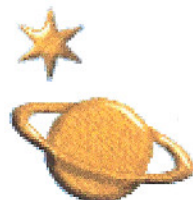


Newsletter of the Baton Rouge Astronomical Society



**January 2010**

**The Next Meeting of the  
Baton Rouge Astronomical Society  
will be January 11, 2010  
at 7 PM.**



We will be meeting at the Highland Road Observatory. The meeting starts at 7 PM. Please arrive a few minutes earlier .

PROGRAM NOTES: **The Year Space and Astronomy in Review,  
and Show and Tell (Astronomy Item)**

For the January meeting we will have a combo of things. Chris is going to give a talk on the year in review for 2009. Please give voice to any events you think should be added. We may vote on which one should be the top event.

We would also like to invite you to bring or talk about something club related that you may have received over the holidays. Weather permitting we will hope to be able to get some viewing in. It seems that for the last few months viewing has been impossible because of the rain and clouds, so we'll keep our fingers crossed!

Thanks,  
Ben, VP, Programs  
Ben Toman <tomanben@gmail.com>

Please put our monthly meetings on your 2010 calendar. In addition to the program we will have a little finger food and several nice raffle items. The more members, the merrier. Keep looking up.

**Have a happy new year!!** - Craig Editor





## MESSAGE FROM HRPO

Doug Inwood seems quite keen on getting BRAS members back into using the 20OGS for pure science—I'm assuming asteroid discovery and asteroid and comet astrometry. More news on this later. I think BRAS has taken a "quantum leap" (ha,ha) in accepting Stephanie Northrop's offer to be the club's first PIO. Stephanie is phone-savvy and has a good presence, I know, when she volunteers at the HRPO front desk. Good luck to her, and to new Vice-President Ben Toman (have we ever had as a Vice-President someone who'd joined less than a year earlier?).

### CALLS FOR VOLUNTEERS

**Learn to Use Your Telescope:** Saturday, 23 January from 4pm to 7pm

*Probably three or four volunteers will do. Assisting the public with newly-acquired scopes is the name of this game.*

**Mars' Closest Approach:** Wednesday, 27 January from 8pm to 11pm

*One volunteer will do, but HRPO will take two!* NOTE TO VOLUNTEERS: The next time each one of you shows up for volunteering at HRPO, I will snap your picture for the upcoming Volunteer Photo IDs! Dress the way you want to look on your badge!

Thanks, Christopher

### HRPO FRIDAY NIGHT LECTURE SERIES

**\*8 JANUARY "Sun Dogs and Other Sky Oddities"** *What's that...up in the sky? Sun dogs! Moon dogs! Sky rings! Glories! Circumscribed halos! Is it your imagination, or can that actually happen? Baton Rouge Astronomical Society member and asteroid discoverer Merrill Hess will showcase bizarre and rare atmospheric phenomena, and what you need to do to see them.*

**\*15 JANUARY "Wonders of the Winter Sky"** *Craig Brenden, HRPO Education Curator and founding member of the Baton Rouge Astronomical Society, takes you on a fascinating tour of Baton Rouge's winter season. He highlights the celestial gems that will sparkle throughout the next three months—gems that you'll be able to see live if you continue to visit HRPO!*

**\*22 JANUARY "The Mars Report"** *BRAS Observing Chairman Art Barrios returns for his popular periodic overview of the Red Planet, including updates about current and future spacecraft missions! Also, visitors will receive a sneak preview of Mars' Closest Approach.*

**\*29 JANUARY "Living with a Star: Mission One"** *NASA's Living with a Star program is designed to reveal the working of the Sun like never before, and to help us understand how the Sun's power affects the Earth. The Solar Dynamics Observatory is the first mission in this program. Come join us for this stunning introduction.*

**\*5 FEBRUARY "NASA Spinoff Technology"** *HRPO Center Supervisor and BRAS member Tom Northrop gives the audience an overview of the fascinating objects and technology that developed as a direct result of NASA's exploration of space. Some of these devices and materials might even be in your home!*

### 2010 B.R.A.S. OFFICERS

Congratulation to are newly elected officers for 2010. They are -

PRESIDENT: Marvin Owen

VICE-PRESIDENT: Ben Toman

SECRETARY: Dave Thomas

TREASURER: Bob Sinitiere

NEW—PUBLIC INFORMATION OFFICER: Stephanie Northrop

NOTE: The Public Information Officer is an appointee by the President.

