

## "This Little Scope"

By Yasuharu Inugi

### \*\*\*\*\* Overview \*\*\*\*\*

You all saw Norb Vance's nice article about Celestron Firstscope in May 2009 newsletter. Many thanks to Norb, he was so generous to let me use the scope like it was mine. I had a lot of fun with it that night and was very impressed with how this tiny 3 inch "mini Dob" performed.

The scope is inexpensive (SMRP is \$49.99), very portable and easy to use, yet the performance is surprisingly good. It is also "ready to use" right out of the box. I saw some beauty in the concept of this product.

I got to like the scope and I soon picked one up for myself from Rider's hobby shop.

### \*\*\*\*\* Quick Review \*\*\*\*\*

The scope is a newtonian reflector on a Dobsonian type mount. The aperture is 76mm (approx. 3") and the focal length is 300mm. It is small (16" max. height) and light weight (4.3 lbs).

The primary mirror seems to be glued to the bottom of the tube and not adjustable. The secondary is attached with a single vane and can be collimated.

The scope comes with two eyepieces, H 20mm (Huygens) and SR 4mm (Ramsden). They are surely usable, but I find they have rather small apparent FOV's and for SR 4mm eye relief is rather short. So I tend to use Orion Expanse eyepiece set (20mm, 15mm, 9mm, and 6mm) more often instead. With a 20mm Orion Expanse, it covers very wide field (more than 4 degrees FOV) with 15X magnification. To have higher magnification I use a 2X barlow. The combination works well.

### \*\*\*\*\* Improvements I made \*\*\*\*\*

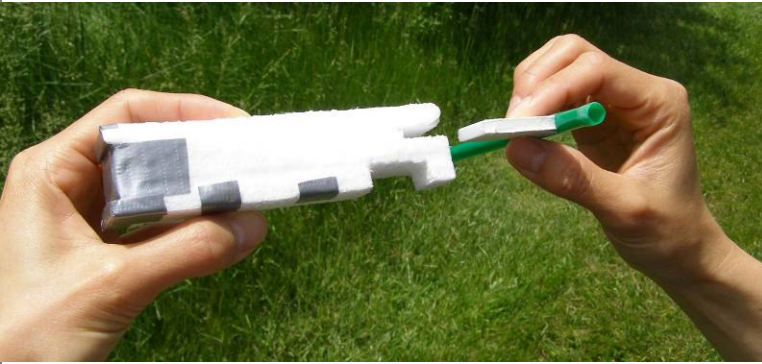
Initially, I encountered two difficulties:

- 1) The telescope is so small so for adults it is hard to look through unless it sits on a base with reasonable height.
- 2) There was no finder on the scope (unless you buy an additional kit) and it was hard to get the object inside the FOV of the eyepiece, despite the large FOV it covers.

The first problem could be solved if you have a picnic table or something, but Peach mountain does not have one. I have a small portable table but it is not very rigid and I don't want to put a telescope on it to observe. So what I did was to make a base/adaptor for a tripod. The base has holes to fit the legs of the base of the scope, and it is secured to the tripod by a screw at the center.

For the second problem, the easiest solution would be to put a reflex finder like Rigel or Telrad. But I didn't want to spend an additional \$40 for a \$50 scope. Not because I thought the \$50 scope didn't deserve a \$40 finder, but I thought it defeats the concept of the product. And the scope has such a wide FOV to begin with, so all I needed was to be able to aim the scope "fairly close" to the target to have the object inside the FOV of about 4 degrees with 20mm eyepiece.





So I made up a low cost "straw finder". It is made of a straw, a piece of Styrofoam, foam board, magnet, and some tapes. All materials were readily found at home. The finder attaches anywhere on the scope body with the magnet at the bottom. Aim is easily adjusted by the magnet (left-right) and by the foam board attached to the straw (up-down). The finder is small enough to be stored on the scope base. I could easily aim the scope fairly accurately by looking through the center of the straw.

Soon after I built the finder I tested it with the moon, Saturn and some bright stars from my balcony. The result was encouraging. Then one night I tested under a darker sky and found it more difficult to use. The reason was on my balcony there were enough lights around to make the straw easily visible, but not under dark skies.

