



# REFLECTIONS AND

# REFRACTIONS

OF THE UNIVERSITY LOWBROW ASTRONOMERS

November 2004

## Upcoming Events

### November 2004

- **Saturday, December 4, 2004.** *May be cancelled if it's cloudy or too cold.* (Starting at Sunset.) Open House at Peach Mountain.
- **Saturday, December 11, 2004.** *May be cancelled if it's cloudy or too cold.* (Starting at Sunset.) Open House at Peach Mountain.
- **Friday, December 17, 2004.** (7:30PM). Monthly Club Meeting.
- **Saturday, January 8, 2004.** *May be cancelled if it's cloudy or too cold.* (Starting at Sunset.) Open House at Peach Mountain.
- **Saturday, January 15, 2004.** *May be cancelled if it's cloudy or too cold.* (Starting at Sunset.) Open House at Peach Mountain.
- **Friday, January 21, 2004.** (7:30PM). Monthly Club Meeting.

The  
Long  
Night  
of the  
Comets  
by Mark Deprest  
page 2

# The Long Night of the Comets

by Mark S. Deprest

I have had observing sessions that I will never forget, and I have observed from darker sites. I have had sessions that lasted until daybreak, and I have seen many fascinating comets before. I have seen things with my scopes that others had doubts about, and I have spent hours futilely searching for objects just beyond my reach. But on the night of Saturday, November 13th and the early morning hours of Sunday, November 14th, I experienced a night that will be added to "The Best of" list.

First of all it was mid-November, and clear, on a New Moon week-end. Secondly, I realized that given the right conditions (very good transparency), I could observe 6 comets in one session, albeit some of those 6 would be very faint. Ah, but I have seen very faint comets before, and according to the most recent information (from the "comet-ml" group), some of these comets are brighter than their elements would suggest.

So with that in mind and the overconfidence I possess, I first downloaded the latest orbital elements and, using Guide 8.0, I printed six wide-field (20 degrees) finder charts and six highly detailed, 2.5 degree, inverted field of view charts. I always make sure to include any deep-sky objects at least two magnitudes dimmer than my intended target on these 2.5 degree charts, in order not to confuse some other faint fuzzy with my comet. I also like to include magnitude listings for the stars down to about 10.5. This helps me when I try to estimate a comet's overall magnitude. I also invert these highly detailed FOV charts to match my telescope & eyepiece view. I'll admit it, I've always had trouble mentally flipping my actual FOV to match most finder charts, and this is one of the reasons why I prefer a "Telrad-Finder" to the more conventional finder scopes.

My targets, according to Guide 8.0, for this session would include C/2004 Q1 Tucker at 13.1 magnitude, 78P Gehrels at 11.6 magnitude, 32P Comas Sola at 13.5 magnitude, 29P Schwassmann - Wachmann at 15.0 magnitude, C/2004 Q2 Machholz at 7.3 magnitude and 62P Tsuchinshan at 12.8 mag-

nitude. Now, I know the first thing you're thinking is that there is no way to see comets as faint as the magnitudes listed above with a 12.5" f/5.6 reflector from Peach Mt. and if you weren't thinking that then, you probably are now. Well, let me explain some things about the numbers I just gave you. The first thing you need to remember about comets is that they are notoriously difficult to predict. As David Levy has said, "Comets are like cats, they both have tails and they both do exactly what they want to!" Secondly, remember that I said the most recent information showed that these comets were brighter than their elements would suggest. I also read recently that comet 29P Schwassmann - Wachmann was in outburst, this happens periodically to comets when they tumble and a new area of their nucleus is more directly exposed to the charged particles streaming off the sun. That newly exposed area can sometimes become very active and can brighten a comet's overall magnitude by many orders of magnitude. Position in the sky, sur-

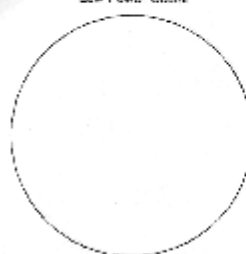
The American Association of Amateur Astronomers  
www.astronomy.com

