



# Star Stuff

Ford Amateur Astronomy Club Newsletter

Volume 27, Number 3

March 2017

## What It's Like on a TRAPPIST-1 Planet

By Marcus Woo

With seven Earth-sized planets that could harbor liquid water on their rocky, solid surfaces, the TRAPPIST-1 planetary system might feel familiar. Yet the system, recently studied by NASA's Spitzer Space Telescope, is unmistakably alien: compact enough to fit inside Mercury's orbit, and surrounds an ultra-cool dwarf star—not much bigger than Jupiter and much cooler than the sun.

If you stood on one of these worlds, the sky overhead would look quite different from our own. Depending on which planet you're on, the star would appear several times bigger than the sun. You would feel its warmth, but because it shines stronger in the infrared, it would appear disproportionately dim.

"It would be a sort of an orangish-salmon color—basically close to the color of a low-wattage light bulb," says Robert Hurt, a visualization scientist for Caltech/IPAC, a NASA partner. Due to the lack of blue light from the star, the sky would be bathed in a pastel, orange hue.

But that's only if you're on the light side of the planet. Because the worlds are so close to their star, they're tidally locked so that the same side faces the star at all times, like how the Man on the Moon always watches Earth. If you're on the planet's dark side, you'd be enveloped in perpetual darkness—maybe a good thing if you're an avid stargazer.

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## Presidents Article

By Liam Finn

### *A Moment of Levity*

Our observing sessions are about to begin and we are still seeing snow. If you have purchased new equipment in the last few weeks, we have two choices. Offer your equipment up to the sky Gods by throwing it into a volcano or offering the purchaser to the Gods by throwing them into the volcano. Personally, I hate to see good astronomy equipment go to waste.

### *Annual Astronomy Conference & Swap Meet*

To all who attended our annual Astronomy Conference and Swap Meet, which was held at EMU, I thank you for your participation. This year was successful even though we did not draw many members of the public we did draw many astronomers. The presentations have received great reviews and to the presenters, Gordon Hansen, Ken Anderson, Mark Jeffery, Dale Partin, Clay Kessler, Tim Campbell, Jeff Thrush and Jim Frisbie I thank you on behalf of all those who attended for putting in so much work to create and present your content for the attendees.

I also must give a special call out to Jim Frisbie and Frank Ancona without whom the event would not happen. Also, thanks to those who helped with the setup and on the day of the event.

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## Presidents Article

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### *Beginner's Nights (see page 4 for calendar)*

April is an unusual month where we have two beginner nights in one month. Our first beginner's night will be April 1<sup>st</sup> and the second is April 29<sup>th</sup>, both at Island Lake. Let's all hope the sky Gods are going to be kind to us and wipe the skies clear of clouds and maybe also pay a little more on the heating bill so we don't turn to ice when out observing. If you have not been to a beginners night or have not been there in a while, come on out and if not with a scope you can just hang with the club members and mingle with the public.

### *State Wide Astronomy Night (SWAN)*

As mentioned in last month's StarStuff, the FAAC in conjunction with Henry Ford College (HFC) will be putting on our own SWAN night event. The event will be held at HFC on Friday April 7<sup>th</sup> from 7PM to 11PM. The event will include Planetarium shows, scientific presentations on gravity, the size of the solar system and how stars work. Tim Campbell and I will be doing the classroom presentations. Hayden and Bob have offered to do the planetarium shows. We will need members of the club to turn up with telescopes to do some night sky observing with the public as well as some without telescopes to help in directing and people management. If you are interested to assist with or without a telescope please contact me as it is only a few weeks away. I will have a signup sheet at the March meeting but you can always email me at:

[President@fordastronomyclub.com](mailto:President@fordastronomyclub.com).

### *Michigan Science Center*

Michigan Science Center has asked for our club members to participate in some events they are running in April. On April 15th and April 29th they would love to have some members to come out with solar scopes to do some solar observing with the public. They are also doing a World Space Party from 6pm-9pm on April 20th which is a little early for night observing but if we get lucky there may be some planets we can show around sunset. All

interested please let me know and I can relay our numbers back to Paulette.