To solve this problem I applied small amount of "glow in dark" paint at the tips of the straw. After being exposed to a flashlight for a short time, the straw faintly glows. Looking through the straw I can see two greenish "rings" and by aligning them to the object I can set the aim fairly accurately. Now finding objects became much easier. I can even use "geometry method" to find deep sky objects that are not visible with naked eyes.

I also was able to use one of the solar filters I had made for my 15x70 binocular. The finder works perfectly in this case, by projecting the shadow of the straw on a screen in this case my hand is the screen.

#### \*\*\*\*\* Observations \*\*\*\*\*

I first observed objects like the moon, Saturn, and double stars from the balcony of my apartment in Ypsilanti. I was pleased with the views, and wanted to check out the scope's capabilities for DSO's in dark skies. In May I made a trip to northern Michigan and took the scope with me. I even took the scope for a backpacking trip to Lake Michigan shore. Here's the brief report of observations through the scope.



#### Planets

Under good seeing condition, the scope provided good amount of details of Saturn and Jupiter. I mostly used 100X (2X Barlow + 6mm eyepiece) for planetary viewing, sometimes 150X if seeing was good. 150X seemed to be about the magnification limit for this scope.

Saturn: The ring, the gap between the ring and the planet, and the shadow of the ring on the planet were visible. Titan was easily visible. Hint of one or two more moons seen under good condition.

Jupiter: Two stripes were obvious. Another band in south was visible. All four moons were easily visible.



**Open clusters**

The scope's wide FOV was perfect for large bright open clusters. The whole M44 (Beehive) fit nicely in the FOV when 20mm or 15mm eyepiece was used. Clusters such as M6, M7, M23, and Coathanger all provided very nice views. Individual stars of M11 were seen under dark skies but washed out under light polluted skies.

**Globular clusters**

For bright globulars such as M13, M22, M3, M5, M4, and M15, individual stars were seen at higher power. For dimmer globulars granulation was difficult to see, but I was able to find all M54, M70, and M69 ("bottom of teapot" globulars).

**Planetary nebulae**

M57's ring shape was clearly seen with higher power. For M27 dumbbell shape was easily seen. I was able to detect Eskimo nebula and Ghost of Jupiter but it was difficult to see details for those small planetary nebulae.

**Other nebulae**

North American nebula: Under dark sky this was one of the best views I ever had for this object. The shape of the nebula was so obvious and Yumi was able to see the whole shape for the first time. I could also see Pelican nebula. A nebula filter worked well.

Veil nebula: Both NGC6992 and NGC 6960 were easily detected under dark sky. Good amount of details was seen, especially for NGC6992.

M8, M20, and M21: All three fit in the same FOV with 15mm Expanse. Very nice view. Nebulosity was bright and obvious for both M8 and M20. Could not see the "split" of M20.

M16 and M17: Could fit both in the same FOV. Very nice view. Nebulosity was bright and obvious for both. M17's "checkmark" was easily visible and the "parachute" was also seen under dark skies.

**Galaxies**

M81 and M82: Easy to find and appear fairly bright. Both easily fit in FOV. Nice views.

M51: Brighter than I expected. Hint of spiral was visible under dark skies.

M101: Again brighter than expected. Spiral structure was not seen.

M104: Hint of dust lane visible

NGC4565: Edge on shape was visible with averted vision. Dust lane difficult.

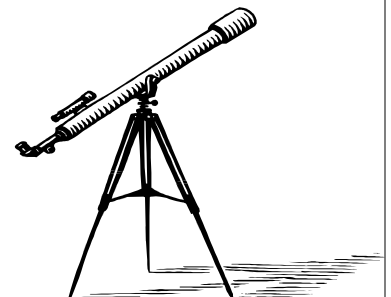
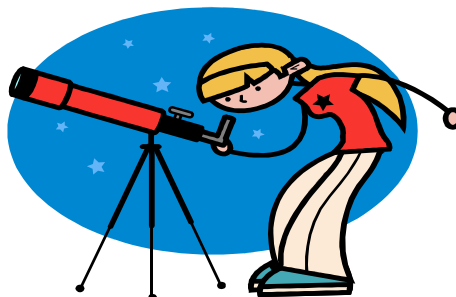
M31: I saw this early in the morning at northern Michigan. Wonderful view. With 15mm Expanse the whole galaxy fills the FOV of about 3 degrees. M32 and M110 were easily visible.

