REFLECTIONS
REFRACTIONS

of the University Lowbrow Astronomers

November 2001

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-Pinkney 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. For further information call (313) 480-4514.

Two Telescope Topics
(what every ATM should know)
By Tom Ryan

Harry L. Juday Reviews Three Star Atlases
(will they get: "2 Telescopes at Zenith" or will it be: "Don't Unpack your Eyepieces")

November Observing Can Be Great
(don't start packing up for the winter, just yet!)
By Mark Deprest

The Top 11 Reasons Why Mike Huff Observes in the Morning
Plus
Lorna's Views on an Earth Centered Universe

This Month:

November 10th Open House at Peach Mt. Observatory, begins at Dusk … there probably won't be any mosquitoes but Saturn and Jupiter will make their presence known!

November 16th Lowbrow Meeting at 7:30pm in Room 130 of the Dennison Bldg. ...Milton French is scheduled to show his Photos of the June 21, 2001 Total Solar Eclipse

November 17th Leonid Shower / Open House at Hudson Mills Metro Park begins at Dusk …. This is becoming a Lowbrow Tradition …. Catch a Comet (C/2000 WM1), or a "Shooting Star" it may warm your heart, but bring an extra blanket its can get very cold in mid-November.

Next Month:

December 8th Open House at Peach Mt. Observatory, begins at Dusk …. Will Linear (C/2000 WM1) be visible "naked-eye"? It should be well placed in Cetus the Whale.

December 14th Lowbrow Meeting at 7:30pm in Room 130 of the Dennison Bldg. Speaker TBD

December 15th Open House at Peach Mt. Observatory, begins at Dusk …. It might be cold, but the "Gas Giants" will be high in the sky!!!

Telescope Topics

By Tom Ryan

I was visiting a friend of mine, Rob Hubbard, at Kitt Peak several years ago. He was giving my wife and me a tour of the observatories shortly after one of the observatory technicians had been killed by the dome. (It was rotating, he stepped from the main floor into a door to the catwalk, but only half of him made it through.) Rob was telling us that the OSHA safety people had been out afterwards and had ordered many, many safety changes to the building. Halfway through ordering a number of upgrades, which included much increased lighting, the inspector suddenly realized, "Hey! You guys are Astronomers! You *have* to work in the dark!" Rob was shaking his head that some guys get so wrapped up in doing their jobs that they no longer can see the obvious around them.

Being astronomers, we usually work at night. And usually outside. That means that our equipment gets exposed to thermal cycles and lots of water condensation (dew). Little drops of sulfur dioxide saturated water which bridge two different kinds of metals make a battery, and the electron motion then creates an oxidation reaction. It you've ever worked on an old car, you've probably noticed that the fasteners can sometimes be pretty hard to remove because of this phenomenon. Telescope mounts that are rode hard and put away wet can have this problem, too.

The solution is simple. Just prevent the electrons from flowing. This can be done by making our telescope mounts out of materials that have similar electro-negativities (which reduces the voltage difference between the metals), or by placing an electron barrier between the metals. Compatible materials include aluminum and stainless steel, and regular steel and brass. (But not aluminum and brass, etc.) The designers of the McMath 24" went with steel and brass, but most of us will probably use aluminum and stainless. Tables of various metal's electron potential can be found in most engineering books.

Putting an electron barrier between metals is a second choice. I've heard that the builders of Rolls-Royce automobiles place a special waxed paper between the bolted-on body panels. We can use a simpler solution in the form of Loctite. Not only does it keep water out of the contact area, not only does it provide a vibration-proof and controlled release forever and always, but it's use also shows that you have thought about how your creation is going to be used, and that you care.

A VERY USEFUL BASIC STAR ATLAS

By Harry L. Juday

I greatly enjoyed Doug Scobel's fine article on Uranometria in the Sept. issue of Reflections. So, I thought I might offer an article or two on other star atlases that I find very useful.

First to set the stage and put my thoughts in perspective is a short recap of my astro-hobby history. Although I have had an interest in astronomy since I was quite young, I never obtained a real telescope as I always thought they were too expensive. Instead, I got into sailing for a number of years which makes amateur astronomy seem like a real bargain. Hale-Bopp was in the heavens about the time I retired from 39+ years at Ford's, it was the Holidays and my birthday was coming up shortly. I mentioned to my dear wife Anna that I would really like a decent telescope to see the comet and perhaps pursue amateur astronomy. She responded with, "We are going to buy you one." (What a Great Lady!)

