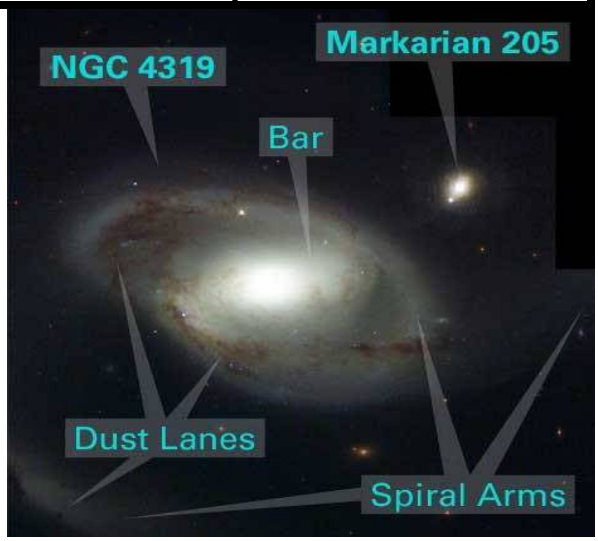
REFLECTIONS / REFRACTIONS

University Lowbrow Astronomers

May 2010

Volume 34 Issue 5



Far, Far Away – Getting Started in Quasar Observing

By Christopher Sarnecki

I don't know how I got started on observing quasars. Perhaps it was because of a fascination with distant objects. In amateur astronomy, we observe objects at enormous distances. Quasars, short for 'quasi-stellar radio source' in reference to their stellar pinpoint radio source origin, are the farthest astronomical objects seen in our telescopes. Not tens of millions of light years away, or hundreds of millions of light years away, but billions of light years away. That's right, billions of light years away. Talk about time travel! A quasar is understood to be the energetic nucleus of a distant galaxy surrounding a super massive black hole. Small in size, perhaps only the diameter of our Solar System, quasars out shine their host galaxy. Think about that for a moment. An object the size of our Solar System is emitting energy equivalent to entire out put of the home galaxy or about a trillion Suns. These objects are also associated with high redshift confirming their enormous distance from our point in space. In short, quasars are the most distant and luminous pinpoint objects you are ever going to observe in your telescope. So endith the science lesson.

So what are you going to see when looking at quasars? Well not much, in you eye anyway. Just a faint pinpoint of stellar light. Remember, these objects are after all 'far, far way, (you know the line) in a distant galaxy'. Your mind is going to 'see' much more. Just knowing that you are looking at the farthest object possible in the optical spectrum is impressive. Ancient photons bouncing around in your eyeball that started on their journey billions of years ago. Also, knowing these photons were generated on the edge of a black hole's event horizon is something to think about.

While there may be a couple hundred thousand known quasars, we amateur astronomers can see only a handful. Here is a list of observable quasars in moderate and large amateur telescopes. Note that you are not going to find these objects on your usual star chart with the exception of 3C273. So pay special attention to locating finder charts. As with all faint objects, it helps to observe the target when it is at or near the upper meridian of the sky.

Also, don't claim you can't see these objects because you don't have access to an appropriate sized scope. The Lowbrows are a generous lot and will help you dial up these objects in their scopes if asked. Just do you homework by bring the correct star charts at the correct time of year.

Name/Cat No	Mag	Coordinates	Constellation
3C273	11.7-13.2	12H26M/02^19'	Virgo
PHL 1811	13.8	21H55M02S/-09^22'24"	Capricornus
MSH 04-12	14.9	04H07M49S/-12^11'36"	Eridanus
Markarian 205	14.5	12H21.6M/75^18'	Draco

3C273 - The brightest visible quasar as seen from the Earth. On a clear day you can see 93 million miles, or about 8 light seconds to the Sun. On a clear night, you can see about 2.2 million light years naked eye to the Andromeda galaxy. Well on a clear night, you can see almost 2 Billion light years in your scope by sighting quasar 3C 273. This quasar is visible in an 8-inch scope. See page 83 of Sky & Telescope's May 2005 issue for maps and observing tips.

PHL 1811 - This 13.8 mag quasar is located in Capricornus. Armed with the fine star chart from Skyhound web site (www.skyhound.com), I found this one too easily. Imagine, the look back time on this object is 2.4 Billion light years. That's more than half the age of the Earth. While I located this one with an 18-inch scope, I'm going to try and find this quasar again with the 8-inch. It should be visible on a night of transparent seeing for our latitude.