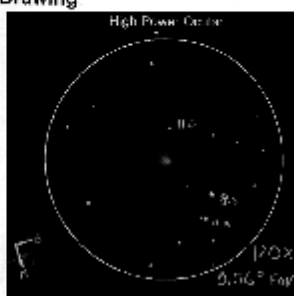
**Observation Log**  
and Sketch Template

Observer: Mark S. Deprest  
Date: 11-13-04  
Time: 23:00 EST  
Site: MARBLE MOUNTAIN  
Seeing (1-10): 3.5 Transparency (1-5): 5

Object: C/2004 Q1 TUCKER  
Constellation: ANTARES/SCA  
RA: 10h 13.1m Dec: +35 d 15.0m  
Listed Magnitude: 9.5 Listed Size: 0'  
Source: ESTIMATE (14-100 normal)  
Telescope: 12.5" f/5.6  
Eyepiece(s): 15mm  
Filter(s): None

**Field Drawing**

Low Power Circle: 

High Power Circle: 

**Description and Notes**

BRIGHT, LARGE WITH A WELL DEFINED CENTRAL CONDENSATION  
VERY SLIGHT INDICATION OF TAIL EXTENDING 30' FROM COMA  
TO THE SW.

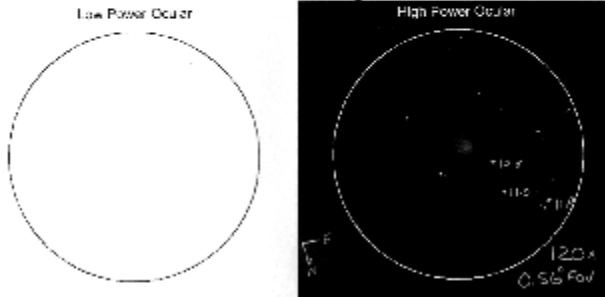


**Observation Log  
and Sketch Template**

Object: 78P Gehrels  
 Constellation: ARIES  
 R.A. 03h 14.54m Dec. +17d 24.28m  
 Listed Magnitude: 10.2 Listed Size: 6"  
 Source: ESTIMATED (10-DOT METHOD)  
 Telescope: 12.5" DS  
 Eyepiece(s): 15mm  
 Filter(s): ORANGE

Observer: MARK S. DEFRANT  
 Date: 11-13-04  
 Time: 03:30 EST  
 Site: N42-282 W83-270 (Peach Mt)  
 Seeing (1-10): 3.5 Transparency (1-5): 5

**Field Drawing**



**Description and Notes**

BRIGHT, LARGE EASY TO SEE, WITH VERY SLIGHTLY ORIENTED  
 TAIL IN A DIFFUSE COMA

face brightness and size are large factors in determining whether or not you will be able to see an extended object like a comet. For instance, a small, high surface brightness comet placed overhead would be considerably easier to see than a large, more diffused (low surface brightness), comet only a few degrees above the horizon.

So, let's get back to the ambitious list of comets I planned on trying to see this night. I like to check Seiichi Yoshida's website for some of the most accurate, up to date and practical information on comets. His website for November 13, 2004 listed, C/2004 Q1 Tucker as 10.4 mag., 78P Gehrels as 10.3 mag., 32P Comas Sola and 29P Schwassmann - Wachmann as between 12th & 13th mag., C/2004 Q2 Machholz as 6.9 mag., and 62P Tsuchinshan as around 12th magnitude, and that puts all of these comets within my reach even if only in theory. Next we need to look at when the best time to attempt finding these elusive objects would be, based on where they are in the sky, and pull charts for those times. After all, comets move against the background stars and a chart pulled for one time would not be as accurate if you were trying to find the comet at a different time. Tucker was near the Andromeda / Pegasus border and only slightly more than 1 degree southwest of the 4.5 mag. Sigma Andromeda. This would be highest in the sky about 21:00 EST, so goes charts 1 and 2. Gehrels and Comas Sola were tucked away in the southern most corner of Aries near the borders of Taurus and Cetus respectively,

with Gehrels being 3.7 degrees west of 4th mag. 5 Taurus and Comas Sola only 1 degree east of the 4th mag. Mu Cetus. They would be best at mid-night, charts 3, 4, 5, & 6. Schwassmann - Wachmann was 2.5 degrees north of omega Pisces and would be best after 21:00 EST, but should be a viable target until at least midnight. With that in mind, I printed charts 7 & 8. The next two comets, Machholz and Tsuchinshan, would not be high enough in the sky to make viable targets until the wee hours in the morning. 01:30 EST for Machholz and 03:00 EST for Tsuchinshan, so, charts 9, 10, 11 and 12 were printed for these two Solar System visitors.