Telescopes did not seem to be readily available at that time, locally at least. I made the classic mistake of buying the first reasonably priced one (to my totally astro-ignorant judgment), I could locate, a Celestron 8" Celestar SCT, but maybe more on that experience some other time. I was recommended to also buy Wil Tirion's **Sky Atlas 2000** and another, simpler star atlas, the subject of this review. Both were excellent recommendations The basic star atlas is named (and please do not snicker or smirk, at least yet) "**Seasonal Star Atlas and Glow in the Dark Star Finder**" published by Hubbard Scientific Co. product no. 433, editor/compiler not named. This book has proven to be one of the handiest astro references I own. I use it almost ever viewing session even though I have and use **Sky Atlas 2000**, the **Herald-Bobroff AstroAtlas** (another review in this month's Reflections), **Millennium Star Atlas** and **The Sky**. (I still do not have a laptop and our computer is on the lower level so I do not use **The Sky** as much as I should/could for viewing reference. Probably planning my viewing sessions a little better would help in that regard).

This Atlas is an 11 1/2" x 14", 11 page, fully laminated book containing a simple but adequate Planisphere incorporated into the front cover and

eight, 8"x10" star charts (2 for each of the 4 seasons covering the North Polar region to about +20d on the first chart and +20d to about -45d on the second). One of the major pluses of this atlas are the descriptions given for each Constellation. This takes up 1 1/2 of each of the 2 pages devoted to each season. The descriptions give a short paragraph description followed by a list of wide separation double stars with designations (Struve nos. if applicable), magnitudes, separations and rough locations, Messier objects for each constellation and other objects of interest for naked eye, binocular and small scope viewers.

The charts are gridded for each RA. hour and 10d of latitude. Constellation figures are outlined and boundaries shown. Major stars are shown and identified, with their magnitudes shown to the nearest whole no. Many mag. 5 stars are also shown. Messier objects are located and major double stars identified . NGC objects, viewable with binos &/or small scopes are shown and identified. The Milky Way is shaded in and the Ecliptic shown. An added minor item is the inclusion of the Asterisms "The Bull of Poniatowski" and "Gloria Fredrica". Oh, and as for the "Glow in the Dark" part, I've never noticed it.

There is also some basic introductory material at the front and back of the atlas describing use of the atlas and Planisphere, Venus, Mars Jupiter and Saturn Constellation locations thru 2004, some basic observing and telescope tips, a seasonal list of stars to use to adjust manual setting circles, a list of the Constellations also indicating those only partially shown and not shown, the brightest and nearest stars, and a description of star and galaxy types.

The book concludes with a brief explanation of star characteristics including size, color, magnitude, mag. scale spectral classes with major class characteristics, velocity and proper motion. And all of this can be had for the grand price of around $20.00 at most Astronomy stores (I got mine at Riders). As the atlas is fully laminated, it can stand up the dewings we often get. I have used mine, mainly outside, since early 1997 and the chart pages show no degradation from the weather. The Atlas does have one major fault, in my opinion, and that is the binding method. The charts are held together with a plastic strip containing 24 integral rings that fit thru 24 slots in each chart. These have a strong tendency to come loose from the charts and it is a pain in the lower regions to put them back in. After a couple of years of use, the ring on mine broke and I punched a couple of holes in each chart and fastened them with a key ring. These eventually broke thru so I recently reinforced each page edge with reinforced packing tape, repunched 3 holes in each chart and fastened them with loose binder hooks (available at office supply stores) that are hinged and fasten together by friction-hooking. This appears that it will last for a while.

I very highly recommend this Star Atlas for all beginners and any other amateur astronomer who may need a quick refresher on where to find some of the major items when they go out viewing. I also find this volume very useful for teaching/showing non-astronomy people what to look for, where to look at or where the object I am showing them is located, in relation to the rest of the sky. When asked "How do I get started in amateur astronomy? What telescope should I buy/" I always answer "Don't buy any telescope yet, get a pair of binoculars, this Star Atlas, go look at the sky, and if you are still interested, visit your local Astronomy Club, preferably Lowbrows. Go out to Peach Mt. or come to my place on a good viewing night and try looking thru different scopes before you even think of buying one, or you will probably soon decide that you bought the wrong telescope, as many others have, including myself.

THE HERALD-BOBROFF ASTRO ATLAS

By Harry L.Juday

I do not know how many club members have, use, or are familiar with this star atlas. It is one that I find very practical to use, prompting me to write this review.