**Double stars**

The scope provided nice views of easy doubles, such as Mizar, Cor Caroli, Kappa Hercules, Iota Cancuri, Albireo, etc. Companion of Polaris looked faint under light polluted sky but was easy under a dark sky. Tighter doubles such as Castor, Alpha Hercules, Gamma Leonis, and 54 Leonis were all split at 100X. Color contrast of Alpha Hercules was seen albeit faint. I tried to split Izar and Porrima but wasn't successful.

**Final Thoughts**

Of course the views were not as spectacular compared to larger scopes. But overall, the performance further exceeded what I had expected. I believe this scope is one of the best starter scopes on market now especially for young astronomers, but it could also be a great grab and go scope for more experienced observers.



## The Further Adventures of an Amateur Astronomer Part 7

By George Ferrier & Fred Covell

On May 3rd I went to the I94 overpass on Ellsworth and observe the Planet alignment of Mars, Venus, Uranus, Neptune & Jupiter. I was able to find Neptune due to its close proximity to Jupiter.



May 5th I took three of my Junior Lowbrows Fred Covell, Tre'von Covell & Kiyell Hopes my Nephews to the Ryder Star Party, Visibility was bad at a 3.5 I bought Fred a Celestron My First Scope and John the Ryder's Manager showed him how to use it we used my 114mm Newton to observe the Moon which was a Waxing Gibbous 86% Illuminated. We could distinctly see The Rays of Tyco & Copernicus. With the 25mm we observed the area around Mare Tranquility. I was able to see the Craters: Messier A&B, Guttenburg, Goclenivs, Langrenus & Taruntius.

Through the break in the clouds we could view Saturn with Titan to the Northeast May 10th I joined SLOOH and



viewed M35 NGC2158 M82 and Algeiba

My name is Fred Covell and my brothers and I are learning astronomy from our Uncle George, who bought us a My First Telescope and he took us to Ryder's Hobby Shop where John the store manager showed me how to use the telescope. Uncle George & John both had Telescopes there and we looked at Saturn & the Moon. Uncle George showed me "The Basketball Player" which was named by my Aunt Patricia. Uncle George told me that Mare meant Seas and said that Mare Serenitatis is the head Mare Tranquillitis the Body and Mares Nectaris & Frecwith Mare Crisium as the the legs and Mare Crisium as the Basketball. Using the big Lens I watched Tyco and Copernicus Rays they were Beautiful.

May 16th we went to Peach Mountain and we seen Saturn Again but thru different Telescopes (seeing Saturn at different angels thru different type of Scopes) One of the members was looking at Artures and then he told me how to use a spotting Scope to find objects he had me find Saturn when I did Uncle George told me how to put it in the scope so I could see all of Saturn. We also went to eastern Michigan University and we seen M13 Gamma Leo the Beehive Cluster which was better in the finder scope but cool in the Telescope. We also watched the Space Station pass and also a Satellite pass below the Bowl of The Big Dipper.

## The iPhone & Astronomy

By Krishna Rao, MD

### Introduction

Greetings, friends! I've been a Lowbrow for 3 years now and it's about time I wrote an article! I've been playing around with the various astronomy applications for the iPhone since the App Store opened up last summer. For those of you who have one or used one, you've probably realized that the mobile computing platform of the iPhone clearly has great potential to be a useful tool out in the field. Maybe this is why 3 astronomy applications joined the many others in the App Store as "inaugural" applications, launched with great pride by Apple. A year later, there are at least 10 astronomy-related iPhone apps out now, from full, professional-grade star chart programs to red flashlight apps, and the "inaugural" apps have been tweaked many times over with updates, for the better. I'm going to review two of these applications briefly below, StarmapPro (a "light" version is also available, but the pro is only \$7 more, so why get the other one?) and Star Walk (the official International Year of Astronomy application). I will not comment on two other decent apps, GoSkyWatch and Distant Suns, as I don't really recommend them for folks like us or laypeople as they fall short of both needs compared to the others (but GoSkyWatch is a close "3rd"). My reviews are based on the iPhone 3G, but I don't see why this wouldn't apply to the first gen iPhone, or even the iPod touch, for that matter. First, however, a few preparatory guidelines.