Please thank them for serving at our next meeting.

## PRESIDENT'S MESSAGE FOR JANUARY 2010

I hope you had a very merry Christmas and will have a very happy New Year. Please attend our January 11 meeting. Our new VP has been hard at work getting programs ready for 2010. If you have ideas or contacts please share them with Ben.

It is still not too late to sign up for the club outing and stargaze at Rockefeller set for January 15-16.

Names go on the *Rockefeller Road Trip* list on a first come, first served basis. Remember this outing is for club members and family. Only if spaces remain unused should you invite friends. You need to check with Debra to see if space is available. Thankfully, we have never had to turn anyone away. The list is growing but there are still some beds available. Anyone who wants to attend should e-mail (debra.dickson@la.gov) or call (225)219-3322 to confirm their spot or for further information.

Debra says the directions are: If traveling along Hwy. 82, heading west, the Refuge headquarters is on the left before the town of Grand Chenier. There is a boat about three miles before this. If you get to Price Lake Road, you've gone too far. Contact Debra if you need more specific directions from I-10 to get to Hwy. 82.

Ms. Landry at LaDept Wildlife & Fisheries said we don't have to worry about paying a deposit.

### Rules for use of the General Quarters:

1. **No Pets allowed**
2. \$10 payment per night for each person 18 years of age or older. Children under 18 will sleep on the sofas/floor if no 'extra' beds are available
3. Camp groceries are not supplied; however kitchen utensils, towels, and bed linen are furnished.
4. You are responsible for any damages and should such occur, shall reimburse the Department for the cost of repair.
5. Due to a recent change in law, any person age 16-59 visiting a Refuge or Management Area must have in his/her possession a valid Louisiana hunting license, Louisiana fishing license or Louisiana Wild Stamp unless this is a function sponsored or hosted by LDWF.
6. Upon departure, please strip beds and leave soiled linen in hallway.

Please follow these rules so we are invited back again next year. Hurricane Rita destroyed much of Cameron Parish September 2005. Since its passage, temporary repairs have been made to the General Quarters dormitory.

Please keep in mind there is no hospital in lower Cameron Parish, although there is an ambulance service on standby.

Also keep in mind to bring food. There is not much in stores or restaurants close by. There is a well laid out and furnished kitchen, but not with food! In the past we have done a group Crab Boil on Saturday.

This is a wonderful opportunity for club members to do a little crabbing, nature watching, and sky viewing with very dark skies.

Remember our January 11 meeting, and again a Happy New Year.

Marvin E Owen, BRASinc President  
marvin@meocpa.com  
ph 225-292-0099  
FAX 225-296-5780



# BRAS Observers Update

January 2010

## Constellation of the Month Triangulum: The Triangle

The constellation Triangulum is not surprisingly simply a grouping of stars that form the shape of a triangle. Triangulum is actually the Latin word for triangle. The three main stars practically form an isosceles triangle with two nearly equal sides and a narrow base. The Greeks saw this grouping as their letter Delta and therefore called this constellation Deltotron.

There are no reported mythological figures associated with Triangulum. Perhaps we should assign it as the official constellation of UFO enthusiasts who often report seeing triangle shaped craft!

### Position in the Sky

Right Ascension: 2 hours

Declination: +30 degrees

### Named Stars

Metallah (Alpha Tri)

### Deep Sky Objects

M33 The Triangulum Galaxy (spiral galaxy)

### Finding The Triangulum Galaxy

Many of us have seen M31, the Andromeda Galaxy. If you can find that you can easily find M33, the Triangulum Galaxy. M33 resides in a line almost directly across the bright star Beta Andromeda from M31. M33 is a member of our local group of galaxies, is 2.9 million light years away and shines at magnitude 5.8. Can you find it? You will need very dark and clear skies.

### Hand me that giant Saturnian wrench

Pictured below is the North Pole of Saturn which exhibits a most unusual cloud formation. It actually looks like a giant hex nut which slowly rotates around the pole. This formation was first discovered in the 1980s by the Voyager spacecraft and has again been viewed by the Cassini spacecraft. Scientists are still trying to understand what causes the hexagon and why it has lasted for so long.