When I plan an observing session as ambitious as this I like to check and recheck all of my equipment and pack everything into my car well ahead of time so as not to forget any essential item, like eyepieces, flashlight, or the wonderful charts I printed. I also like to get to my observing site early enough to get a good spot. On Peach Mt. that can sometimes be a challenge, as there is limited space and only one semi-level area on the hill.

This night John Causland beat me to it, but not to worry, just to the west of that area there is a fairly good spot which would ultimately give me views of some of the rising objects that much earlier. It was very clear and had the temperature been a few degrees higher there would have been many more Lowbrows and guests. Even so, there were still a substantial number of both represented that night. I estimated the public at 75+, Lowbrows 15,

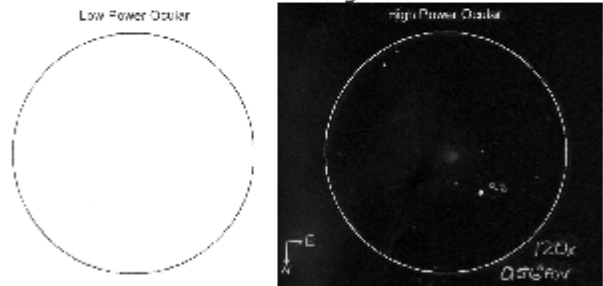


**Observation Log  
and Sketch Template**

Object: 32P COMAS SOLA  
 Constellation: ARIES  
 R.A. 03h 20.04m Dec. +10d 08.567m  
 Listed Magnitude: 12.0 Listed Size: 2.5"  
 Source: (10-DOT METHOD) ESTIMATED  
 Telescope: 12.5" DS  
 Eyepiece(s): 15mm  
 Filter(s): ORANGE

Observer: MARK S. DEFRANT  
 Date: 11-13-04  
 Time: 03:00 EST  
 Site: N42-282 W83-270 (Peach Mt)  
 Seeing (1-10): 3.5 Transparency (1-5): 5

**Field Drawing**



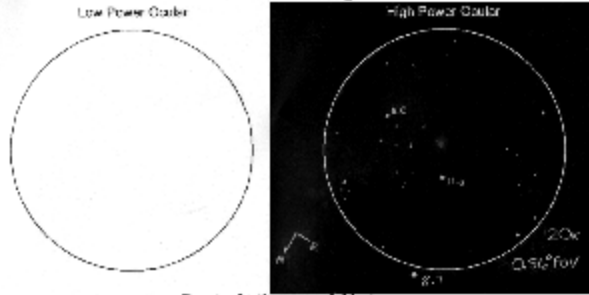
**Description and Notes**

THIS ONE WAS TOUGH! JOHN CAUSLAND & ROBERT VANCE CONFIRMED  
 VERY DIFFUSED, EXTREMELY FAINT, AND CENTRAL OBSERVATIONS NOTES  
 SLIGHT OVAL SHAPE... ABSOLUTELY NEAR MY EQUIPMENT/BANDS  
 LIMITS



Observation Log and Sketch Template	
Observer: <u>Mark S. DeFest</u>	Object: <u>29P Schwassmann-Wachmann</u>
Date: <u>11-14-04</u>	Constellation: <u>Andromeda</u>
Time: <u>01:00 EST</u>	RA: <u>23 h 36m 20s</u> Dec: <u>40° 5' 40" N</u>
Site: <u>AMZ 783 WRS 250 RWA MI</u>	Local Magnitude: <u>2.5</u> Limit Star: <u>30"</u>
Seeing (1-10): <u>0.5</u> Transparency (1-5): <u>5</u>	Source: <u>cometary (out-out debris)</u>
	Telescope: <u>12.5" f/5</u>
	eyepiece(s): <u>15mm</u>
	Filter(s):