A MUCH shorter "rave" review of this star atlas can be found at the Astronomical League's "Reflector Book Review" page on the web at www.astroleague.org/al/bbokserv/obsgd/rev98081.html.

This is a 1 vol. multi scaled atlas containing 214 charts, divided into 6 sections (A thru F) ranging from general distribution of galaxies, Messiers, etc. to detailed charts on the most popular and densely crowded areas of the sky.

The AstroAtlas was created by David Herald and P. Boborff of Canberra, Australia and published in 1994 by HB2000 Publications, Woden, 2606, A.C.T. Australia.

This is a large 12 1/2" x 16 1/2" laminated paper covered volume with a 32 double wire ring binding which allows the atlas to open flat and seems to be holding up excellently.

The chart pages are 12" x 16 1/2", printed on a heavy wt. paper that takes dewing fairly well, even though they are not laminated.
The charts are preceded by a 19 page introduction and explanation section with well detailed descriptions of each chart series, symbols, references, etc.
The charts themselves are 14" tall and vary between 9 1/4" and 10+" wide at the widest points, excluding polar regions which are (you guessed it) round. The charts are tapered toward the poles as required by sky position. They are arranged in descending RA . order from left to right with the first and last chart in each series containing adequate overlap of area.
There are 12 "A" Series charts covering the whole sky and generally showing distribution of included objects by classification.
There are 48 "B" Series charts, arranged in 3 separate 16 chart sets, "B", "BS", and "BM". They are based on "The Yale Bright Star Catalog" showing all stars down to visual magnitude 6.5 and 641 additional YBSC stars between vis. mag. 6.6 & 6.9
Each chart covers a large area of sky, 64d in declination and 6 hrs. in RA. They are arranged so that +60d dec. to -60d dec. charts of the same RA hrs. appear on opposing pages.
The "B" series is intended for quickly locating the brightest stars and non-stellar astronomical objects. The "B" and "BS" charts are identical except that the "BS" charts are presented with South up. The "BM" charts contain stars only with the vis. mag. given for each star shown. The primary purpose of this is for judging the transparency of the sky to the naked eye.
The 94 "C" charts are the workhorse of this volume. They plot all stars thru vis. mag. 9.0 and non-stellar objects thru vis. mag 14.0. They are shown in a uniform scale and except for polar regions have grid lines every 3d in dec. and 12min. in RA. Additionally the sidebars show alternate heavy/light lines every 1d dec. and 4min. RA. Each chart page shows the star mag. scale in one of the margins.
Position angles are shown for double stars and variable stars indicted. All major non-stellar objects are shown with common symbols. Where known, the orientation and relative size of each galaxy are shown to scale
Bright and Dark Nebula however, are shown with box and diamond shaped figures, one of the major faults of this atlas in my opinion.
The 42 "D" charts cover crowded areas of the sky. Their boundaries are shown on the "C" series charts with a light gray borderline and location (D 27, etc.) They are of varying scale to accommodate the density of the area and show stars thru vis. mag. 10.0 except in galaxy fields where it is 11.5. All non-stellar objects are shown thru vis. mag. 15.0. Object identification is limited to the brightest items.
The "E" & "F" series of charts show mostly far Southern regions , Magellanic Clouds and Eta Carina (this is an Australian published star atlas) except for the Virgo Cluster area of chart "E" which shows stars to vis. mag. 11.0 & non-stellar objects to vis. mag. 15.0.
In all, I have found this to be a very useful one volume star atlas that takes over where "Sky Atlas 2000" leaves off, but is not as detailed as "The Millennium Star Atlas". And when searching for, or identifying objects, I usually use them in that order, depending on the object and how fast I find or identify it. As I almost always view from my home, I can have this luxury, however, for taking one volume into the field, at this time I would choose the AstroAtlas (yes, I have ordered the new Uranometria 2000.0 and Field Guide, so I shall see how they compare).
This is not an inexpensive book, the current cost is $89.95 plus $8.00 s&h from Lymax Astronomy.
For those who may be interested:
Lymax Astronomy
13008 E. US 40 Hwy.
Independence, Missouri, 64055
(888) 737-5050 (toll free)
e-mail lesa@lymax.com

SAVE YOUR MONEY ON THIS ONE!!!

By Harry L. Juday

It well may just be me, but following is a short review on a star atlas I STRONGLY recommend you do not waste your money buying, even a cheap used copy.