## What It's Like on a TRAPPIST-1 Planet

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If you're on some of the farther planets, though, the dark side might be too cold to survive. But on some of the inner planets, the dark side may be the only comfortable place, as the light side might be inhospitably hot.

On any of the middle planets, the light side would offer a dramatic view of the inner planets as crescents, appearing even bigger than the moon on closest approach. The planets only take a few days to orbit TRAPPIST-1, so from most planets, you can enjoy eclipses multiple times a week (they'd be more like transits, though, since they wouldn't cover the whole star).

Looking away from the star on the dark side, you would see the outer-most planets in their full illuminated glory. They would be so close—only a few times the Earth-moon distance—that you could see continents, clouds, and other surface features.

The constellations in the background would appear as if someone had bumped into them, jostling the stars—a perspective skewed by the 40-light-years between TRAPPIST-1 and Earth. Orion's belt is no longer aligned. One of his shoulders is lowered.

And, with the help of binoculars, you might even spot the sun as an inconspicuous yellow star: far, faint, but familiar.

Want to teach kids about exoplanets? Go to the NASA Space Place and see our video called, "Searching for other planets like ours":

<https://spaceplace.nasa.gov/exoplanet-snap/>

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## What It's Like on a TRAPPIST-1 Planet

Continued from page 2



*This artist's concept allows us to imagine what it would be like to stand on the surface of the exoplanet TRAPPIST-1f, located in the TRAPPIST-1 system in the constellation Aquarius. Credit: NASA/JPL-Caltech/T. Pyle (IPAC)*

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## Secretary's Report

By Jessica Edwards

### *Member Observations and What's up*

There was a nice window of very clear skies and warm temperatures that members took advantage of recently. Venus and Mars were visible in the evening as was the Orion Nebula. The sun has some observable activity as well. The moon occulted Aldebaran on 4 March 2017. Club members Tim Campbell, Greg Knekleian, Tim Dey, Syed Saifullah, Brian Kutscher, Sandra Macika and James French converged upon HJRO to observe through the club's C14 and also Greg's 8" SCT and also Syed's 8" dobsonian, while others observed and imaged the occultation from the cozy confines of their own backyards. Comet 41P is making an appearance in Ursa Major. 20 March is the Vernal Equinox.

### *Main Talk – Time Lapse Photography – Doug Bock*

Time lapse photography is a means of recording events that occur over a long time and playing them back at an accelerated rate. The basic setup includes a camera with a remote timer and a mount for tracking objects across the sky. Exposure times of 10-15 seconds with a 5-10 second delay will yield about 1800 images over the course of a night. By adjusting the tracking rate, a static foreground, static sky, or a combination of the two can be achieved. Editing of the RAW images is done in Adobe Bridge which applies the settings from one image to the rest. Adobe After Effects is used to create an .avi output and Vegas Studio is used for the final rendering of the video. Examples of the finished product can be seen on Doug's YouTube channel.

### *Plymouth Astro Imaging SIG Events*

By Gordon Hansen

All are welcome to attend. The meetings are at the Plymouth Library at 6 pm on the third Tuesday of each month. Reminders are published on the club's Yahoo Group.

## Special Feature:

### *Building a new imaging system – By Doug Bock*

In October of 2016, I decided to build a new imaging system here at the Northern Cross Observatory (NCO). This would allow me to utilize the winter months easily whenever it cleared. Observing in the cold weather has become less and less of a desire for me as I get older. I usually go to my Boon Hill Observatory during the better weather for observing and time lapse photography (April through October), so that leaves November thru March pretty idle for observing.

I had the 14" dob in the observatory for about 4 years, and would use it on clear nights easily from my backyard. The impetus for getting back into imaging was the usable clear weather during the winter. I found it hard to get up the motivation to go out in 10 degree weather to observe.

So, I did some research and started ordering parts. First was the Losmandy G11 w/Gemini2 mount which I setup in the garage when it arrived. This has a 60 lb instrument capacity with a total weight limit of 100 lbs including the counter weights.



Next I had to order an adapter to mount the EQ head to my existing pier, which I bought through

Telescope Support Systems (Clay Kessler and Jeff Thrush).