### Field Drawing



### Description and Notes

VERY SMALL TRIANGULAR SHAPED 41 STAR NUCLEUS, EXTREMELY  
FAINT. NUCLEUS VANE CONDENSED

which is very good for a mid-November open house. As I started to set up, I noticed a small group of people standing off to one side with somewhat hesitant looks on their faces, not knowing exactly what to do or how to act. Seizing the opportunity to make them feel a little more comfortable and placing myself center stage, I invited them over to see how I set up my telescope. The youngsters in this little group were very enthusiastic and moved right over, asking questions and enthralled with how I turn a 15" cube into a working 12.5" telescope that stands over 70" tall. I fielded the usual questions like, "where do you look thru?" and "how do you know where to point it?" from the kids and "how much does something like that cost?" from the parents.

Once I had all of my equipment set up and the sky grew darker, it was time to show these people some of the "really cool stuff" we like to look at. I have always viewed astronomy as a one person hobby that is as much fun to share with others as it is to relax alone in the peaceful, cool and quiet dark-

ness of the night. As much as I love to perform center stage, entertaining the crowds with tales of gods and heroes, I do also love the solitude of this hobby, alone under the stars with only my thoughts and the occasional chirping crickets.

Ah, enough of this waxing poetics, its time to do some observing! As the crowds moved from scope to scope and the hour moved toward 21:00 EST, I slid my optics toward the area of the sky where my first target lay. First I find sigma Andromeda with my 38mm Erfle eyepiece in place, and then slowly nudge the scope toward the southwest and ... BINGO! C/2004 Q1 Tucker is easily visible as a 6 arc minute, 10th magnitude, elongated fuzzy patch of sky, and a significantly brighter condensed spot in the coma at the northeastern edge would put the  $m_1 = 9.5$  magnitude. A slight contrast difference in the background sky extending an additional 10 arc minutes southwest before fading into the darkness hints of a tail. One down, five to go, and the night was young. As the public and the other Lowbrows all took their turns at the eyepiece, I spent a little time looking over the charts for the next comet on the agenda. 29P Schwassmann - Wachmann should have been my next target but the region of Aries where 78P Gehrels and 32P Comas Sola were lurking was high enough that I opted to try for them next. So once the scope came back to my control, I moved it down first to find 5 Taurus in the low power wide field eyepiece and then slowly slide it back to the west until .. there it was, 78P Gehrels and my second target for the night. Not quite as bright as Tucker but still very easy to see, as similar in size and shape but at least a half of an order of magnitude dimmer overall and with not nearly as bright or condensed coma area,  $m_1$  was estimated to be about 10.0 to 10.2 magnitude. After a few minutes my fellow observers, including Norbert Vance, astronomy professor at Eastern Michigan University, got to see the second comet of the night, I moved the telescope over to mu Cetus and then back to the east about a degree and checked the

## About the University Lowbrow Astronomers

The University Lowbrow Astronomers is a club of Astronomy enthusiasts which meets on the third Friday of each month in the University of Michigan's Physics and Astronomy building (Dennison Hall, Room 130 or 807). Meetings begin at 7:30 PM and are open to the public. Public star parties are held twice a month at the University's Peach Mountain Observatory on North Territorial Road (1.1 miles west of Dexter-Pinckney Road; further directions at the end of the newsletter) on Saturdays before and after the new Moon. The party may be canceled if it's cloudy or very cold at sunset.



field of view chart to find a 9<sup>th</sup> magnitude star that should be about 4.5 arc minutes northeast of 32P Comas Sola. Okay .. Hmmm, nothing in the low power eyepiece, let's pump up the power a bit. Now just to the left and little above that bright star is that something? Try averted vision .. there is something, extremely faint and diffuse over an oval spot about 2.5 arc minutes in size, it is almost imperceptible from the background sky, I need someone else to verify this one. A quick look around and I noticed John Causland nearby so I called him over to check and confirm that what I see is actually there.