### Tricking out the iPhone for Astronomy

Although all of the iPhone astronomy apps include a night vision mode, you'll quickly find that's not good enough. Firstly, some of them don't implement it well or fully (Distant Suns, for example, does a particularly pathetic job) and secondly, even in full, programmatically well-implemented night mode the iPhone itself has a very bluish screen with a lot of off-axis blue/white color leakage. This is even apparent in the red flashlight apps! This is obviously unacceptable for field use when pursuing those faint fuzzies, so the first task is to create a red transparent filter for the screen. The red plastic can be obtained in various ways. You can purchase it at an arts supply store, go to Kinkos (or on your printer at home) and get a transparency printed in red (RGB: 255, 0, 0), or buy a few sheets from ScopeStuff.com (in this economy, that may be a nice thing to do since I'm sure they need the support). Actually affixing the plastic to the screen is easiest if you've got a case. I've cut mine to be easily slipped in or out of the hard case I've got protecting the iPhone. Acceptable cases for this purpose usually run about \$30. My favorite is the line from Agent18 (<http://www.agent18.com/category/iphone-cases.aspx>), as they come with a docking adapter and are easily taken on and off and are also extremely thin and lightweight while still being protective (yes, I realize I sound like a commercial; no, I don't own their stock). This will dim the scattered blue/white light of the iPhone enough to be useable, in conjunction with the night vision mode in your apps. The one last trick is to make the unlock screen night friendly as well. The iPhone will slip into sleep mode every few minutes when not used and to get back into the program you were in, you first have to "slide to unlock" on the unlock screen. This screen displays a background image of your choosing, plus bright white icons and text. Although you can't fully turn this screen into night vision mode, you can at least use a blank, red background image which, used with the red plastic filter you've fashioned, is good enough. I usually still point the screen away from me when unlocking just to prevent the glare. Finally, you'll have to manually set the appropriate brightness level of the display. There is no one-size-fits-all setting I can recommend, since this varies depending on the program and the darkness of the specific plastic filter you fashioned above, but half-way works for my setup just fine. If you don't do this, the iPhone auto-adjusts the brightness and will likely pick a too-dim setting when you're in the field.

### StarmapPro (<http://www.star-map.fr/>)

This is a fantastic application. It has many extremely useful features, a very thorough object database and star catalogue, and is easy to use after spending 5 minutes reading the manual. Over the past year, the developer has been very responsive to comments from reviewers in the App Store, and has really improved the already brilliant program. I'll breakdown and review the features:

#### Main screen:

Intuitive point, pinch and zoom interface that is smooth and without significant or annoying lags. The location, date, and time are automatically set using the iPhone GPS, but you can easily change these manually. There many customizable options: show/hide the horizon, show/hide object/constellation labels, overlay a telrad (my favorite feature by far), include cardinal direction labels, show/hide ecliptic/alt-az/equatorial grid, show/hide variable and double star icons, change limiting magnitude of stars displayed (default is down to 16!), and the list goes on and on. No other iPhone app even comes close to the level of customization here. A particularly nifty feature is the eyepiece view, which when entering your telescope and eyepiece details, can show you a properly oriented FOV. You can swap between this and the regular view by flipping the phone over and back (the iPhone has a built-in accelerometer). Very cool.

#### Object Search:

You can do this in many different ways. The standard options are all there: search by object type (planets, stars, galaxies, clusters,

neublae, catalogues - messier, NGC, IC included, or just browse the main screen. An amazing number of objects will show up, depending on your zoom level, on the main screen so you can easily browse by region of the sky.