THE PHILIPS COLOR STAR ATLAS - EPOCH 2000

by John Cox and Richard Monkhouse, published by George Philip Ltd., in 1991, London, England.
This is presented as an atlas about star color. It is a large 11 1/4 x 15 1/2 40 page paper covered volume.
The reference material on star color is very basic and certainly not worth obtaining this book for.
For me, the main problem are the charts. There are 20 major charts, to cover the whole sky, 2 half book general Constellation position charts arranged around the Celestial and Galactic Equators and 12 small area charts showing major stars in selected Constellations/

areas.
The charts seem crudely executed. (The book states they are computer generated, but does not say from what sources. They have dot grid lines every 10d dec. and 1 hr. RA, with all names and identifications hand lettered in.
The background color is blue, the Milky Way white. Stars (to vis. mag 6.75) and non-Stellar objects (some dimmer) are shown in there primary colors and sized for apparent mag.
I have tried using this atlas and found it very confusing for locating and/or identifying almost anything due to the colors.
And all of this can be had for $19.95 U.S.
Q.- Okay, dummy, so why did you buy it?
A.- I had just gotten into Amateur Astronomy and didn't know any better.
Q.- Well, why are you bothering to tell us about it.
A.- So someone else won't waste their money like I did. Also to warn you that after seeing this book, I would be very leery of any item from this company, if in fact they are still in business.

Top 11 Reasons Why its Best to View in Early Morning

By Mike Huff

11. Less people up to see you shoot out that streetlight.

10. If cloudy **Home Depot** is always open.

9. If it's a bad morning for viewing **Meijer's** bottle return line is short.

8. Less light pollution from other houses.

7. All the other Lowbrows headlights aren't on.

6. The sky is less busy.

5. Less jet trails.

4. You know when your kids come in too late.

3. When you view the Orion Nebula it's not cold like winter.

2. No @#%*ing mosquitoes around because the Lowbrows fed them all.

… and the number 1 reason ...

Bernard always brings back my eyepieces at 3:00 am.

More Telescope Topics

By Tom Ryan

Paint. In Clifford D. Simak's excellent short story, "The Big Front Yard", we encounter advanced alien traders whose alienness is evident by the fact that they have never invented paint. In our own world, paint is so ubiquitous that we rarely think of it, other than to notice that our houses could use another coat, or to wonder what the car companies were thinking when they produced *that* shade. A deep thinker about paint might delve into it's moisture permeability, or it's psychological effect on the viewer, but since most astronomical equipment is made from rust free materials, and most astronomers don't pay any attention to things that don't last at least a few thousand years, astronomers end up looking at paint from a completely different perspective.
Roger Tanner, in Tucson, Arizona, made this clear recently when he and I were discussing the color to paint his observatory roof. I said that I remembered reading in ATM II or III that stellar observatory domes were painted white, and solar observatories were painted silver, but I couldn't remember why. He replied:

"On the white roof, Here is what I have learned from the people designing observatories around here and in my radiometry class.

Aluminum absorbs only about 5% of incident visible radiation, reducing the large heat input. Typical white paint absorbs about 8-10% so it will absorb more radiation. When these objects heat up they radiate in the 10 micron range and the white paint has a emissivity of about 90% (it is effectively black at 10 microns) while aluminum is about 2%!. While this means a reflectivity of 98%, great coating for an IR telescope, only bettered by gold, it isn't going to radiate away much heat. What happens is the aluminum gets hotter since it can't radiate heat away. More heat would get carried away with convection cooling with aluminum, this is what limits

the temp. Aluminum roofs around here are much hotter than white roofs, but not as bad a black asphalt roof. That is also why a chromed metal door handle on a black car can get much hotter then the paint on a windless day. Temperature is controlled on a windless day by
IR emissivity / Vis absorption ratio.

Problem is at night, the white domes radiate away their heat to a 3 degree Kelvin sky through a 180 degree Kelvin atmosphere; they actually cool below the air temp. Then the air next to the dome cool off and rolls off the roof into the slit and causes seeing problems. The aluminum dome would be good because it would not cool off at all and stay near air temp.