I stuck my little 4" f/10 SCT I've had since 1980 on the mount, until my new 10" arrived 😊





The telescope OTA is a GSO 10" f/8 Riche Chrétien. (RC), which I ordered through High Point Scientific.



This is a Lodestar x2 guiding camera from Starlight Xpress.



This camera would be used to guide through the 10" while imaging through it as well, using the On Access Guider (ONAG) system from Innovation Foresight. The ONAG system is a diagonal, that splits the light at about 7000 Å and above, to pass through to the guider, and everything else (white light) diverted 90 degrees to the imaging camera. This allows both cameras to use the 10" for its field of view

I also ordered an OPTEC motorized and computer controlled focuser. This allows automatic focusing as temperatures change or direct focusing using the cameras, automatically.



The ZWO asi071 MC cooled imaging camera will be my primary imaging camera on the 10 inch.



then take control of the laptop from the house computer, via remote desktop, and run the entire system from the house. The only caveat, is if the auto guiding camera doesn't have a star in the field to select, I do have to go back out and move the ONAG system in the X and Y direction to find one.

Here is the picture of the cameras, the focuser and the ONAG.



I also repurposed the Canon T3i, as a 3<sup>rd</sup> camera on the system for widefield imaging and pointing. Kind of a digital finder. ☺

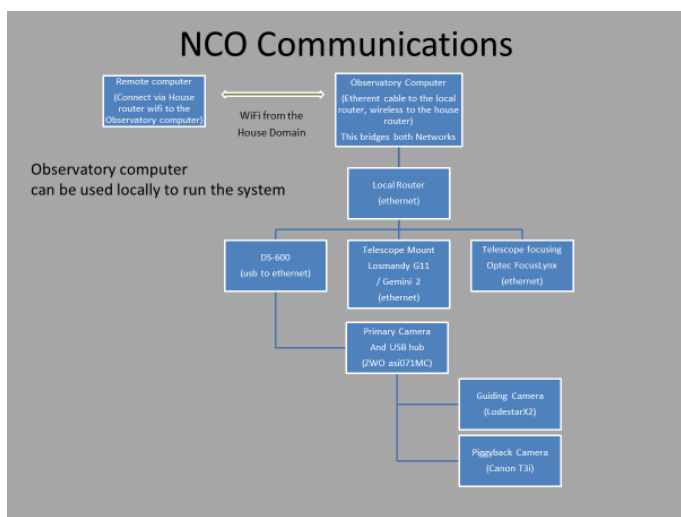


Thus far, I've had about 6 or 7 clear nights since November, to test, refine and collect data.

Once the system is powered up, I slew to a fundamental star to verify pointing, and if need be, re-sync on it, which means it is good to go for the night. The G11 Gemini2 allows sky modelling to improve pointing accuracy, which I've done on 2

I intended to use my Canon on this system, which I did for a few sessions, and it does work, but I found that it required moving the primary forward a couple of millimeters to achieve enough back focus for the Canon. I took some images, which are later in this article. However, I decided to go with a cooled camera for the long run.

Assembling the system was pretty easy. In addition, I had to get all the communications running for my final intent. Automating the system well enough that I could run it from the Den in my house, where it is toasty warm in the winter. This next image is a simple diagram of the communications between all components of the system. Note that the entire system is routing through an Ethernet router. This means I can connect with one Ethernet cable, or wireless to it all.



This allows me to start up the system on the laptop in the observatory, and once I verify alignment, I can



occasions already. However, if you move the polar alignment at all, you need to do that again.

