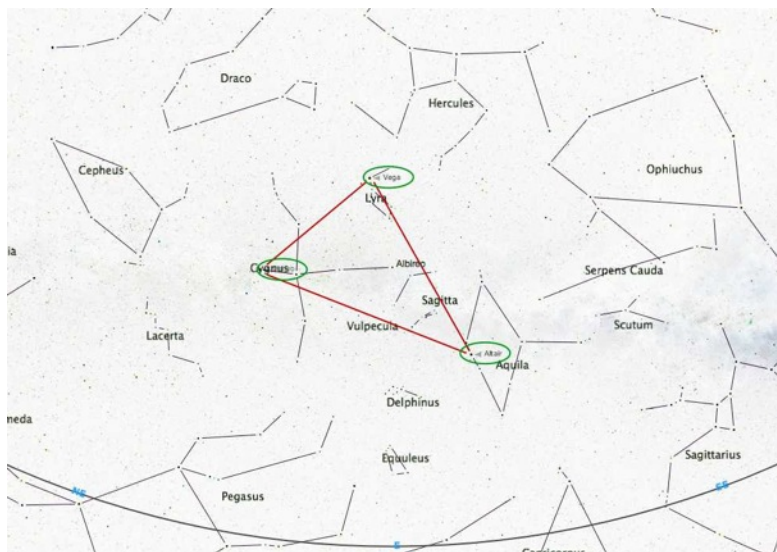
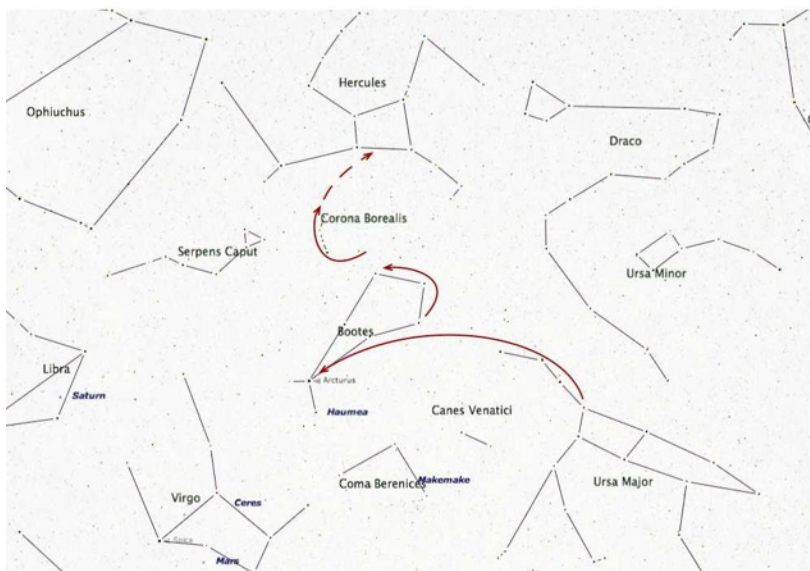
If you follow the curve of Corona Borealis around and continue, it hooks you right in to the middle of Hercules the hero - the trapezoid shaped body section. Between the two stars on the side of the trapezoid nearest to Boötes is the globular cluster in Hercules. A nice summer subject (be brief if the dew is heavy because your scope may be pointing nearly straight up to see it — a good way to collect dew on your optics if you linger too long.) I use the Hercules globular cluster as a test of seeing conditions based on how many stars I can resolve.

### Looking East

Look to the east to find three fairly bright stars... the brightest in that region of the sky. The three stars are Deneb, Vega, and Altair.

Deneb is located in the constellation Cignus the swan. The swan is flying with wings outstretched and head pointing straight — in a cross-type configuration. Next is Vega in Lyra the harp. Finally, Altair is located in Aquila the water-bearer.

*Continued On page 8*





## Navigating The Summer Sky(continued)

Deneb is perhaps the most interesting of the three... while these three stars appear to be roughly comparable in brightness Deneb appears to be just slightly dimmer than Vega and Altair. Deneb is magnitude 1.25, Altair is .77, and Vega is magnitude 0.03. But the reality Deneb is the brightest star by far... because while Altair is just about 17 light years away and Vega is about 25 light years away... Deneb is a young blue-white super-giant star located over 3500 light years away!

The head of the Cignus the swan is marked by the double star Albireo. Albireo is a double star, but what makes it interesting for visual observing is that one star is blue and the other is yellow — so there's a noticeable color difference with the two side-by-side. Locally, some refer to this as the U of M star because of the "maize and blue" colors.