MSH 04-12 - A 14.9 mag pinpoint in Eridanus that's 4.9 Billion light years away! The Skyhound web site also has some great charts and a locator photograph to help you find this one. You should print all Skyhound's reference material for use in the field, especially the locator photo, if you stand a change of bagging this quasar.

Intermission

Awesome quasars paired with awesome brews. This month's beer review is all about high gravity micro-brews…

120 Minute IPA, Dogfish Head Craft Brewery, Sussex County, DE – $12 for a12 oz bottle doesn't make a great brew, but for this powerful beer, a year in the Man Cave (otherwise known as the cellar) helped mellow its smooth taste.

Imperial Series, Double Bock, Boston Beer Company, Boston, MA – With enough malted barely in a bottle to make a loaf of bread, this full flavored caramel beer requires slow and easy consumption.

Bourbon County Brand Stout, Goose Island, Chicago, IL – At 13 ½% ABV you better plan on placing this in a sniffer and spend the entire evening sipping it.

Markarian 205 – I recently located this quasar on a Sunday night (April 14th) at Peach Mountain with Mark Deprest as my witness. Over a billion light years away, this quasar has an infamous past. Astronomer Halton Arp claims the adjacent galaxy NGC 4319 expelled the quasar as evidenced by a photograph of a light bridge between the two objects. Such a light bridge would violate our understanding how galactic distances are established. Rather than go into extensive detail here, 'Google: Markarian 205' to read up on this controversy. To find this quasar, locate the 11th mag galaxy NGC 4291. You'll find this galaxy on many star charts. Using the finder chart below, starting at the galaxy NGC 4291 and star hop to galaxy NGC 4319. Mrk 205 is off the south side of the galaxy. Wait for periods of steady seeing, and the quasar should pop in and out of view. Be patient and don't forget to breath, as the increased O2 will improve your eye sight.

This short list quasars is not the limit for amateur astronomers. In researching this subject on the web, I came to the understanding that there are more quasars that amateur astronomers to chase down. Stay tuned, as I hope a future article will expand our list of quasars available for our observing.

A sketch of Quasar Markarian 205 with Galaxies NGC 4319 and 4291 by Jere Kahanpää, Hartola, Finland.

Printed with permission of the author.

Object: Galaxies NGC 4291, 4319 and qso MRK 205 Constell: DRA RA: 12h 21.73m (-19) Decl: +75° 19.5' Epoch: 2000

Mag: 12.8^m(p)/11.4^m(v) Size: 3'x2.3'/1.9x1.6' Type: SB(r)ab/E(-19/-91)

Observer: Jere Kahanpää Obs. place: Hartola, Finland

Date/Time: 19./20.4.1995, 00.00 Telescope: N 205/1000

Magn: 133x Filter: n/a Field: 22' NE Lim.mag: 6.0^m

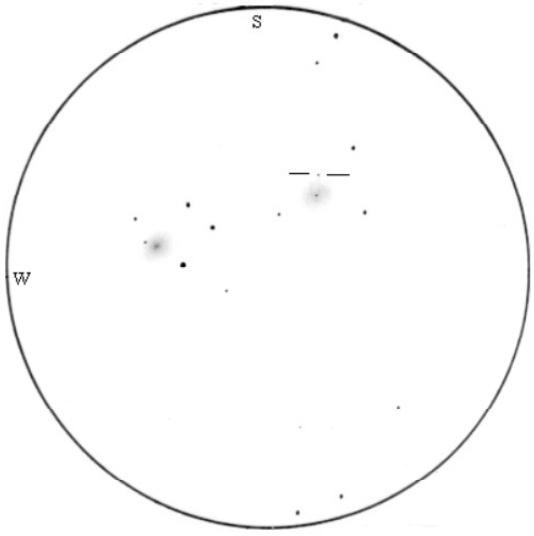
Background sky: 2 Seeing: 2 Weather: Good. +0 °C, no Moon.