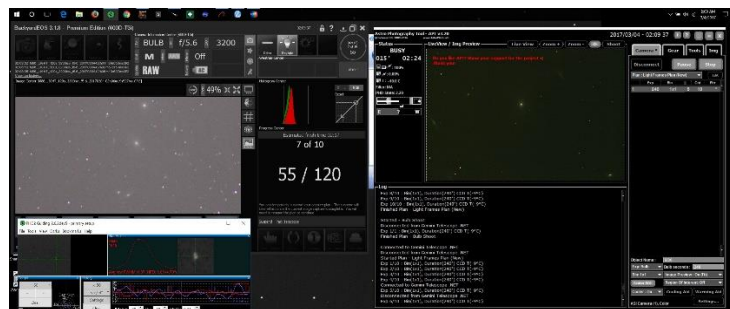
After alignment, I can fire up the software for the 3 cameras. Currently I can use AstroPhotography Tools, for both the Canon and the ZWO cameras. I use PHD2 for the guiding camera, since it is the autoguiding software I use. I can also use Backyard EOS for the Canon. In addition, there are many programs to run these cameras, so it comes down to personal choice, and functionality you want.

I also fire up TheSky 6 to point and slew the G11 from that program. It's a very nice planetarium program with millions of object database elements. Plus I can upload the latest comet data anytime.

I then use FocusLynx to run the focuser, but can also control it from APTools, or the gemini HUB. Another piece is FocusLock, which will use the guiding camera to automatically focus the system, and keep it in focus.

There are multiple ways of moving the G11, 1) TheSky, 2) physical hand controller which has a DB in it, 3) onscreen controls from the ASCOM drivers G11 HUB.

I've already recorded a few sessions on YouTube, which show what is going on, while acquiring data, setting it up, and even some error messages.

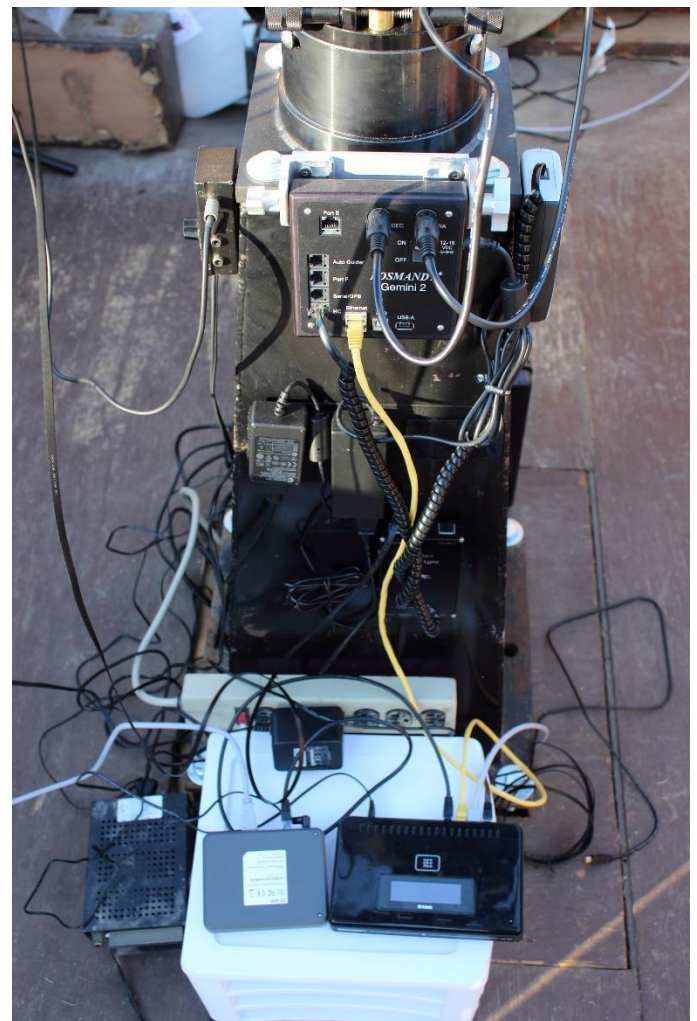


The other item is the communications. At the bottom is the router at the right, and a DS-600, which is used to communicate to the USB cameras, but runs Ethernet into the router. This way I have IP addresses for everything, including the 3 cameras. The focuser has an Ethernet port, the G11 has an Ethernet port as well.