On the WIYN telescope, they went with a different solution. They used aluminized mylar on an insulating foam-on-steel structure. The aluminized mylar is mylar side out, this gives it the low absorptivity of aluminum during the day in the solar peak at 0.5 microns, and the mylar is transparent at this wavelength. The mylar is mostly opaque at 10 microns (with an emissivity of like 0.4) and so the roof can radiate well and it carries the heat away from the aluminum. They choose the thickness of the mylar to get this emissivity. Also the mylar is thin enough not to isolate the aluminum from being cooled. Then at night the emissivity is not so high that it cools and has cold air rolling off the roof. The very low thermal mass of the aluminized mylar means the building cools off very rapidly at night. I think that my be why the Desert Storm Shield works to keep a scope cool during the day also. If you just wrap the scope in aluminum, it can get pretty hot unless there is a good breeze to keep the convection going. They said the only down side is the mylar will require replacing in 5-8 years. This is not that bad as a white dome needs repainting about this often. Aluminum domes don't need anything. Maybe solar observatories are cooled from the inside with convection? The McMath solar telescope on Kitt peak is painted white.
That is why I choose white, even though it cost $700 over just galvanized steel. Galvanized steel is more absorbent than aluminum and more emissive, but it still gets hotter than white paint. Since my
observatory will be in another building, I won't have problems with the cold air coming off the roof. I have painted the roof of my present observatory with a local paint called KoolKote. It is loaded with barium sulfate or something like that to give it the lowest visible absorptivity; around 6% when new. It is also very black in the IR, like 94% emissivity. The door handles to the observatory are often too hot to touch during the day, I just pull the door open with the key. But the roof was just as cold or hot as the air. The sides of the building are painted a very light tan, almost white. They are usually warmer than the
roof even though the roof is getting the sun at a more normal angle."

Roger's insight into the use of paint is, like most of his thoughts, both informative and practical. Did you notice that Ford is having a much tougher time of it since he left them to work on Mars landers? Well, their loss is our gain.
"Paint. It's not just for looking at any more."

In the Skies

By Mark S Deprest

Its Sunday morning, and the day after a rather "visually poor" open house, (October 20, 2001). I'm sitting at my computer, checking some of my astronomical software for the answer to a question that Chris Sarnecki asked me, last night.
I had come to the open house with three very specific goals for the evening's viewing session, (none of which were accomplished due to the cloud cover) one of these goals was to observe the latest Linear comet to make it to observable status for amateur astronomical equipment. Linear (C/2000 WM1) should be about 9.6 magnitude and brightening to 4.7 magnitude as it moves closest to earth on December 1, 2001 and makes its way to Perihelion on January 22, 2002. A list of the orbital elements as I have them will be provided at the end of this article.
Linear (C/2000 WM1) is currently making its way through Perseus and then Aries, Pisces and finally Cetus before moving into the southern skies. On December 1, 2001 it will come to within 47.5 million kilometers of earth, and be pretty well placed some 30 degrees above the horizon in the Southeastern sky at 20:00 local time.

On November 17th, the night of our annual Leonid Meteor Shower/Storm party at Hudson Mills Metropark, Linear (C/2000 WM1) should be about 6.7

magnitude and visible most of the evening. At 20:00 local time it should be just a little over 3 degrees southeast of Algol in Perseus.

As we look forward to the November 17th event we should keep in mind that this is a great opportunity to show the public many on the night sky's finest spectacles. A thin crescent moon sets by 20:14 and may show a great deal of "Earthshine", Neptune, Mars and Uranus are all still visible until 23:16, 23:56 and 00:30 respectively. Saturn and Jupiter rise at 19:07 and 21:17 respectively and should be well placed most of the evening. Jupiter's GRS (Great Red Spot) should transit at 23:50, Saturn's glorious rings and its many faint moons are always a crowd pleaser. There are many other wonderful sights in the night sky and we should do our best to show them off. The Andromeda Galaxy trio (M31, M32, and M110) make a beautiful low power wide-field sight. The Double Clusters in Perseus (NGC 869 and NGC 884) are two of the finest examples of open clusters in the sky. The Pleiades and the Hyades are spectacular in binoculars, and can be a good test of ones eyesight and the evening's clarity. Can you count 7 stars in the Pleiades? Let's not forget the main reason for the event … to see a fabulous meteor shower, and the current projected predictions are for a very good show!!!

So, what is the point to this article? Well, maybe there isn't any one real point, but to say just because the temperature is dropping there is no reason to put astronomy on the "wait till it warms up again" list. There is still a lot of astronomy left for this year. So many stars, so little time!