After a few moments of checking my charts and the field of view a couple more times John turned to me and said that he too could see an extremely faint comet-like object where I said I was seeing it. Now for those of you keeping track, that is comet number 3. Norbert Vance heard John and I talking about this extremely faint comet, so after a finely tuned scrutiny, he too confirmed that there was definitely a very faint something there. Now, 32P Comas Sola is without any doubt the faintest comet I have ever seen and to estimate its ml by using surrounding field stars defocused to a similar size puts it at 12.6 magnitude. By now it was moving toward midnight and I notice that the area of Pisces that 29P Schwassmann - Wachmann was getting a little lower in the southwest, so I push the scope over in that direction. My overconfidence was at an all time high, but I wasn't too sure about this next comet and after searching in vain for about twenty minutes, that confidence was waning. I knew I was in the right area, so I pushed the power up a little and started my search again. I could see on my FOV chart that there was an 8th magnitude star about 15 arc minutes to the northeast and I could see that star, but where was the comet? Then, just as I was thinking about giving up, there it was, much smaller than I was looking for and surprisingly brighter than I expected. How could I have missed it? A 30 arc second 12.5 magnitude triangular shaped smudge with a very obvious stellar nucleus, I quickly called Norbert Vance over to verify my 4th comet of the night. He commented that he had never seen 4 comets in one night. He was very pleased and complimented both my hunting skills and my equipment. Well, it was only 01:00 EST and I had over an hour to wait before my next comet was high enough in the sky to be seen.

About this time Norbert Vance had gone home, but two late arriving Lowbrows had just shown up. Nathan Murphy and Peter Alway, so while John Causland and Nathan were busy assem-

bling the 18" truss tube Dobsonian, Peter came over and asked me if I would put the Orion Nebula in the eyepiece for him. I slide the scope over and centered the request in the FOV and relinquished the scope for the next 25 minutes to Peter, who proceeded to take out his drawing pad and sketch M42. As he finished up his drawing, I noticed that Saturn had poked its rings above the tree line to the east which means that it was about 30 degrees above the horizon and that makes for fairly good views of the ringed giant. So, I slide the scope over and pushed

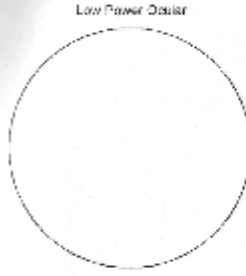
The American Association of Amateur Astronomers  
www.astronomy.com

**Observation Log**  
and Sketch Template


Observer: <u>Nathan S. Lowbrow</u>	Object: <u>32P Comas Sola</u>
Date: <u>11-14-04</u>	Constellation: <u>LEO</u>
Time: <u>02:00 EST</u>	R.A. <u>09h 49m</u> Dec. <u>16° 23'</u>
Site: <u>M42SS W6775D PPSA NY</u>	Labeled Magnitude: <u>12.5</u> Listed Size: <u>50"</u>
Seeing (1-10) <u>2.5</u> Transparency (1-5) <u>5</u>	Telescope: <u>12.5" D/S16</u>
	Eyepiece(s): <u>15mm</u>
	Filters:

**Field Drawing**

Low Power Dealer



High Power Dealer



**Description and Notes**

VERY FAINT, EXTREMELY FAINT, NO CENTRAL CONDENSATION, CONFIRMED BY JOHN CAUSLAND.

the power up over 200x and just enjoyed. Peter came back over, sat right down and proceeded to "hog" my scope for another 15 minutes, but it was okay, I needed to take a little break.

Just before 02:00 EST Peter gave up control of my scope and I again went back to comet hunting. This time it was C/2004 Q2 Machholz lurking in Columba, the Dove, and only 18 degrees above the southern horizon. Now if I am able to find this comet I will have two "firsts" with one observation. The first "first" is observing five comets in one night and the second "first" is actually observing an object in the constellation Columba. That would be pretty cool. I don't know anyone in the Lowbrows that can say that. So let's start by finding M79, a bright globular cluster in the southern realms of Lepus, the Hare. A quick search and M79 was in the bag and now I needed to drop the scope 6.25 degrees southwest and .. WOW! that was easy and boy it's big and bright. When I say big and bright I mean