As you can see, between all the communications cables, and power cables, it is quite busy. 😊

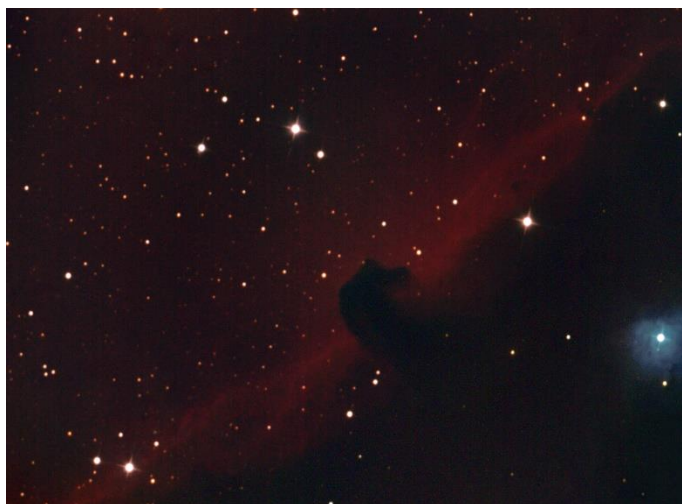
I have everything plugged into a UPS (uninterruptible power supply), which means it can run on the batteries for an hour or 2, if I lose power. Plus the UPS conditions the power a bit.

The automation works well, when everything is working. Issues that arise are communications drop outs, from time to time, or when the laptop has issues. I have ordered a new laptop, since the one I'm using is about 9 years old. A refresh is in order. 😊



I've had a few nights with it now, and here are some preliminary results.

Horsehead in Orion



M51 - in Canes Venatici



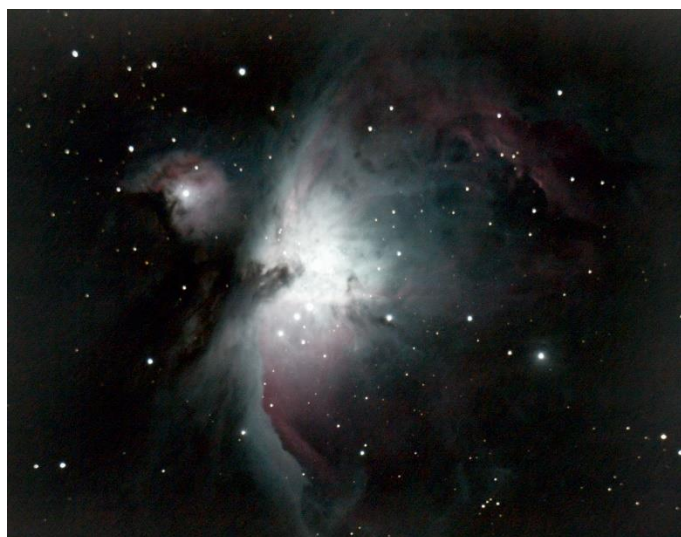
M65 in Leo



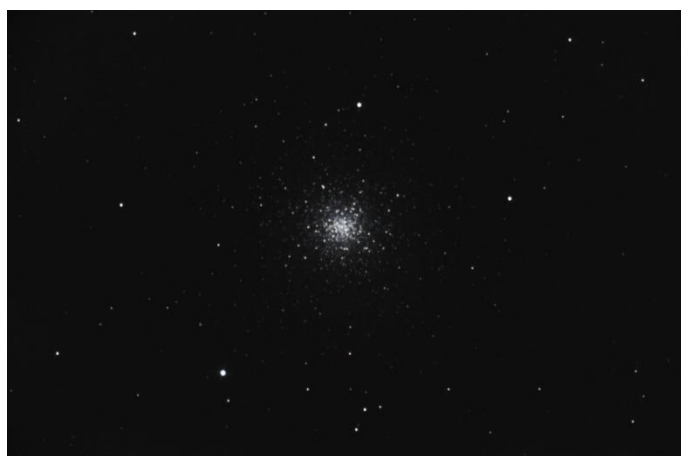
M86 at center, with surrounding galaxies in the Markarian chain.



M42- The Orion Nebula.



M3 – Globular Cluster in Canes Venatici.





I've also done some captures of Comet 45P, and noted over the few hours of capture how much it moved. The image to the right is the NGC 4656, but the object of interest is the streak in the middle. This was about 2 hours of images stacked to show how much the comet moved.