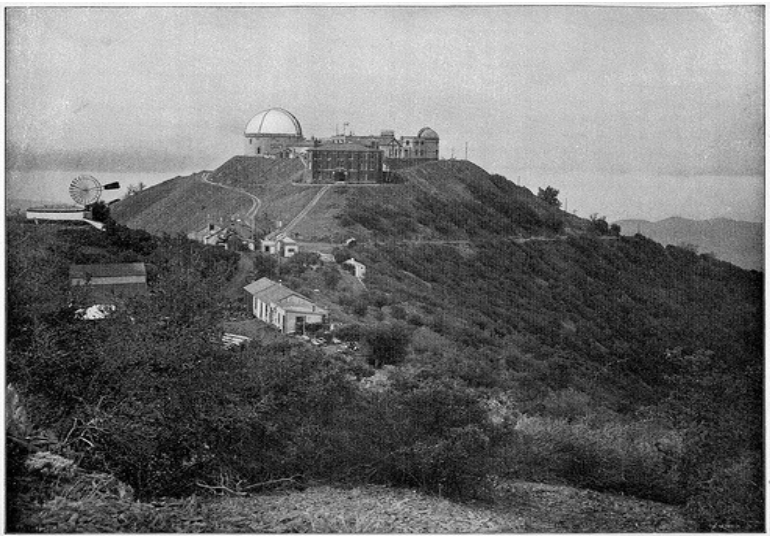
Description: Two quite bright galaxies, both quite easy but small at 40x.

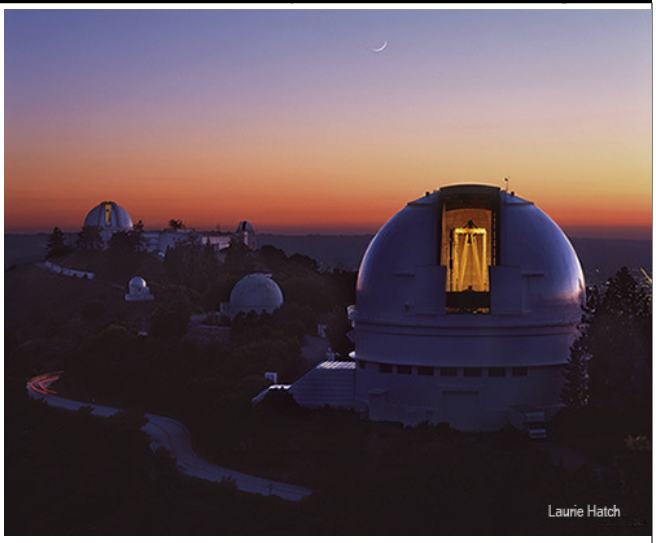
NGC 4291: A typical elliptical galaxy; Strongly concentrated towards a non-stellar core. 1.2'x0.9'. Core almost round.

NGC 4319: About as bright as -91. Round, diam 1.5'. Slightly concentrated towards a mag. 15 stellar nucleus.

Quasar Markarian 205: A stellar mag. 15 point a bit off the S edge of NGC 4319. Difficult but clearly visible with averted vision.







Hand Book of the Lick Observatory

By Liz Calhoun: for May, 20101, R/R

Last August we Lowbrows enjoyed an inspiring presentation by Sandra Macika of the Ford Amateur Astronomy Club on historic Lick Observatory on Mt. Hamilton, within sight of San Jose and San Francisco, California. To be honest, I'd never really heard of Lick Observatory … in fact I would consider myself to have been pretty "observatory-ignorant" until Ms. Macika's presentation sounded a profound note in my romantic soul. I realized that there is an untapped reservoir of serious investigation into the *history* of astronomical observation and research in the United States! Not just that what/when, but also the cultural implications of observatories. WHAT did people think of these monuments? Boon, or silly waste of money and time? Was there a 19th century "space race"?

My interest piqued, I resorted to that institution with which I've been familiar since July of 1984, the mighty University of Michigan library system. Quickly I found a venerable tome that resonated with that echoing romantic note so recently plucked: ""Hand-Book of the Lick Observatory of the University of California," by Edward S. Holden, director. Published in San Francisco and copyright the author in 1888, this humble visitors' guide offers 125 pages of text, five of index, and several of engraved advertisements, including one for transportation to Lick Observatory care of the Southern Pacific Railroad (from "S.F." and including Stage, $5.50 round trip), a laundry service catering to tourists, and even a proud statement of the Union Iron Works, "Builders of the great dome and elevating floor for the Lick Observatory" (and "Now building for the U.S. Navy the Cruisers "Charleston" and "San Francisco").