### What Else?

There is, of course, much more... by learning to find just a handful of familiar patterns, it becomes easier to find others. Down low to the southern horizon you can find Scorpius which resembles a giant "J" shape ... not unlike a giant fish hook. A bit to the left of that we can see the top half of Sagittarius but we can't see the entire constellation. We can, however, make out the teapot shaped asterism in Sagittarius.

Slightly above Virgo is the L shaped constellation Coma Berenices (Berenice's hair). Between Virgo and Coma Berenices is the region known as the Coma super-cluster of galaxies (sometimes called the Coma/Virgo supercluster) — which has among the highest density of galaxies visible in our sky and a great place to go galaxy hunting.

I've annotated the sky charts to show some simple star-hopping patterns and I hope you'll agree that by just learning a few patterns, you can actually find quite a number of constellations and asterisms... and by extension you can learn to find the neighboring patterns and ultimately begin to memorize the interesting objects located there.

As I mentioned earlier, it's much better to look at the real sky to learn your way around rather than relying on flat charts... flat charts are distorted so the relationships between constellations and other patterns aren't accurate. It doesn't take much time and you add to your knowledge with each new season.

Clear skies!

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## Classified Ads

**Meade LX200GPS - 8 inch SCT with a Scope Buggy dolly.**

Asking \$1800

Contact: Joan Onkka, 734-525-0228

**Orion SkyQuest XT10 Classic Dobsonian**

Asking \$350

Contact: Gordon Hansen, 734-624-1102  
or on Yahoo

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## Club Wear

You can order online from LL Bean, using the instructions contained in a file that you can view on our club Yahoo Group website Club Wear file folder at

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

FordAstronomyClub/files/Club%20Ware/



## Astro Imaging SIG

Gordon Hansen

All are invited to join us in the Astro Imaging SIG meetings, to share and discuss images, experiences, and techniques.

We always have a good time, with lively discussion, and sharing of valuable information.

Next meeting is July 10th. The meeting room location - HFCC Admin. Services and Conference Center (same building), Berry Amphitheater Auditorium.

Topics invited. Pizza served.

## FAAC Events 2014

**June 26 - Next General Membership Meeting**

**July 5 - Beginner's Night at Island Lake State Park. Sunset is at 9:12pm EDT**

**August 2 - Club Picnic at Island Lake State Park. Sunset is at 8:51pm EDT**

**October 4 - Beginner's Night at Lake Erie Metro Park (Final Beginner's Night of the year) Sunset is at 7:09pm EDT**

*Canon EOS t1i photo of Mars at HJRO*

## Minutes

By Ellen Duncan

Tim Campbell called the meeting to order at 5:30 and everyone introduced themselves. 28 people attended, including one guest, and he was given information about the club and Tim discussed the mentoring program, which is administered by Doug Bauer.

Members discussed observing they had done in the past month. Ken Anderson

talked about binocular viewing, Chuck Jones and Michael D talked about visiting the dark sky area of Port Crescent State Park (day use section), and what a good spot it is. Tim Campbell with Sandra Macika and Jim Frisbee did Astronomy Day events at the Michigan Science Center, and George Korody and others did daytime Astronomy Day events at Kensington. These daytime events were followed by May beginners night at Island lake recreation area. Astronomy Day events were used to publicize the club and Astronomy at the Beach. Steve Uitti presented "What's Up in June," including moon and planet viewing. Clear skies expected most of this weekend, and possible new meteor shower early Saturday morning (2-4 a.m.) Tim Campbell showed a picture of Saturn taken by Greg Knekleian recently which showed how much the rings are tilted toward our view on Earth.

The main talk was "Ask the Astronomer," in which members ask questions answered by other members. Difference between orbital junk and natural meteorites?--speed (junk slower, natural faster) and direction (East to West are generally natural) and materials (some junk is made of aluminum). What's the size of the Milky Way galaxy? Andromeda? Who uses software vs who uses maps/charts led to a long discussion about how to familiarize yourself with the night sky and constellations. Steve Uitti suggests the monthly map from skymaps.com, Dennis Salliotte suggests the various observing clubs from the Astronomical League.

The tech talk was presented by Tim Campbell about Sky Safari 4, Plus 4, and Pro 4, astronomy for mobile devices. He showed its features, including planetarium software, orientation sensors, object searching, telescope control (wired and wireless), field of view and planning aids, observing list creation, and observing logging.