Here are the orbital elements for:
Linear (C/2000 WM1)
Perihelion distance 0.5553910 AU
Eccentricity 1.0002670
Inclination of orbit 72.5508000 degrees
Argument of perihelion 276.7703000 degrees
Long. ascending node 237.8971000 degrees
Date of perihelion: JD 2452297.1837 (22 Jan 2002 16:24:31.6)
Absolute Magnitude 6.5
Slope Parameter 4
(Finder Chart on page 8)

THE PTOLEMAIC WAY TO GO

By Lorna Simmons

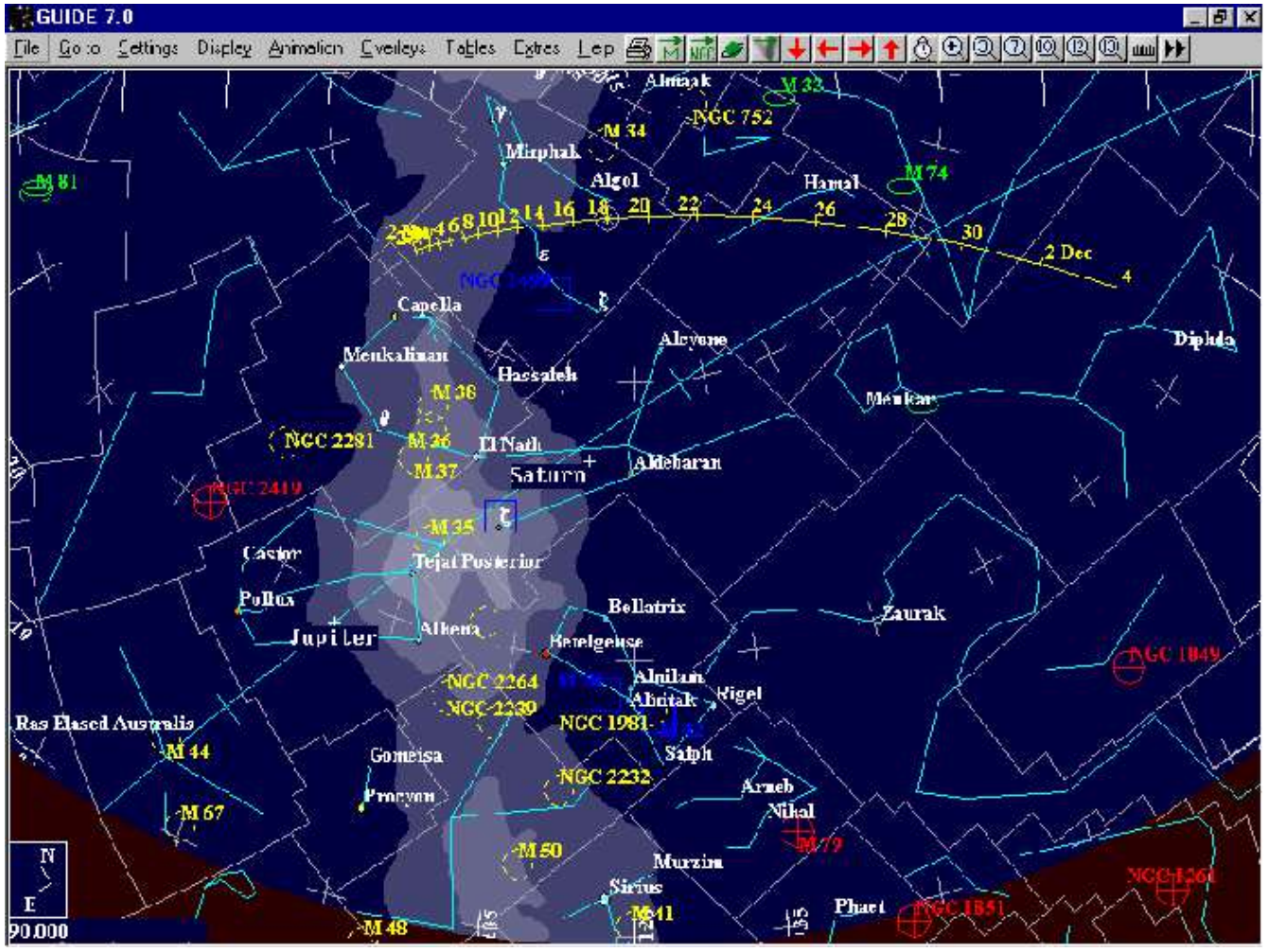
When you Lowbrows venture out to view the magnificent nighttime or daytime sky (anywhere, except in Michigan, of course), you need to wear your Ptolemaic Magic Glasses to find the real positions of the sparkly things out there -- no Copernican stuff for you! The cosmos, obviously, as anyone can see, is eternally wheeling overhead before your eyes with the constellations wafting by as they slowly come into and out of your view--except, of course, the circumpolar constellations which, simply, are up there, "running around in circles, getting nowhere" (as an old, before-your-time, song goes). The extended and revised Copernican-based way of viewing the Universe is much more complicated and seems completely unusable for anybody's simple observing pleasures.
On the other hand, all of us today (with the exception of Geocentrist goofies) know that everything in the Solar System is gravitationally attracted to everything else in the Solar System, and all of the bodies in the Solar System, in turn, are gravitationally attracted to, and revolve about, our Sun. We are also aware that our Sun, in turn, gravitationally travels in its lengthy elliptical journey, safely at a great distance of 8500 parsecs (pc) from the central black hole of our very own Milky Way (a/k/a The Galaxy). In addition, we are knowledgeable about the globular clusters, each in their own paths that randomly revolve around the Milky Way in its galactic halo. We also realize that some nearby less-massive galaxies, the Large and Small Magellanic Clouds, the Leo Dwarf Galaxy, etc., are locked into a stately gravitational dance with the Milky Way, which, in turn, moves in a gravitational waltz with the other galaxies in the Local Group of Galaxies. Then again, it does not stop there. Astronomers and cosmologists realize that our Local Group of Galaxies is gravitationally attracted to other large galactic clusters, such as the Virgo Cluster, making super-galactic clusters. These immense super-galactic clusters in our Universe have been measured (using Type 1a Supernovae as "standard candles") as accelerating away from all other super-galactic clusters in our Universe (sadly, in one fell swoop, throwing the Big Crunch and the Steady State universes into the theoretical cosmological trash can).