But the centerpiece of the guide for me was the heroic composition in open rhyme, "The Unmounted Lens of the Great Telescope at Mount Hamilton," by "A.V.G." I was completely surprised by the inclusion of this magnificent seven-stanza poem to a chunk of glass! But there's the lesson for us all: that we moderns take for granted Hubble deep-field images, easy access to any number of maps of our galaxy, and affordable off-the-shelf wide-field eyepieces – not to mention iPhone apps and Go-To's. In the Golden Age of Observatories the advent of a new telescope that could see farther and in better focus than anything preceding it had the potential of empowering its operator to be a voyeur at the keyhole of Heaven itself. These days we've brought the stars in closer, but maybe diminished our own stature proportionately.

As noted, the poem is seven stanzas long, of varying lines per stanza. For the next few issues of Reflections/Refractions I'll present two stanzas, introduced with some illustrative commentary to set the context of the composition.

I wish to thank the generosity of the University of California and our colleagues in the Astronomy Department there who have allowed me to state that this poem is used with permission of the University of California Regents/Lick Observatory.

This first stanza opens with our hero sleeping until summoned forth when the final construction of the mount is completed. The imagery refers very specifically to New Testament scenes, specifically Lazarus; but the constructions are a bit jarring: "awful splendors" and "intolerable light" awaits the hero, the mighty Eye. What grand expectations lie ahead? Will its Doom be glory, or … ?!

I.

Mysterious Eye, dim shrouded from the light,
Bound with dark bands like Lazarus in his tomb,
Shut in by muffled doors from sight and sound
Of the world's outer life, soft speech of men,
And neigh of steed, and tramp of busy feet;
No sound about thee save the sullen wind
That moans and raves around thy mountain crypt;
No light save thine own inward radiance
That links thee with the space-embosomed stars:
Close-lidded sleep'st thou in thine inner court
Of dark and silence the while men do forge
With bolt and rivet and strong bands of steel,
The mighty orbit for thy wondrous sphere.
Know'st thou thy power? Dost feel thy destiny?
Beneath these grave-like cerements thrill'st thou not
Thro'all thy bright circumference with dim
Prophetic visionings of the Abyss
That from gray evening till the purple dawn,
From dawn until the evening gray, will smite thee
With awful splendors of uncounted suns?
O mighty Eye! Say what wilt thou reveal,
When from the tomb men Christ-like bid thee forth,
Unbind thy bands, and set thee like a star
Upon Earth's grave and cloud-encircled brow,
Eye unto eye with heaven's dread mystery,
Lidless against intolerable light?

[to be continued …]

My Hot Camera

By Brian F. Close, J.D., LL.M., M.A., T.N.*

Some of you may recall my article back from the 2007 Mars opposition with a picture of my astro-dog Max. (See Reflections, Mar & Apr 2008) Well, Mars has come and gone and below is a selection of images from my updated set-up.

As you may recall, my prior set up was a Toucam with a 5" D&G F/12 refractor. I have since switched over to a monochrome DMK 21AU.04 Camera from Imaging Source. This was acquired from Astromart. However, ***caveat emptor***! The camera did not come with software. When I contacted Imaging Source for Software they told me (a) the camera was stolen from a UPS shipment; and (b) I could get the software only by paying full camera price. This was ***after*** I had provided them copies of the Astromart ad and the name and address of the seller.