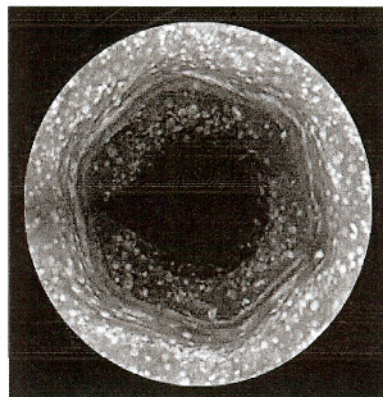
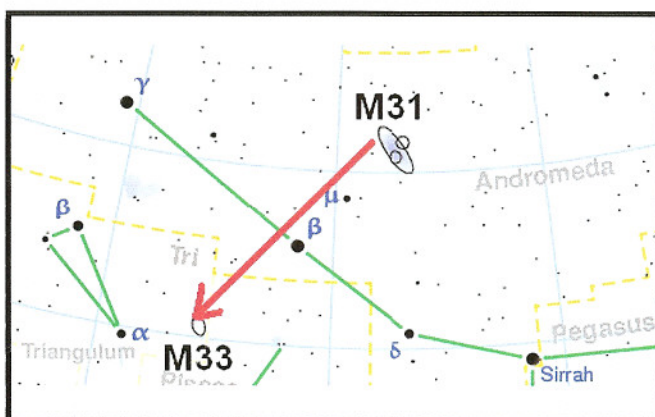
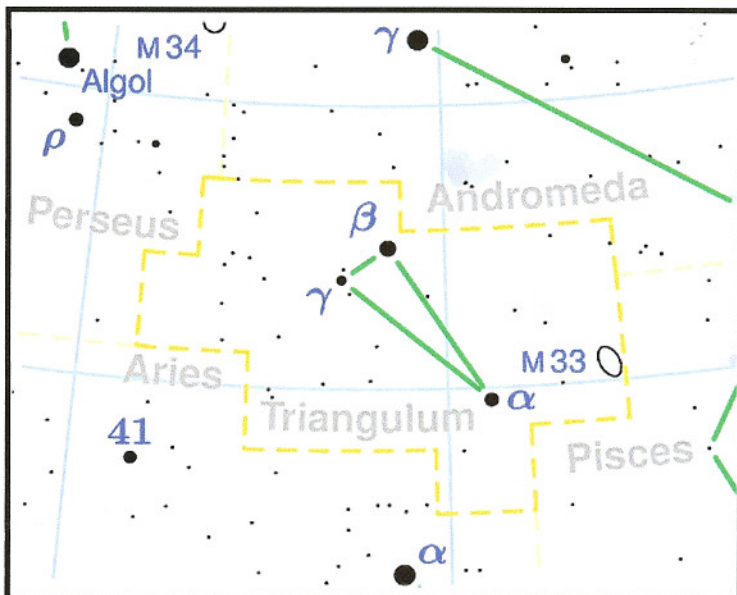
**January 9th 2010 Primary and January 16th 2010**

**Secondary this months observing date from our dark sky site.**

**A map of the BRAS Dark Site can be viewed at**

[http://maps.live.com/?v=2&sp=Point.p1wwxc7c69n1\\_BRAS%255fDark%255fSky](http://maps.live.com/?v=2&sp=Point.p1wwxc7c69n1_BRAS%255fDark%255fSky)

Art Barrios, BRAS Observing Chairman, [art.barrios@cox.net](mailto:art.barrios@cox.net)





# Building a 6" f/15 Achromatic Refractor

By James Champagne



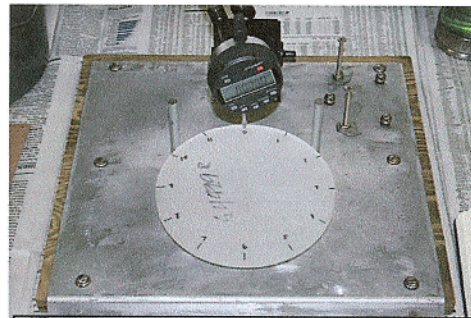
6" f/15 achromatic refractor

Many telescope makers began their hobby by making a Newtonian reflector. The high success rate of this instrument and nice views through the eyepiece make it a great first project. But what about making a refractor as a first telescope? Amateur telescope makers are often drawn away from lens making due to the fact that four glass surfaces need accurate radii ground into them. I decided to break away from tradition and build a refractor as my first telescope despite the "scary" optics. As I found out for myself, the optics were very forgiving in their construction and lens making was not that frightening. Through hard work and exceptional guidance, I was able to create a fine lunar and planetary telescope.