Thus far, given the limited sky time, I'm pleased with the results. I still have a bunch to learn in the processing software, but it has given me something to do over this winter.

I'm looking forward to using this system when I'm home, and not out and about at star parties. It is most useful on a clear weeknight, where I can start it up and do some integrations over the night, while I'm sleeping, and close it up in the morning before going off to work. ☺

## 2017 Beginner's Nights Calendar

Month	1st Quarter	Beginner's Night	Sunset	Location
April	Monday, April 3rd	<b>Saturday, April 1st</b>	7:58pm	Island Lake
April/May	Tuesday, May 2nd	<b>Saturday, April 29th</b>	8:30pm	Island Lake
		<b>^^Int'l Astronomy Day^^</b>		
June	Thursday, June 1st	<b>Saturday, June 3rd</b>	9:04pm	Island Lake
July	Friday, June 30th	<b>Saturday, July 1st</b>	9:12pm	Island Lake
July II	Sunday, July 30th	<b>Saturday, July 22th</b>	8:54pm	Island Lake (Club Picnic)
August	Tuesday, August 29th	<b>Saturday, August 26th</b>	8:15pm	Island Lake
<b>**Solar Eclipse is on 21st** - Head for totality!</b>				
September	Friday, September 9th	<b>Fri-Sat Sept 29, 30</b>	7:17pm 7:14pm	(AATB / Island Lake)
October	Sunday, October 27th	<b>Saturday, October 28th</b>	6:30pm	Maybury State Park



## Treasurers Report

March 2017

By Mike Bruno

### Ford Amateur Astronomy Club Balance Sheet 3/20/2017

#### ASSETS

<u>Checking / Savings</u>	
Checking	\$ 707.20
FAAC Savings	
General	3,093.13
Equipment	2,368.48
Scholarship	<u>379.26</u>
Total FAAC Savings	5,840.87
Petty Cash	100.00
Total CD's	3,190.05
Total Checking / Savings	<u>9,838.12</u>
TOTAL ASSETS	<u><u>\$ 9,838.12</u></u>

## FAAC Equipment Holders Report

By Dennis Salliotte

### FAAC Equipment Report 3/16/17

<u>Item</u>	<u>Currently Held By:</u>	<u>Date Last Verified</u>
<b><u>Telescopes</u></b>		
4" Dobsonian (Harold's donation)	George Korody	1/20/17
<b><u>Presentation Tools</u></b>		
Projector (older)	Jim Frisbie	1/15/17
Projection Screen 8'	Bob MacFarland	3 /15/17
Speaker System w/wireless mic	Bob MacFarland	3/15/17
Bullhorn	George Korody	1/20/17
DVD Player	Jim Frisbie	1/15/17
Projection Screen 6'	Mike Dolsen	1/15/17
Projector, ViewSonic	Gordon Hansen	1/16/17
<b><u>Demonstration Tools</u></b>		
Weight On Planets Scale	George Korody	1/20/17
Lunar Phase Kit	Bob MacFarland	3/15/17
100 ft Scale Model Solar System Kit	Bob MacFarland	3/15/17
<b><u>Display Items</u></b>		
Astronomy Event Sign (3' X 6')	Gordon Hansen	1/16/17
PVC Display Board - Folding	Sandra Macika	1/23/17
Banner – Small (24" X 32")	George Korody	1/20/17
Banner – Medium (24" X 72")	Sandra Macika	1/23/17
Banner – Large (32" X 16')	George Korody	1/20/17
Tri-Fold Presentation Boards	Don Klaser	1/26/17
Tri-Fold Poster Board (Early Club Photos)	George Korody	1/20/17
<b><u>Other</u></b>		
Canopy (10' X 10')	Dennis Salliotte	3/16/17
Equipment Etching Tool	Greg Ozimek	1/20/17
Pop Cooler	Michael Dolsen	1/15/17
<b><u>EQUIPMENT KITS</u></b>		
<b><u>CARETAKER</u></b>		
<b><u>Telescopes</u></b>		
TK3 Celstrn 130 Newt Goto mount	Liam Finn	3/15/17