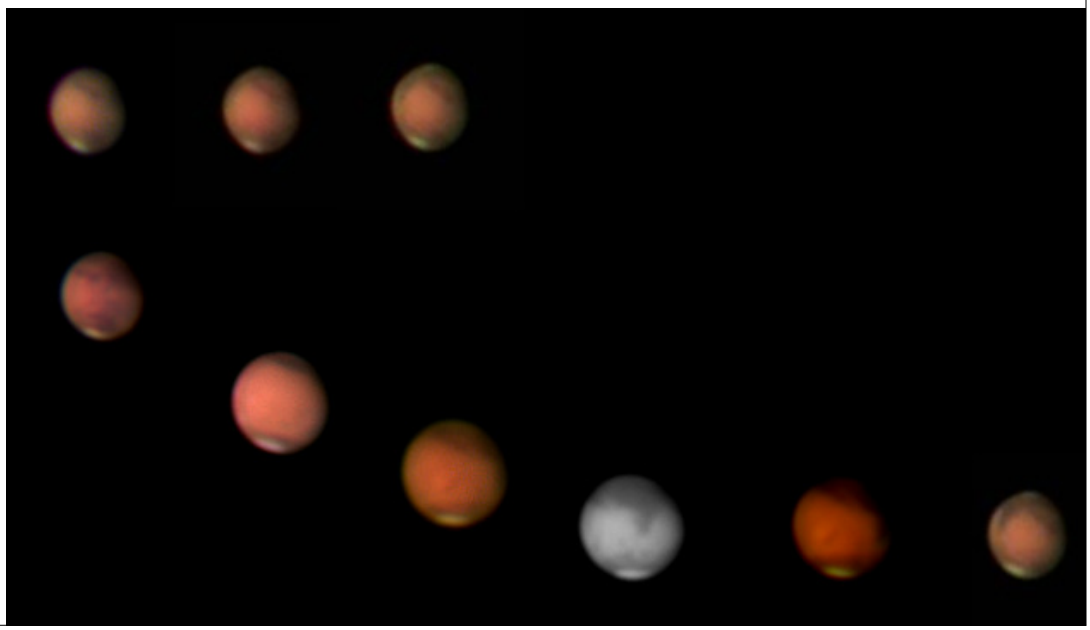
Imaging Source should of worked with me instead of punishing me for buying used and helping them, so I kept the camera and looked for software to run it. (Or at least that's what I rationalized.) Stark Labs produces a nice little freeware ccd camera control program called "Craterlet". Stark Lab also produces Ph.D. Guide to run guide cameras and an image processing program called Nebulosity, all freeware (Donation optional). Craig Stark is a great guy and happy to answer questions. http://www.stark-labs.com

I don't know what they are, but Craterlet won't work with Vista or Windows 7 without additional "codecs".

Whatever they are, the complete AVI Suite of codecs can be downloaded and installed with a nice freeware program call K-lite CODEC http://codecpackguide.com/klcodec.htm

A monochrome camera requires a filter slide or filter wheel and filters. I'm using a used ATIK powered filter wheel. It's ok for the price, but if you can afford a USB supported SBIG or other expensive wheel go for it. (My original control box failed and it took me two months to get it back from ATIK in Portugal). I'm using Non-IR Astrodon RBG filters, which are suppose to be parfocalized but are a little finicky.

Here's my light path stack: Fringekiller® filter on the front of the filter wheel (the D&G is a traditional refractor), 5x ImageMate, filters, then IR filter then the ccd chip. The DMK can take 30 frames per second. With Mars at or below 13", it can be exposed up to 15 minutes. I take RGB of 4 minutes each, which gives me time to refocus if I have to and adjust exposure. I expose Red and Green at 1/60th a second and Blue at 1/30th. I get about 7000 frames per filter. Frames are then processed with Registax and then color combined with Maxim DL with Green weighted at only 80% of Red and Blue. I got good data until Mars dropped down below 8".



Next opposition I hope to get color calibration on a white star down so I can get a true color weighting and maybe trade some focal length for light gathering power by using my home built 6" f/6.5 as well as the D&G.

* "Telescope Nut"

FROM CHELSEA TO THE UNIVERSE

Charlie Nielsen (May 1, 2010)