## FAAC Equipment Report 5/14/14

By Dennis Salliotte

<u>Item</u>	<u>Currently Held By:</u>	<u>Date Last Verified</u>
<b><u>Telescopes</u></b>		
4" Dobsonian	George Korody	1/18/14
4 1/2 " Galileo Alt/Az Reflector	James French	5/10/14
8" Orion 8XTi Dobsonian	James French	5/10/14
4" Donated Reflector in need of repair	George Korody	1/18/14
<b><u>Presentation Tools</u></b>		
Projector	Gordon Hansen	6/5/14
Projection Screen 8'	Bob MacFarland	2/13/14
Speaker System w/wireless mic	Bob MacFarland	2/13/14
Bullhorn	George Korody	1/18/14
DVD Player	Gordon Hansen	1/8/14
Projection Screen 6'	Gordon Hansen	1/8/14
Projector, ViewSonic	Gordon Hansen	6/5/14
<b><u>Demonstration Tools</u></b>		
Weight On Planets Scale	George Korody	1/18/14
Lunar Phase Kit	Bob MacFarland	2/13/14
100 ft Scale Model Solar System Kit	Bob MacFarland	2/13/14
<b><u>Display Items</u></b>		
Astronomy Event Sign (3' X 6')	Gordon Hansen	3/15/14
PVC Display Board - Folding	Tim Campbell	6/5/14
Banner – Large (32" X 16')	Dennis Salliotte	6/13/14
Banner – Medium (24" X 72")	George Korody	3/15/14
Banner – Small (24" X 32")	George Korody	3/15/14
Tri-Fold Presentation Boards	Don Klaser	1/23/14
Tri-Fold Poster Board (Early Club Photos)	George Korody	1/18/14
<b><u>Other</u></b>		
Sky Quality Meter	Syed Saifullah	3/15/13
Canopy (10' X 10')	Greg Ozimek	2/6/14
Equipment Etching Tool	Gordon Hansen	4/22/14
Pop Cooler	Michael Dolsen	1/23/14
Dennis Salliotte equipment@fordastronomyclub.com		

## Lincoln Park Mi, HJRO Update

by Greg Knekleian

The nights are getting warmer and some clear skies offer viewing opportunities. I've been very busy however and made very few announcements that the observatory would be open.

One evening I was able to open up and announce that we'd be open and about 4 or 5 FAAC members showed up. We looked at a couple planets and a one star cluster that night and spent much of the time talking about other subjects. Conditions that night were mixed with some clouds and haze. Mars and Saturn looked nice through the eyepiece.

In May I spent about 3 weeks experimenting with some optical experiments, that might prove beneficial to HJRO in the future.

### **Solar Middle School Outreach (6-5-2014)**

All the 8th grade LP Middle School students went through our solar tour in one day. The students arrived in groups of 30 or 70, from one or two science classes every hour. Tim Campbell, Tim Dey and I were present to give the tour and present various astronomy demos.

The solar projector worked well, but I'd estimate that under 20% of the students really looked at the large solar disk, they were anxious to get to the other telescope setups. I showed many students the original HJRO telescope mirrors, that were ground by students 35 and 52 years ago.

My old Sears 1970s refractor (solar projection) worked out okay. Some of the 8th graders took interest in a small spotted spider that was taking up residence on the Sears tripod during the event.

Overall the students this year were well behaved. They liked to talk and enjoyed being outside. We had three observing stations. Tim Campbell had two solar telescopes setup on two mounts (a Losmandy G11 and CG5). We could have used at least one more astronomer to help out. Tim ended up doing double duty between his telescopes with the crowd. Tim Dey was inside the observatory. The observatory was crowded much of the time with 12 to 30 eighth graders. Inside HJRO, they listened to Tim Dey's presentation and lining up to get a glance of the sun or Venus through the telescopes inside. When we had 70 students from two classes within an hour, there wasn't enough time for everyone to look through telescopes in the observatory. We can handle 30/hour. But 70/hour is too many students for even a basic observatory tour.

I also experimented with time lapse photos using a GoPro Hero 3. The Hero 3 is okay for time lapse exposures of outdoor daytime activities, but it lacks the low light sensitivity for documenting night events.

The entire 8th grade class went through the observatory, saw the sun through HA and white light telescopes outside, and most saw the planetary distance presentation that Tim Campbell gave. We had fun but could have used more help. More astronomers or a two day presentation schedule would serve the students better at future solar events.

*Students pace out the distances for our solar system scale demo at the Solar outreach event.*





## May Camelopardalids Shower

compiled by Greg Knekleian

### Summary from our FAAC Yahoo Group.

#### Northville, Mi

Pat and I saw three apparent Camelopardalids from Northville. Observed from 1:15 to 2:00 AM and from 3:15 to 3:45 AM. Seems the professional astronomy experts who predicted the event need a little more training

:-)

George Korody

#### Lincoln Park, Mi

James French and Greg Knekleian attempted to watch the meteor shower for about an hour at HJRO. We saw perhaps 3 to 5 meteors in one hour. Some may not have been from the predicted location and may not have been from the shower.