**Object Info:**

Very thorough. Most common objects have pictures associated with them and the usual data about magnitude, size, etc. Full ephemeris data is also present with rise/set times and position graphically displayed on a background indicating when the sky is dark. If you're near an internet connection (or have edge / 3G activated) you can hit a button to get even more info beamed into your phone on demand. From this screen, you can also hit the "find" button and get to the object by following the arrow (and even see the telrad overlay, if that option is selected).

**"Tonight" feature:**

This is another great part of the app and very useful for planning observing sessions. On an overlay of the time with darkness indicated, the objects of interest for the observing night are displayed. You can apply useful filters such as "naked eye," "telescope," "galaxies," etc. You can also sort by rise time, magnitude, or only display the circumpolar ones. From this screen, objects can be chosen and added to the "featured" section, so you can create a personalized list and just jump to this section when ready to observe.

There are many other features in this app including the ability to control a telescope, a logbook, a photographic logbook, that I haven't used so won't go into, but hopefully you can start to see why I'm so enthusiastically endorsing it! For \$19, it's a steal!

**Star Walk**

(\$5 - itunes link: <http://www.tinyurl.com/nfclrz> )

The official IYA 2009 iPhone product is a great application for enthusiasts and layfolk alike. It is not nearly as feature-rich or powerful as StarmapPro, but it gets the job done for casual sessions with binocs or naked eyes.

**Main Screen:**

As above, it can use the iPhone's location feature to find your position, date, and time, but you can manually change this. It is also a fluid, intuitive, point, pinch, and zoom interface common to all iPhone apps. Unlike other apps, this one can only be used in landscape mode, which is not a huge limitation but can be a little more cumbersome if you've got thick fingers and clumsy hands like me. The visual display is quite beautiful, with a fairly photorealistic sky and a few tuning options for labels and such. The night mode is complete and useable.

**Object Search:**

Can find stars, solar system objects, and the messier catalogue. That's about it, but remember this is designed for the public.

**Info Screen:**

Select an object and hit the info button to bring up useful info about the magnitude, distance/mass/etc., displayed in an entertaining way with sound effects. It includes pictures for many objects as well and the polished interface garnered many "oohs" and "ahs" the last time I used it, which was our on-campus collaboration with the student club.

Overall, I think this is a great app to have on hand during our public events to pull up quick facts on objects and give people an idea of what the object they're seeing looks like before peeking in the scope. When my non-astronomy friends ask me about a good astronomy app to pick up, this is the one I tell them to reach for.

**Conclusions:**

Overall, I'm happy with the astronomy offerings on the iPhone. That being said, there is always room for improvement but as long as the developers above keep supporting their programs, things are only going to get better. You do have to do a little initial ground work to make your phone usable in the field, but trust me, it's worth the investment. Now who wants to bet after reading this that John Causland will be the first of you to go out and buy an iPhone!



## E-Astronomy or Arm-Chair Astronomy for the 21<sup>st</sup> Century

By Mark S Deprest

Hello all, over the years I have written numerous articles asking you all to get outside and do real “at the Eyepiece” astronomy. My opinion on this subject has not changed, I still want to see more of you “getting out” and “looking up”!

Speaking of that, here is a little side story; A few month’s ago Doug Scobel and his wife Deb and my wife Terri and I were out at a social function that had nothing to do with astronomy. As we got out of the car to go into the function we were attending, I did, like I always do ... look up to see how clear the sky was. Out of the corner of my eye I noticed Doug doing the same. I didn’t think any more of it until later on when we left the function and we were walking back to the car, and my wife noticed both Doug and myself doing it again. She noticed us doing it again when we got to the restaurant for coffee and dessert; it was at that point that she mentioned that both Doug and I were hopeless cases. I had to agree with her, I am a hopeless “Visual Astronomer” and so was Doug. I wonder how many other amateur & professional astronomers look up every time they walk outside.