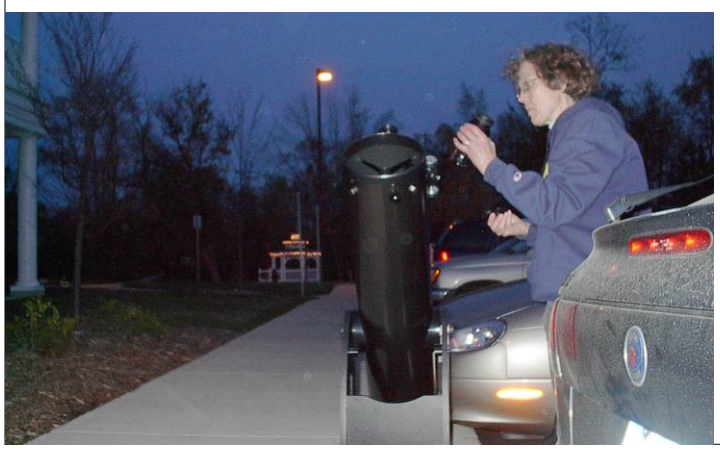
That was the name we choose for an event done by or club for the Chelsea Adult Learners Institute. I was contacted by a representative of this group during the second half of last year. Chelsea ALI is an organization that runs a series of classes which cover a wide range of topics. The class attendees are mostly retirees from the area, and they have to pay a small tuition for each class. The "season" runs for several weeks and some of the classes have several sessions. Not wanting to over commit us, I choose to do a single 2 hour plus session, on April 22, from 7 to 10 PM. In my conversation with ALI's rep, Jan Carr I mentioned the nature of our SMP presentation last year and she thought that was just the kind of thing they were looking for. The club's Saturday Morning Physics talk was titled "From Ann Arbor to the Universe", so we just substituted Chelsea. Since the SMP talk had to be limited to one hour including demos, and we had 2 hours for Chelsea ALI, we expanded upon the SMP Power Point presentation. It is a pretty fat file now.

The Lowbrow team for the task was Jack Brisbin, Arthur Suits, and this author. Jack and Arthur were the main presenters, and I ran several demos. The 3 of us met several times to go over the SMP file and determine what we wanted to cut, what we wanted to add, and what we wanted to modify. We also discussed what demos we wanted to run. Of course we would like to do the now famous "Flaming Eyeball" demo from SMP, but we did not have the necessary equipment. It was also decided that we would hold a mini open house after the presentation on the grounds of Silver Maples, the site of the event. This is a retirement community located in the southeast part of Chelsea. The light from the building and the parking lot was horrible of course, but we figured the main targets would be the Moon, Mars, Saturn and maybe a couple of other brighter objects anyway. Jack and I attended a lecturer introduction meeting a few weeks before the date. This was very useful because we could check out the room and facilities that we would be using. These facilities turned out to be great. We had a large room, and a fine projection system. We came up with tables and an easel for demos.

Fifteen people signed up for our class, which I hear is a typical number. I believe there were two no-shows, but our event coordinator and our A/V person stayed to watch the show. We only practiced about 1.5 times, and the "1" was just a few hours before the live event. As it turns out this was not an issue since we were all very smooth come show time, and everything worked as planned. As I stated earlier, Jack and Arthur did the Power Point presentation parts, and I ran demos. One exception was when Jack did a mirror grinding demo for them. I used a scope, camera and PC, and a little help from a heat gun to demonstrate turbulence. I also used the club's laser optics demo kit and one of the NSN toolkits to demonstrate how refractor and reflector telescopes work. We also had versions of these and a catadioptric design to show them the real animals. We got pushed for time late in the class and spilled a little over the two hours, which did not leave time for questions. As it turns out this did not matter since the skies cleared up nicely just in time for our little open house outside. And, to the rescue came fellow Lowbrows Liz and Margaret, packing their fine 8" Orion Intelliscope. They were setup and running in time for us to come out. Arthur had his homemade 14" DOB setup in the classroom, and I had my little 66 mm ED refractor. We dragged these scopes outside to use also. I have to admit that mine may have been a little easier to pick up and walk with! Since this part of the program worked for us too (thank you Mother Nature) then the attendees could still ask all their pent up questions.

Thanks to everyone that made this program happen, and did our club proud. It all went very well. It appeared to me that the "students" were engaged and learned something, though some parts may have been a little deeper than they expected. They certainly seemed to enjoy themselves. We have some feedback info yet to come as of this writing. I bet it will be mostly positive, and I would not be surprised to get asked to do this program again.

Special thanks to Margaret and Liz for providing the images of the outside session.



Expenses		**Income**	
Telephone bills	-$143.40	Dues @ $20 (62)	$1,240.00
GLAAC AATB Donation (2009)	-$300.00	Dues (senor) @ $12 (41)	$492.00
International Dark Sky Association	-$100.00	Dues (student) @ $12 (2)	$24.00
Br. Guy honorarium	-$100.00	Dues (oos) @ $5 (8)	$40.00
Events: Scherzer "Pizza Party"	-$62.00	Donations	$295.00
Supplies, Misc.	-$696.93	Printed Newsletters (12)	$144.00
Clear Sky Chart	-$50.00	RASC - Calendars & OH: net	$94.35
Total Expenses	-$1,452.33	**Total Income**	$2,329.35
		Previous Balance (3/26/2009)	$7,300.80
		Current Balance (3/31/2010)	$8,891.05