While all this glorious stuff at present is tentatively thought by many to be the evolutionary state of our universe, it makes absolutely no sense to attempt to calculate the positions against the sky of the various celestial objects while using the revised and cosmologically-extended Copernican system, because everybody instinctively knows that the celestial objects are definitely circling around us, right over our heads. Look up and watch it happen. Do not let anybody tell you otherwise. As the saying goes, seeing is believing!

So, forget about the Big Bang Nucleosynthesis (BBN), the Cosmic Microwave Background Radiation (CMBR), the BOOMERANG and the MAXIMA data, dark matter, dark energy, quintessence, lambda, the accelerating universe, etc.

When you are out there with your expensively and supremely overloaded, unquestionably extremely heavy (but nevertheless magnificent) telescopes with all of the fabulous doodads to complicate your viewing pleasures (which sometimes lead to bursts of purple profanity from time to time), remember to throw out all astronomical information about the true positions and movements of the celestial objects. Trust your own eyes and your charts and vote for Ptolemy's long-discarded system. You cannot go wrong. Would anybody ever attempt to attack the Messier Marathon in one night in any other way?

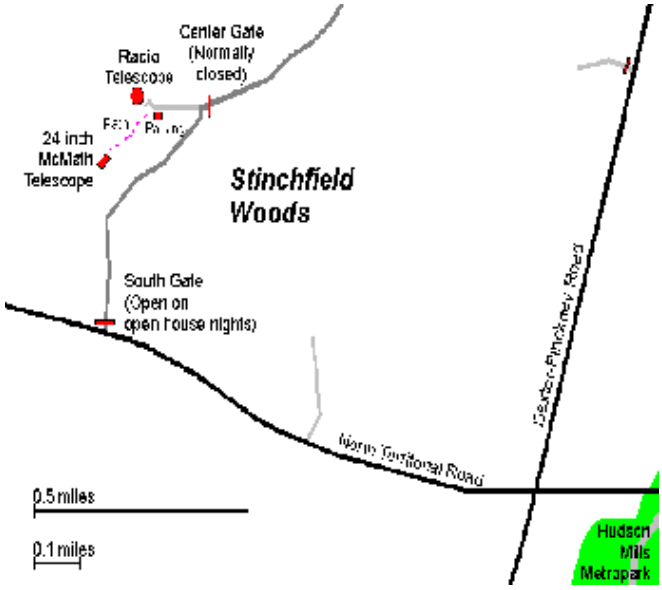
Of course, in Michigan, we will never know for certain about any of this, because viewing the night sky around the time of the New Moon is a much wished for, seldom fulfilled, pleasure. Sigh!