Machholz compares very nicely to the 7th magnitude globular I just saw, in both size and brightness. Jim Forrester thought that, as bright as it was, he too should be able to find it and after a little time searching Jim recorded his first object observed in Columba. C/2004 Q2 Machholz shows as a bullet shaped coma spanning some 10 arc minutes in size, with a very evident tail stretching northwest some 25 arc minutes. A very impressive comet, which is destined to put on a great show in early January when it skirts the outer

minions of the Pleiades and when this comet is predicted to be at it's brightest. Okay, if you are keeping track, that was comet number 5, and with any luck at all in about an hour comet 62P Tsuchinshan should be positioned well enough to afford an observation by yours truly. Both Jim and I were starting to get a little cold and tired, so I suggested that we go for a bit of a rest for our feet and some heat for the rest of us. For the next fifteen minutes or so, we sat in the warmth of my car talking and resting. Jim indicated that he was encouraged and a little inspired by his success at finding an extended object like Machholz in his 4" refractor and that in the future he would be trying to observe more faint fuzzies.

I love challenging myself and pushing the limits of both my eyes and my equipment, and this night's observations are just another part of an ongoing journey that takes me to the far reaches of the universe and to our own galactic backyard. More than anything, I feel like I have an unquenchable thirst for learning new things and seeing new sights. These are the forces that drive my passion for astronomy. But, there I go again getting all philosophical and such. Let

me get back to observing my 6th comet for this "Long Night of Comets." I told you at the beginning of this article that 62P Tsuchinshan was located in Leo and that meant waiting until 03:00 EST to attempt picking this one up visually with the 12.5" scope. Now, to find this comet, I need to kind of create an equilateral triangle almost directly west of Regulus and eta Leo. That point in the sky was easily 30+ degrees above the eastern horizon and enough above the tree line that I could just make out a few 5th magnitude field stars to help guide me to the right area. Oh, thank the great and powerful atmospheric gods for clear, transparent and dark skies at Peach Mt. this night. Because with a little boost in power and a check of the FOV chart I bagged my 6th comet and confirmed it with John Causland's well tuned eyes. 62P Tsuchinshan was small like Schwassmann-Wachmann and visually dimmer against what I would say was a brighter background that Schwassmann-Wachmann, so estimates of its ml

maybe be a bit skewed. Let's just say my best guess would put it at 12.5 magnitude with a very slight central condensation. There you have it folks, a long winded account of how I saw 6 comets in one night. I know there may be some skeptics out there, so I have included my field drawings from that night and you are more than welcome to ask any of the people mentioned above if they saw the same. I want to thank John Causland, Jim Forrester and Norbert Vance for helping me verify some of the more suspect comets. I won't report it or record it if I don't see it and confirm it!

The American Association of Amateur Astronomers  
www.american-astronomer.com

**Observation Log**  
and Sketch Template

Observer: MARK S DEPREST

Date: 11-14-04

Time: 02:00 EST

Site: N42.283 W83.750 PEACH MT

Seeing (1-10): 8.5 Transparency (1-5): 5

Object: C/2004 Q2 MACHHOLZ

Constellation: COLUMBA

R.A. 05 h 00.4 m Dec. -30 d 12.01 m

Listed Magnitude: 6.9 Listed Size: 10'