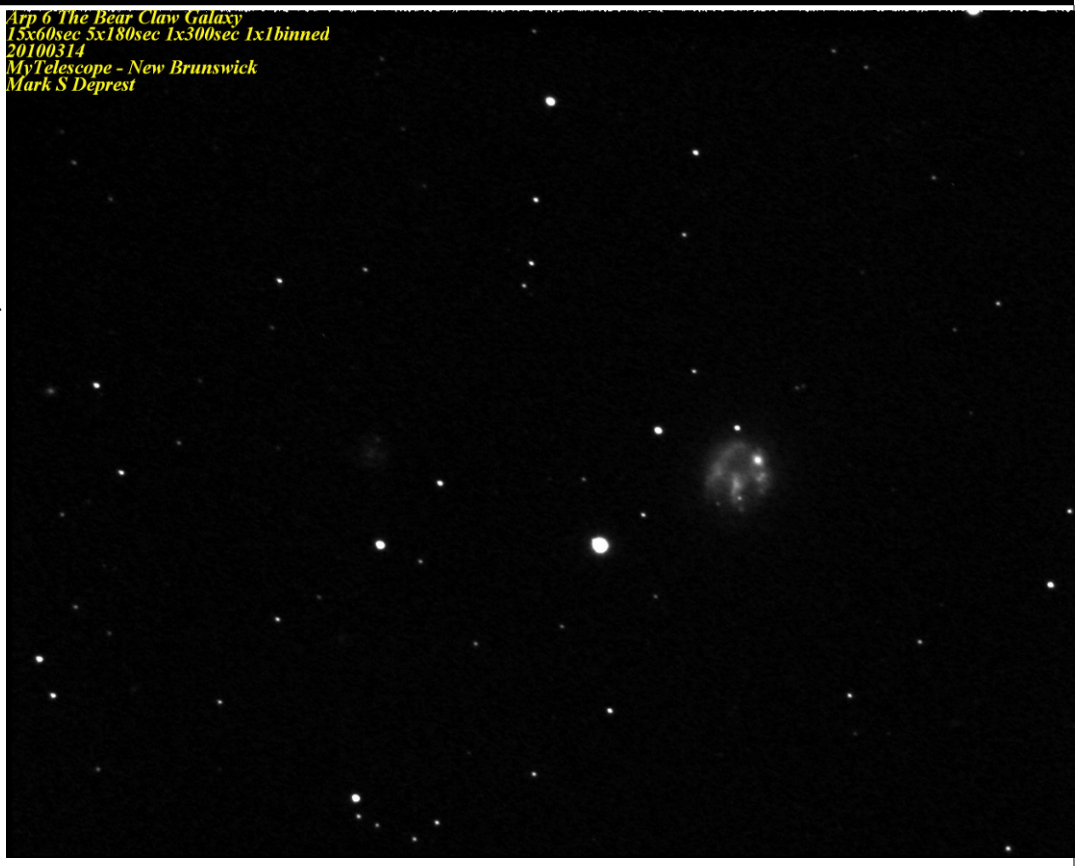
University Lowbrow Astronomers: 2009 Balance Sheet (3/26/09 – 3/31/10) submitted by Liz Calhoun, Treasurer

At the University Lowbrow Astronomers Officer's meeting held last month the officers reviewed and approved the club's financial records and account. The figures listed above are posted in accordance with the by-laws.

Here are a couple of challenge objects for you all .

The first one is the Bear Claw Galaxy (NGC 2537 & NGC 2537a) at this time of year they are nicely placed about 40 degrees up above the northwest horizon at 11:00pm EDT in the constellation of Lynx. The challenge is two part; the first is just finding it as there aren't any really bright stars near by. The second challenge is to see the strange mottling that gives the galaxy it's namesake appearance as the Bear Claw.

As a deeper challenge try and pick out the much fainter companion galaxy NGC 2537a just 4arc minutes to the east.