A six-inch f/15 airspaced doublet kit was purchased from Newport Glass out of California for \$550. I had the help of optical engineer Mike Jones in creating a good lens design for the kit. I was also able to learn how to design my own achromats through the book *Making A Refractor Telescope* by Norman Remer. This book is a must have for any refractor maker and I highly recommend it to any ATM. Included with the two lenses were four plate glass tools, one for each surface. Each lens had pre-generated curves but their radii were many inches away from

the design I chose.

The first order of business was to make each surface parallel to the other side, otherwise known as de-wedging. Wedge in lenses will produce prismatic images of star light. A simple de-wedging fixture was made from three ball bearings, two posts, and a dial indicator on a movable arm. The goal was to have the same edge thickness all the way around each lens. The wedge was removed by marking the high side with a marker and concentrating grinding strokes over this area. I was able to bring both of my lenses within 0.0005" of uniform edge thickness.



Wedge tester used to achieve uniform edge thickness around lens



3.5" spherometer used to measure radius of curvature

One of the most important tools to have in lens making is a spherometer. I made two and both were effective in measuring the concave/convex radii. My spherometer is a 3 ball foot type that uses ball bearings glued into the heads of machine screws as feet. These screws are located at the vertices of an equilateral triangle. In the center of the triangle is a micrometer screw that can read down to 0.0002". A simple formula is used to convert the sagitta measurement into a radius of curvature measurement.

Since each curve was pre-generated, there was no rough grinding and 220 grit was used right away. Each curve was brought to the correct radius or nearly so using a small overhang stroke. I found lengthening a convex radius to be difficult, my inexperience in lens making setting in. This was actually the only problem I encountered and found a way to solve it.

Due to not meeting the design radius of a few surfaces, I had to re-design the lens system as I went along. I was able to meet the original design radius of R3. I then worked on R2 and was not able to bring it to the correct radius. I also failed at bringing R1 to the original design. In order to plan my next move, I used the

free optical design software OSLO-EDU to tweak the original design. Plugging in the new radii that I obtained, I found a better value for R4 and the airspace. I then ground R4 to as close as possible to the new value. In the end, I also had to tweak the radius of R1 to obtain a well corrected lens.

Fine grinding and polishing were the most difficult aspects of the project. I should say tedious rather than difficult. It is at this point that patience becomes a virtue. Hundreds of hours were spent making the same polishing strokes in order to remove pits and make the lenses spherical. The monotonous labor was worth it though when I first gazed through a six inch polished lens. Focusing sunlight with the positive crown element was also a real treat. At this point I figured the concave surface R3 to a sphere with techniques taken from mirror making.

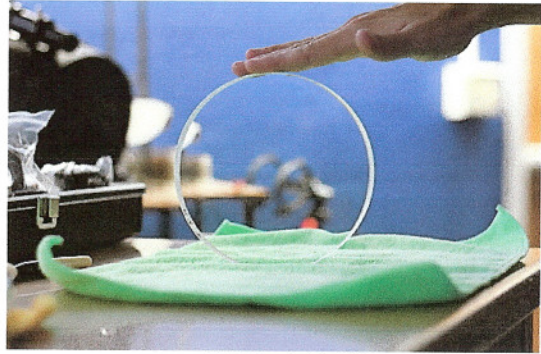


# Building a 6" f/15 Achromatic Refractor

by James Champagne



Polished crown lens

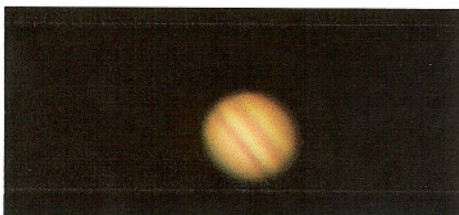


Polished flint lens

I made sure that the tube assembly and mount were completed before it was time to test the lenses. The lens cell and focuser adapter plate were fabricated by the LSU physics machine shop from a large piece of aluminum bar. The optical tube is a 7" diameter irrigation pipe purchased from Hastings Pipe Co. out of Nebraska. The altitude-azimuth mount was made using plans from Richard Berry's *Build Your Own Telescope*. The completed mount proved to be very stable and was a perfect match for the refractor. A Crayford focuser was obtained from Scopestuff and a pair of tube rings from Parallax Instruments.