Source: IN-OUT METHOD & BRIGHTFIELD MTN

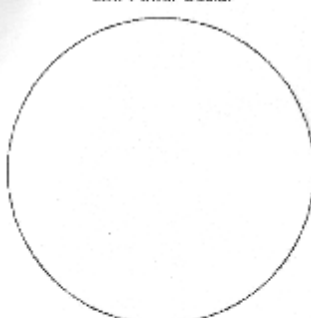
Telescope: 12.5" f/5.6

Eye piece(s): 15mm

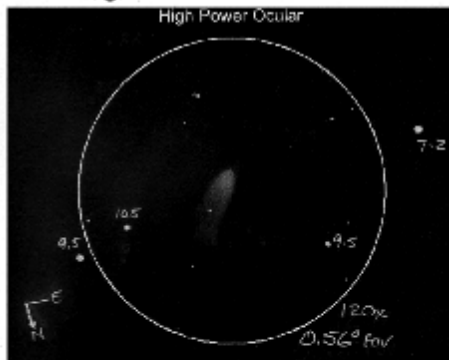
Filter(s): \_\_\_\_\_

**Field Drawing**

Low Power Ocular



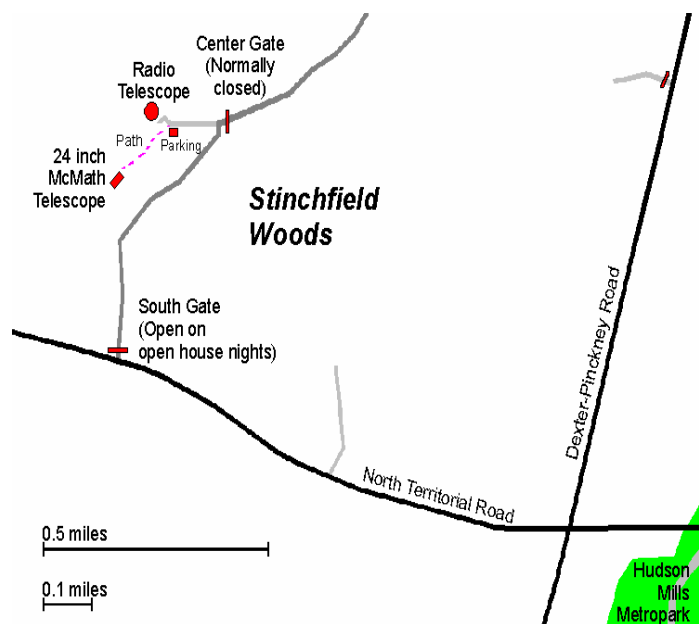
High Power Ocular



WOW! THIS IS THE FIRST THING I HAVE EVER SEEN IN COLUMBA.  
VERY BRIGHT, LARGE, BULLET SHAPED WITH VERY CONDENSED COMA  
STRUCTURE, TAIL EXTENDED 25' NW.

## Places and Times

Dennison Hall, also known as The University of Michigan's Physics and Astronomy building, is the site of the monthly meeting of the University Lowbrow Astronomers. It is found in Ann Arbor on Church Street about one block north of South University Avenue. The meeting is held in room 130. Monthly meetings of the Lowbrows are held on the 3rd Friday of each month at 7:30 PM. During the summer months, and when weather permits, a club observing session at Peach Mountain 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 inch telescope which is maintained by the Lowbrows. The observatory is located northwest of Dexter. The entrance is on North Territorial Road, 1.1 miles west of Dexter-Pinckney Road. A small maize-and-blue sign marks the gate. Follow the gravel road one mile to a parking area near the radio telescopes. Walk along the path between the two fenced in areas (about 300 feet) to reach the McMath telescope building.

## Public Star Parties

Public Open House/Star Parties are held on the Saturday before and after each new Moon at the Peach Mountain Observatory. Star Parties are canceled if the sky is cloudy at sunset or the temperature is below 10 degrees F. Call 4332-9132 for a recorded message on the afternoon of a scheduled Star Party to check on the status. Many members bring their telescopes and visitors are welcome to do likewise. Peach Mountain is home to millions of hungry mosquitoes - bring insect repellent, and it does get cold at night so dress warmly!

Amateur Telescope Making Group meets monthly, with the location rotating among member's houses. See the calendar on the front cover page for the time and location of next meeting.

## Membership

Membership dues in the University Lowbrow Astronomers are \$20 per year for individuals or families, and \$12 per year for students and seniors (age 55/+). This entitles you to the monthly REFLECTIONS newsletter and the use of the 24" McMath telescope (after some training). Dues can be paid at the monthly meeting or by mail to this address:

Kathy Hillig  
7654 W. Ellsworth Road  
Ann Arbor, MI 48103

## Magazines

Members of the University Lowbrow Astronomers can get a discount on these magazine subscriptions:  
Sky and Telescope: \$32.95 / year  
Astronomy: \$29.00 / year

For more information contact the club Treasurer. Members renewing subscriptions are reminded to send your renewal notice along with your check when applying through the club Treasurer. Make the check payable to "University Lowbrow Astronomers".