All that aside, this article is about E-Astronomy that is astronomy related stuff you can do at the computer. Now, this doesn’t mean I’m going stop bugging you to get outside, but there are a lot of very interesting astronomy related programs and websites that you can use to keep you involved in astronomy even when your in the house. Now on my computer I have a dozen observational planning & logging programs, countless lists of stuff to observe, and 3 dozen websites that strictly deal with astronomy bookmarked in “My Favorites”. I have a MP3 player that contains a whole section of the New Age genre “Space Music” and 6 different “Podcasts” that I subscribe to, which are astronomy related. I get email alerts from “Space Weather.com” when the likelihood of Auroras is high. The “Clear Sky Clock” sends me email when conditions are good for visual observing. I belong to 3 “Yahoo” groups related to comet observing, imaging and reporting, which I get daily updates from. I also, have two remote telescope observing/imaging systems that I purchase telescope/imaging time from. There I think I scratched the surface a little, I don’t know if my list is typical or not, and that really doesn’t make any difference, my point is that there are a lot of ways to stay active in astronomy even when the weather doesn’t co-operate for outside observing.

The rest of this article will be filled a list and description of some of the E-Astronomy things that are my personal choices and why I like them.

### **Observational Planning & Logging Programs**

Guide 8.0 by Project Pluto – This is a “Planetarium / Charting” type program and one of the most comprehensive on the market today. The current version comes on 2 compact discs and is updated regularly through Project Pluto’s website. [www.projectpluto.com] Bill Gray is the creator of Guide and takes an active personal interest in customer service and satisfaction. One of the best in the business at customer service. I love this program and have conducted a number of talks and demo / teaching sessions on using Guide. Current price \$89.00. This program gets 4 out of 5 stars with its only downside being a slightly high learning curve.

Observe v.9.4 by Doug Scobel – This is a great “Planning / Logging” type program that uses the SAC 7.0 deep-sky database. Yes, it was developed by our very own Doug Scobel; it is operates in DOS and is very intuitive. It’s simple, clean and efficient and best of all it is free! If you have any problems with it you know the programmer personally. This program gets 4 out of 5 stars with its only downside being a limited database.

Virtual Moon Atlas by Patrick Chevalley & Christian Legrand – This is just what the title says it is a “Virtual Moon Atlas” freeware program. It uses Clementine’s Aerographs and Photographic overlays along with LOPAM Photographic overlays and like I said it’s free. It is very comprehensive with more information that even the biggest Lunatic could ever want or use. It is easy to use and very intuitive. This program gets 5 out of 5 stars with no downsides.

Chartes du Ciel v.2.7 by Patrick Chevalley – This is another “Planetarium / Charting” type freeware program with a huge downloaded database. It rivals Guide in its scope but lack a little polish and it has a rather steep learning curve. Some of its controls are a little on the clumsy side, but it is highly accurate and very comprehensive. Once you’ve learn its little idiosyncrasies you’ll discover that it is very functional. A big plus is that it is free. This program gets 3.5 out of 5 stars, a little clumsy and the learning-curve brings it down.

Deep Sky Planner v.4 by Knightware LLC. – This is another “Planning / Logging” type program that has a much larger database (sorry Doug & Observe) to work with. It also interfaces with Chartes du Ciel so that once you plan your observing list you can easily make charts fro your list. This program a very good customer service person in its creator Phyllis Knight and she takes a personal interest in making sure your program works for you. The program is very easy to use, has a large database and is functionally stable. Current price is \$59.95. This program gets 4 out of 5 stars with the only downsides be its price and its inability to add additional databases.

### Telescope & Astronomy Technical Programs

Newt for Windows v.2.5 by Dale A Keller – This is a freeware program for Amateur Telescope Makers (ATM) that helps you see if your Newtonian design is going to work and can help you optimize your design. Limited to Newtonian design scopes but very useful. Easy to understand and simple to use, 4 out of 5 stars.

Comet for Windows v.1.5 by Seiichi Yoshida – I like to hunt down comets and some of these can be pretty faint ... this freeware program allows me to plot a comet’s light curve and help me figure out when a comet will be easiest (brightest) to observe in the sky. It also allows me to log and graph my observations and magnitude estimates. This program is a real winner in my world so it gets 5 out of 5 stars.