The next step was to figure the lens system so that spherical aberration was a minimum. After an initial setup, a star test revealed that the figure of the lens system to be overcorrected. Since I did not have an optical flat, I measured the overcorrection by using the modified Hartmann test. This test uses sunlight as a source at infinity and a special aperture mask with spaced slits. Slit pairs are located at specific zones of the lens and rays of light can be traced back to the focal point in order to measure spherical aberration. This test is not as accurate as using a flat in autocollimation but it performed well enough to figure the lens. I removed the overcorrection by aspherizing the surface of R1; a sub-diameter pitch lap was used to remove glass from the center in order to push the focus of the center zone out. After a couple hours of figuring, another Hartmann and star test revealed a well corrected lens.

The high contrast and sharp views through the telescope are most impressive. Scanning the lunar terrain at high magnification is an amazing experience. With Ebonystar laminate bearings riding on PTFE strips, the motions are extremely smooth. The cloud bands of Jupiter, ring system of Saturn, and crescent phase of Venus are breathtaking. I was also able to split many double stars. Terrestrial viewing through the scope has also proved to be very nice. Color correction is as expected with an achromat; very bright stars, planets, and the Moon have a slight purplish haze around their border.



Afocal projection of Jupiter through a 12mm eyepiece with a Canon XTi

Overall I am very satisfied with my first ATM project. The telescope

was completed in 6 months with a little over \$2000 spent. If a 6" yard cannon is a little too big for your taste, I could recommend making a similar 4" refractor. With the reduced size of this instrument, time and cost could be cut considerably. I am looking forward to many years of viewing through my 6" refractor. There is nothing like an unobstructed view of the heavens.



Gibbous moon taken prime focus with Canon XTi

*Thank you to James for the summary of his presentation to the club. I hope it may inspire some of you to try building some of your own telescope. James suggested at the end of his talk that a 6 to 8 inch mirror for a reflecting telescope would be a much easier project. If you have an on going project please consider submitting a short summary of it to our Night Visions News Letter. Craig Ed.*



# BATON ROUGE ASTRONOMICAL SOCIETY

**You can pay your Membership Dues at our next Meeting or  
Send your Dues to:**

*Baton Rouge Astronomical Society, inc.  
c/o Bob Sinitiere, Treasure,  
14558 Cottinham Ct.,  
Baton Rouge, LA 70817-3543*

**If you have questions about dues or receiving your News Letter call Bob  
at 755-2079**

<p>◆ Regular Membership    \$20.00    \$ _____</p> <p>◆ Each Additional Family Membership    \$ 5.00    \$ _____</p> <p>◆ Student Membership ( through age 17)    \$10.00    \$ _____</p> <p>◆ Donation* toward club building fund or ( _____ )    \$ _____ <i>Specify</i></p> <p><b>TOTAL ENCLOSED    \$ _____</b></p>	<p>Date _____</p> <p>Name _____</p> <p>_____</p> <p>Mailing Address _____</p> <p>_____</p> <p>_____ Zip _____</p> <p>Phone</p> <p>(H) _____</p> <p>(C) _____</p> <p>(W) _____</p> <p>E-Mail _____</p>
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**How do you wish to receive the Society's Newsletter *Night Visions*-  
\_\_\_\_\_ By Mail or by \_\_\_\_\_ E-Mail  
(Please Check one)**

**PLEASE CHECK THAT YOUR ADDRESS AND E-MAIL ARE CURRENT AND CURRENT.**

**Meetings are usually held the second Monday of each month at 7pm, except for June and July.  
Most meetings are held at the Highland Road Observatory.**

\*All donations to the Baton Rouge Astronomical Society, Inc. are tax-deductible under IRS Section 501(c)(3) & (a)(1) and also 170(b)(1)(A)(vi).

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