At around midnight we decided to travel out to view Meteors from Novi with Syed, Art and Rick.

<http://youtu.be/XrXA6KugGI>

(The Youtube video clip from some images I took only captured one meteor.)

#### Novi, Mi

Dennis and all,

Though I had voiced some frustration, it was still a fun time for us at NCSP. Myself, Rick Arzadon, Art Parent, Greg Knekleian and James French and some sporadic random members of the public. I set up my Orion XT8g dob and observed showpiece DSOs for about 1/2 the time and looked for meteors the other half of the time. I think I caught two. I also had some great views of Saturn in the 8" dob as well. Either way, the weather was nice, the skies were clear (though not nearly as dark as yours at LH) and the company was entertaining. We even had some fireworks going off to the west of us from time to time.

Syed Saifullah

#### Lake Hudson, Mi

Hi all,

I spent all night under the stars at Lake Hudson last night. Some other FAAC members present were Gordon Hansen, Chris Strang, Mike Bruno, Tony Licata, and Dave. My apologies to any other club members who I might have missed. There were quite a few people out there, many who were probably not experienced amateur astronomers. At one point I counted about 20 cars parked. Cars arrived and left throughout the night. Many with headlights ablaze. But it was a fantastic night for observing. With the exception of a few short periods of some passing high altitude murkiness, the sky was dark and clear all night long. You couldn't ask for better conditions to observe a new meteor shower.

Nevertheless, I think most would agree that the new May Camelopardalids were disappointing at best. I watched the sky for about 90% of the time from around 10 pm through 4:30 am. I spotted 4 sporadic meteors that were definitely NOT Camelopardalids and 2 that could have been. I think the others present had similar results. But the company was great, the sky was beautiful and I had a wonderful time observing that I will remember.

Dennis Salliotte



*Two visitors stopped by to look for meteors. at NSP, Novi, Michigan. (Canon EOS 30 second exposure at 1600iso)*

## May Camelopardalids Shower (continued)

*(The best report came from William Finn, Ken Anderson and John Mcgil)*

### St Clair Shores, Mi

Our meteor shower turned into a meteor drizzle but being out on John's boat made for an interesting and fun night of observing none the less

To add to Ken's comments about our observing here is the list of the meteor's we saw (even though some of the crew dreamed about them) on the lake

10:32pm Low brightness at zenith short lived meteor the first one of the night.

12:48am Very Bright meteor, yellow gold trail, visible cloud trail remained, north of Cassiopeia traveling west to east

1:22am medium bright not long trail radiating from Polaris to the west through Cepheus

1:27am Short trail low brightness meteor south to north toward polaris

1:48am Bright meteor no lasting trail from south east to north west above Cassiopeia

2:02am Medium brightness meteor North to South east below Cassiopeia burning out 5 degrees above the horizon. no lasting trail

2:32am Bright slow moving radiating out of polaris low through Ursa Major

2:36am Two direct overhead through Draco direction north to south medium brightness no trail

2:44am Two very short duration meteor out of the little dipper low brightness no trail

3:00am Low brightness short lived above Cassiopeia from Polaris very short duration

3:02am Medium brightness out of the north tip of Cassiopeia toward the east no trail

3:05am Medium brightness south to north toward Polaris

3:11am Medium brightness, direction east to north through the Milky Way toward Cassiopeia

3:14am Medium brightness direction east to north directly below Cassiopeia

3:28am Medium brightness direction north to south directly along the length of the northern cross

3:39am Low brightness out from Polaris splitting Cassiopeia

3:42am Medium Brightness direction east to west south of Polaris

3:43am Waning crescent Moon rising to the east just above the island. 23% illuminated orange/red color

Light high level clouds moving in from the north west to north hiding the faint stars in the northern sky but everything east, west and south of zenith is clear.

4:06am We finished our observing and headed back to port

William Finn



*Cropped image 10 sec (fisheye lens) exposure 1600 iso, Meteor near Polaris over HJRO*

## Mars, April 20th 2014

by Greg Knekleian

Within about a week of it's opposition I took some AVI files of Mars at the Lincoln Park School observatory. I used a Canon EOS t1i and Backyard EOS to capture AVI movies.