### Lists of Objects to Observe

Catalog of Compact Galaxy Trios by Miles Paul – This is as the name says a list of over 300 trios of galaxies that can be seen in a small single FOV. About 150 are within the grasp of a 12 inch scope.

Globular Clusters -118 by Mark S Deprest – I compiled this list using Guide 8.0 and MS Excel it contain 118 observable globular clusters. That is observable from the Northern Hemisphere and with an 8 to 10 inch scope.

Spirit of 33 Double Star Lists by The Spirit of 33 Group – I have 33 lists of 33 double stars. Each of the lists is for a different Constellation and contains 33 double stars visible and splittable in an 8 inch scope.

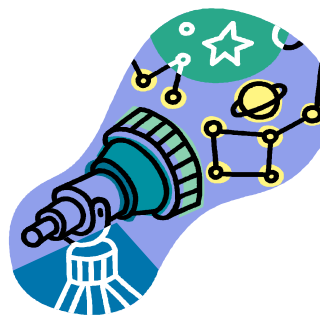
The Herschel 400 and Herschel II lists by The Astronomical League – There are different versions of these but essentially they are two separate lists of 400 each of deep-sky objects that were discovered or cataloged by the Herschels. The first list of 400 are observable in an 8 to 10 inch scope and the second list will take something a little bigger to see them all.

Color Contrasting Double Star List by Wayne Reed – A list of 54 color contrasting double stars visible in 4 inch scopes. These are some of the prettiest double stars you’ll ever see.

S.T.A.R. list compiled by Phil Harrington from various sources – The Small Telescope Asterism Roster list is for wide fields of view and contains things like the Coathanger, Little Sagitta, Davis’s Dog and Star-Gate. These are chance alignment groups of stars that form recognizable patterns in the sky. As the name implies these can be seen with a small telescope 65mm and up with a wide field of view.

I think this is enough for the first part of this article and next month I’ll provide a small list of websites I like and why, and a few more eclectic astronomy related things like “Space Music”, Podcasts and Remote Astronomy & Astrophotography.

If you would like more info on any of the things in this article, you can email me directly at : [msdeprest@comcast.net](mailto:msdeprest@comcast.net) or “Google Search” any of the titles listed above. I hope you liked this little glimpse into my “E-Astronomy” world.

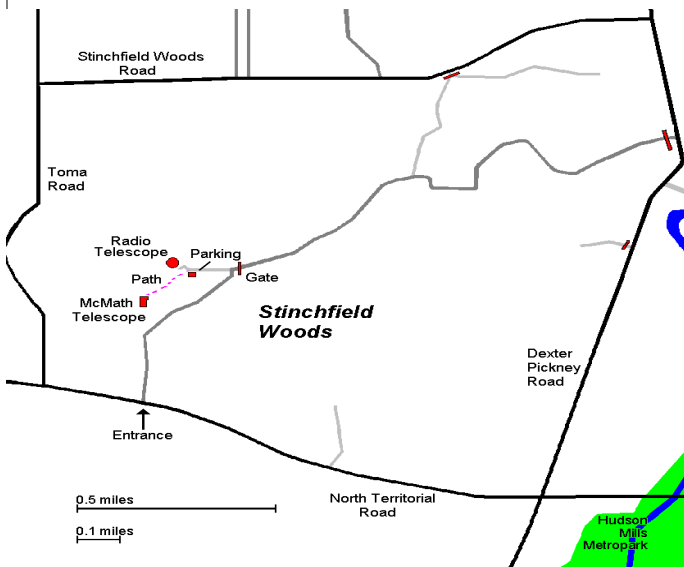




## Places & Times

Dennison Hall, also known as The University of Michigan's Physics & Astronomy building, is the site of the monthly meeting of the University Lowbrow Astronomers. Dennison Hall can be found on Church Street about one block north of South University Avenue in Ann Arbor, MI. The meetings are usually held in room 130, and on the 3<sup>rd</sup> Friday of each month at 7:30 pm. During the summer months and when weather permits, a club observing session at the Peach Mountain Observatory will follow the meeting.