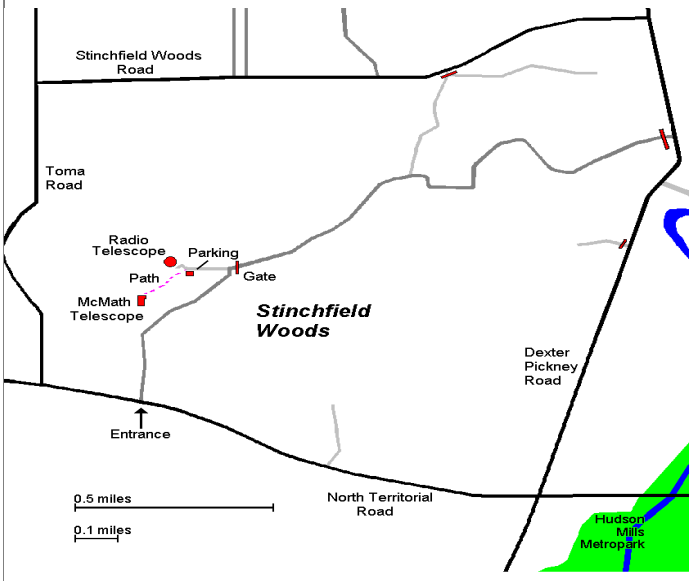


Okay, if you find the Bear Claw and it's companion then move your scope 15 arc minutes due south and see if you find this little beauty. Its IC 2233 and it is faint and thin. This one is a real challenge but very rewarding, as you study the brightest portion of this fine line edge-on you might begin to notice that it starts to get longer. This one is worth a try with a 10" scope or larger under dark sky conditions.

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 3rd 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 48106

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** to discuss length and format. Announcements, articles and images are due by the 1st day of the month as publication is the 7th.

Telephone Numbers

President:	Charlie Nielsen	(734) 747-6585
Vice Presidents:	Jim Forrester	(734) 663-1638
	Jason Maguran	
	Paul Walkowski	
	Belinda Lee	(313)600-9210
Treasurer:	Liz Calhoun	
Observatory Director:	Mike Radwick	
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	Fred Schebor	(734) 426-2363
	Charlie Nielsen	(734) 747-6585
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Lowbrow's Home Page

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

Email at:

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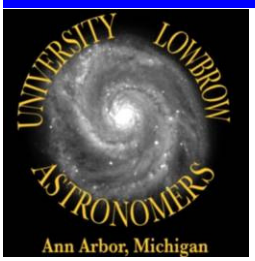
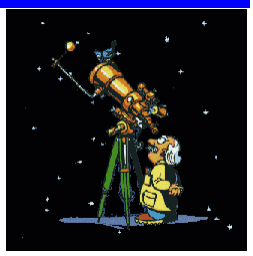
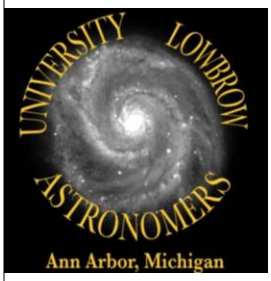
Reflections & Refractions





Website
www.umich.edu/~lowbrows/



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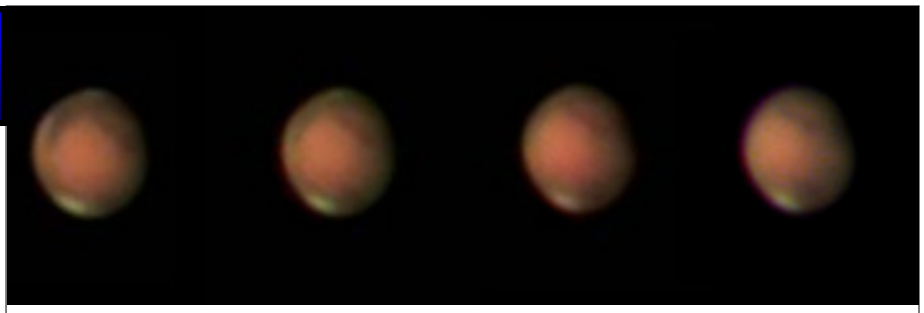

Composite image of Mars Rotation taken 3-24-10 UTC by Brian Close

Instrument: 5" D&G F/12 Refractor, 5x Image Mate, Fringe Killer

Camera: Image Source DMK 21.AU04.AS 12-15 Minutes each @ 30 FPS
AstroDon Filters: RGB & IR Mars Diameter 9.8"

Check your membership expiration date on the mailing label