## Newsletter Contributions

Members and (non-members) are encouraged to write about any astronomy related topic of interest. Call or Email to Newsletter Editor at: John Ryan (734) 662-4188 [allegheny@mac.com](mailto:allegheny@mac.com) to discuss length and format. Announcements and articles are due by the first Friday of each month.

## Telephone Numbers

President:	Charlie Nielsen	(734) 747-6585
Vice Presidents:	Jim Forrester	(734) 663-1638
	Bernard Friberg	(734) 761-1875
	Jim Wadsworth	(734) 529-2766
	Doug Warshow	(734) 998-1158
Treasurer:	Kathy Hillig	(734) 663-8699
Observatory Director:	Mike Radwick	(734) 453-3066
Newsletter Editor:	John Ryan	(734) 662-4188
Keyholders:	Bernard Friberg	(734) 761-1875
	Charlie Nielsen	(734) 747-6585
	Mike Radwick	(734) 453-3066
	Fred Schebor	(734) 426-2363
Webmaster	Dave Snyder	(734) 747-6537

**Lowbrow's Home Page**  
<http://www.umich.edu/~lowbrows/>

## Save the LowBrow Treasury! - by Tom Ryan

Economics is a subject that I mostly stayed away from in College, much to my regret. As a consequence, I fell for Reagan's (and Bush's) "Trickle Down" theory, which Engler copied in his last term in office. Supposedly, lower taxes on people and corporations would free the really important people in our society to hire more people and create more jobs. It didn't work out that way (except for Engler himself), and the result of these policies is the dismal economic jobs market we see today. This theory supposes that the biggest impediment to hiring people is a lack of available cash. Today, most companies are flush with cash, but they are still not hiring. In my own small experience, the only time we considered hiring new people was when the demand for our goods increased. A company would have to be brain-dead to hire people just because they had extra cash.

Fortunately, my education did provide me with the skill to Google information, and when I looked at the historical correlation between taxes and job growth, it seems that high taxes and high job growth go hand in hand. Why might this be? If you're already eating five or six meals a day, there's only so much more you can do to stimulate the demand for food. The government, on the other hand, can tax people and use the money to buy food (even if they give the stuff away to starving Armenians), which creates more demand and creates domestic jobs and more tax revenue. They can tax people and use the money to build weapons systems (morally, a very different choice, but economically comparable, though slightly less efficient), blow them up on a hillside on the other side of the earth, and in doing so, stimulate domestic demand for those items, which really creates jobs (locally, anyway). They can fund the incredibly lazy and undeserving people in our universities, and in return, society occasionally gets something like numerically controlled machine tools, lasers and compact disks, cheap computers, gene therapy and the Internet (and Peach Mountain). Moderate, progressive taxes generally correspond to a healthier, happier population, and if not for this, what's a government for? Well, I suggest you look it up.

This came to mind in the course of a discussion at the last Lowbrow meeting. It was suggested that the Lowbrows raise dues to increase the scope of things we can do. After all, dues were \$20 per year when the club started, back in 1979, and if they had kept up with inflation, they would now be slightly over \$50 per year, but they are not. Since dues and taxes both separate people from their hard-earned money, any move to raise (or reduce) either should be closely examined for its cost-benefit ratio. For that, I suggest that all of you attend the meetings.

Raising dues to provide more services to club members is not our only choice. We could reduce our expenses. The single biggest expense of the University Lowbrows is printing and mailing the newsletter that you are holding in your hands. It has been suggested that the Newsletter can be downloaded from our very excellent web site at virtually no cost to the club and printed on your color printer, which is probably of higher quality than the printers we use at Kinko's.

This option is not for everyone. If you have a slow connection to the web (a download is about 300k), you may prefer to get the Newsletter in the mail. You may like to be reminded of the monthly meeting by the arrival of the physical newsletter. But if you would like to save the club a significant amount of its expenses, you can opt to download the newsletter from the web site. Please email the newsletter editor, John Ryan, at [allegheny@mac.com](mailto:allegheny@mac.com), and let him know that you would like to be moved from the mailing list to the emailing list.



UNIVERSITY LOWBROW  
ASTRONOMERS

Kathy Hillig  
7654 W. Ellsworth Road  
Ann Arbor, MI 48103