Peach Mountain Observatory is the home of the University of Michigan's 25 meter radio telescope as well as the University's McMath 24" telescope which is maintained and operated by the Lowbrows. The observatory is located northwest of Dexter, MI; the entrance is on North Territorial Rd. 1.1 miles west of Dexter-Pinckney Rd. A small maize & blue sign on the north side of the road marks the gate. Follow the gravel road to the top of the hill and a parking area near the radio telescopes, then walk along the path between the two fenced in areas (about 300 feet) to reach the McMath telescope building.



## Public Open House / Star Parties

Public Open Houses / Star Parties are generally held on the Saturdays before and after the New Moon at the Peach Mountain observatory, but are usually cancelled if the sky is cloudy at sunset or the temperature is below 10 degrees F. For the most up to date info on the Open House / Star Party status call: (734)332-9132. Many members bring their telescope to share with the public and visitors are welcome to do the same. Peach Mountain is home to millions of hungry mosquitoes, so apply bug repellent, and it can get rather cold at night, please dress accordingly.

## Membership

**Membership dues in the University Lowbrow Astronomers are \$20 per year for individuals or families, \$12 per year for students and seniors (age 55+) and \$5 if you live outside of the Lower Peninsula of Michigan.**

**This entitles you to the access to our monthly Newsletters on-line at our website and use of the 24" McMath telescope (after some training).**

**A hard copy of the Newsletter can be obtained with an additional \$12 annual fee to cover printing and postage. Dues can be paid at the monthly meetings or by check made out to University Lowbrow Astronomers and mailed to:**

**The University Lowbrow Astronomers**

**c/o Liz Calhoun**

**P.O. 4465**

**Ann Arbor, MI 48105**

Membership in the Lowbrows can also get you a discount on these magazine subscriptions:

Sky & Telescope - \$32.95 / year

Astronomy - \$34.00 / year or \$60.00 for 2 years

For more information contact the club Treasurer. Members renewing their subscriptions are reminded to provide the renewal notice along with your check to the club Treasurer. Please make your check out to: "University Lowbrow Astronomers"

## Newsletter Contributions

Members and (non-members) are encouraged to write about any astronomy related topic of interest.

Call or Email the Newsletter Editor: **Mark S Deprest (734)223-0262 or [msdeprest@comcast.net](mailto:msdeprest@comcast.net)** to discuss length and format. Announcements, articles and images are due by the 1<sup>st</sup> day of the month as publication is the 7<sup>th</sup>.

## Telephone Numbers

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	Fred Schebor	(734) 426-2363
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Webmaster	Dave Snyder	(734) 747-6537

## Lowbrow's Home Page

<http://www.umich.edu/~lowbrows/>

## Email at:

[Lowbrow-members@umich.edu](mailto:Lowbrow-members@umich.edu)



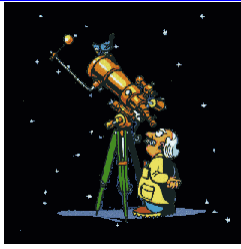
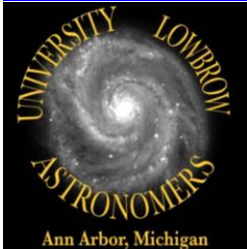


## University Lowbrow Astronomers

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### Reflections & Refractions



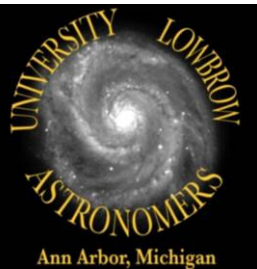
### Website

[www.umich.edu/~lowbrows/](http://www.umich.edu/~lowbrows/)



### *Night Sky Network Event:*

The fifth grade classes of Hoover Elementary School in Hazel Park, MI got to see solar prominences thru Mark Deprest's PST (Personal Solar Telescope). These same kids were also treated to a night of telescopes and observing at their science camp in Holly, MI, when Belinda Lee, Don Fohey, Charlie Nielson, Jim Forrester and Mark Deprest showed up with clear skies and telescopes (Article and more pictures to follow next month)



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