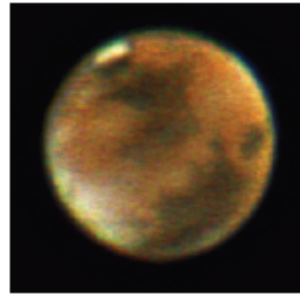
How good is Registax 6?

Seeing was only 1 arc second.

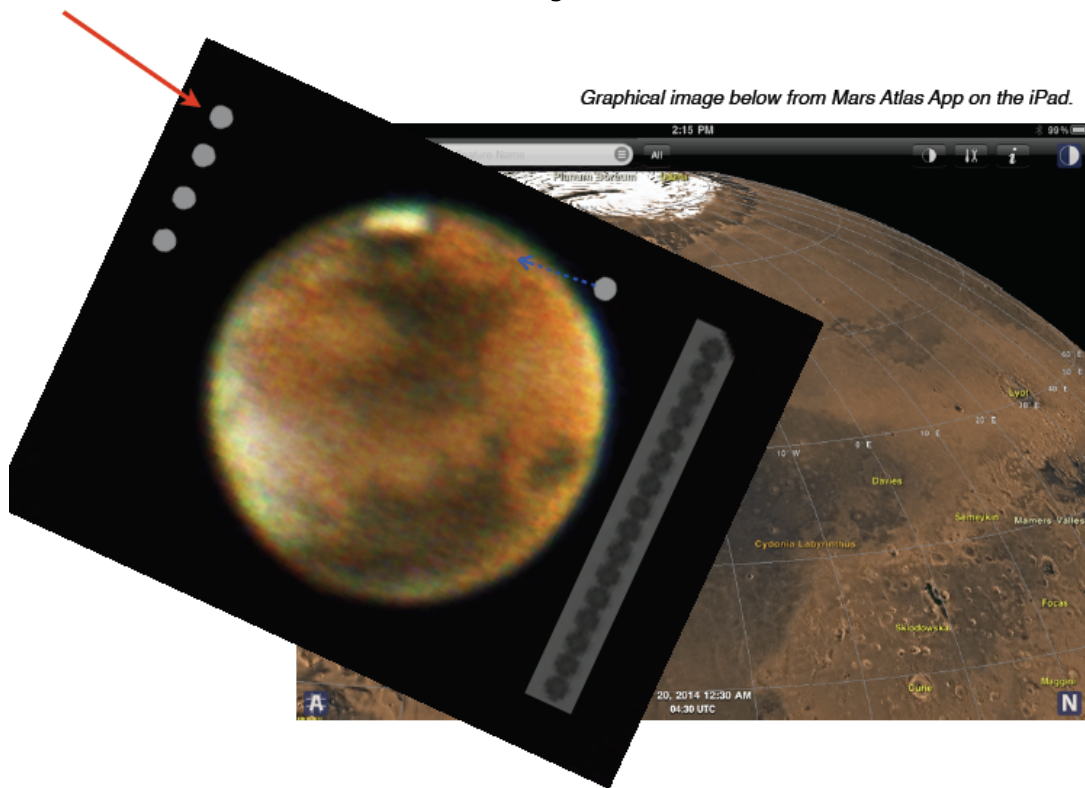
The processed images from the best 40 of 400 captured frames reveals 1/5th to 1/10th arc second details. Clearly some amazing processing is happening with Registax 6.

THE FACTS:

- Mars at that time was 15 arc seconds across.
- Seeing was about 1 arc second.
- A dime at 2 miles equals 1 arc second. I threw some arc second graphical circles on the image below to measure the details in the image.



*Mars at 1250x through the observatories C14. Processed with Registax 6 and Photomatix Pro on my old Macbook.*





# Third Annual FAAC Multi-Club Picnic

## Saturday August 2nd, 2014

5pm-Midnight

Island Lake Recreation Area – Spring Mill Pond



State Park Pass Required.  
You may purchase a day  
pass at the gate if you do not  
have one.

*Image above: Suat Eman / FreeDigitalPhotos.net*

Members  
of the following  
Astronomy Clubs  
and their families:

All Ford

Ford Amateur  
Astronomy Club

University Lowbrows

Oakland Astronomy  
Club

Seven Ponds  
Astronomy Club

Warren Astronomical  
Society

SEMSA Soaring Club

Henry Ford  
Community College

Bring your  
scope or  
binoculars



*Image above: Jennifer Zdanowski*

FAAC will provide hamburgers, hot dogs,  
veggie burgers, soft drinks, plates & utensils

Please bring a dish to pass  
salads, snacks, fruit, desserts.....



**Ford Amateur Astronomy Club  
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