TK4 Clstrn 90 Refrctr w/man mount	Liam Finn	3/15/17
TK5 4 ½ “ Reflector, on Fitz GEM mount	Bob MacFarland	3/15/17
TK6 8” Orion 8XTi Dobsonian	Dennis Salliotte CARETAKERSHIP IS AVAILABLE	3/16/17
TK1 Coronado PST solar scope w/double stack, Meade Autostar Goto mount & tripod and accessories	John McGill	1/15/17
TK7 TPO 8” f/4 Imaging Newtonian Telescope (OTA)	Jim Barnes	1/16/17
<b><u>Binoculars</u></b>		
BK3 15x70 binocs, monopod mount	Bob MacFarland	2/19/17
BK4 20x80 binocs,altaz goto mount	Sandra Macika	1/23/17
BK5 25x70 binocs w/tripod adaptor	Tim Dey	1/16/17
<b><u>Eyeiece Kit</u></b>		
EPK1 Eyepieces, filters & accesories	Liam Finn	3/15/17
<b><u>Other</u></b>		
TA Sky Quality Meter	Syed Saifullah	1/18/17
TA Sky Atlas 2000.0	Tim Dey	1/16/17
TA Orion telescope binoviewer	Liam Finn	3/15/17
<b><u>Lincoln Park Observatory</u></b>		
LPO Celestron binoviewer #93691	Tim Dey	1/16/17
LPO Celestron 2X 1.25” Barlow	Tim Dey	1/16/17
<b><u>Imaging SIG</u></b>		
C1 Celestron NexImage Solar System Imager model #93712	Gordon Hansen	1/16/17
C2 Meade Deep Sky Imager PRO III w/AutoStar Suite	Gordon Hansen	1/16/17
C3 Orion StarShoot Deep Space Video Camera NTSC #52185 w/video capture device #52178	Gordon Hansen	1/16/17
C4 Meade Electronic Eyepiece w/cable to a video monitor, VCR or TV. Pairw#43 AND Meade 3.5” LCD Color Monitor Kit # 07700 Complete (unused). Pair w#34	Gordon Hansen	1/16/17

C5 Orion StarShoot Deep Space Video Camera II #52195 AND Orion StarShoot iPhone Control for Deep Space Video Camera II #52195	Gordon Hansen	1/16/17
C6 Canon 60 DA and accessories	Tim Dey	1/16/17
CA1 Rigel Systems Spectroscope	Gordon Hansen	1/16/17
CA2 Celestron 1.25" to T-Adapter(male thread) Model #93625	Gordon Hansen	1/16/17
CA3 Canon EOS deluxe astrophoto kit FOR Canon bayonet T-thread adapter and variable 1.25" extender	Gordon Hansen	1/16/17
CA4 Orion StarShoot LCD-DVR #58125 2.5" LCD screen	Gordon Hansen	1/16/17
CA5 Celestron Canon EOS T-ring adapter #93419	Gordon Hansen	1/16/17
<b><u>Special Event Use Only- Not Available For Loan Out</u></b>		
TK2 Meade 8" ETX-LS-ACF w/tripod, voice assist, computerized GPS plus MANY (35+) accessories	Tim Dey	1/16/17
BK1 Orion BT-100 binocular telescope w/hard case, Orion VersaGo h.d. man altaz mount w/Vixen dovetail head and Vixen style binocular holder bracket	Ken Anderson	3/15/17
BK2 Zhumell 25x100 binoculars, hard case & Zhumell TRH-16 tripod w/soft fabric bag	Sandra Macika	1/23/17
TAK1 Night Vision Intensification binocular unit	George Korody	1/20/17
Dennis Salliotte equipment@fordastronomyclub.com		



## STAR STUFF

This Newsletter is published eleven times each year by:

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

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SECRETARY: Jessica Edwards

TREASURER: Mike Bruno

WEBMASTER: Greg Ozimek

NEWSLETTER EDITOR: Syed Saifullah

### 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 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 of 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. You may also 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 month's issue.

\* FAAC Members are welcome to join our Ford Astronomy Club Yahoo! Group. Messages photos, files, online discussions.