This Chart was created using Guide 7.0 and shows a 90 degree field of view looking East-Southeast (120 degrees azimuth). The chart shows what the sky should look like on the night of November 17th / 18th at midnight local time. Lets keep our fingers crossed for some nice clear skies and a Leonid shower (storm?) to remember. Comet C/2000 WM1 should be about 6.5 mag.

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 480-4514 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 to the club treasurer **Charlie Nielsen** at the monthly meeting or by mail at this address:
6655 Jackson Road #415
Ann Arbor, MI 48103

Magazines:

Members of the University Lowbrow Astronomers can get a discount on these magazine subscriptions:
Sky and Telescope: $29.95 / 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 E-mail to Newsletter Editors at:
Mark Deprest (734)662-5719 msdpressed@mediaone.net
Bernard Friberg (743)761-1875 Bfriberg@aol.com
to discuss length and format. Announcements and articles are due by the first Friday of each month.

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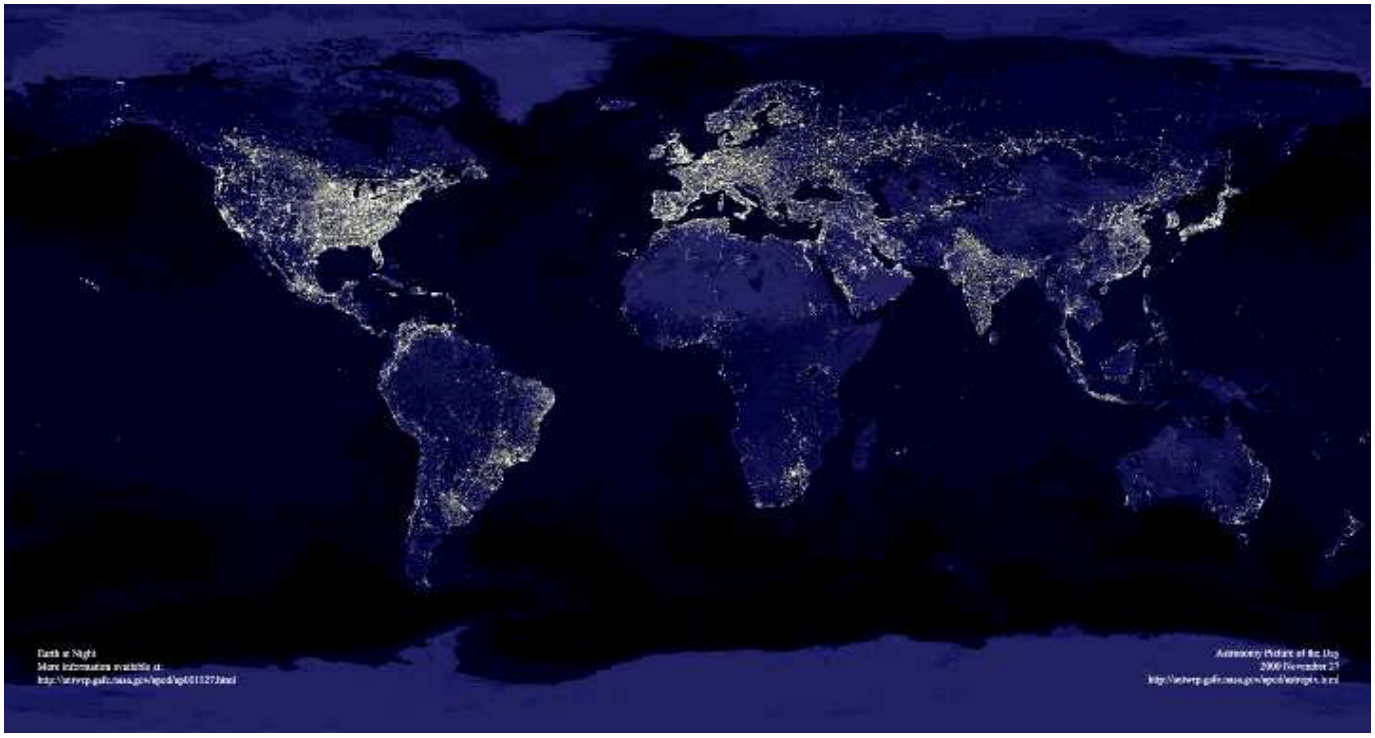
Lowbrow's Home Page:

http://www.astro.lsa.umich.edu/lowbrows.html
Dave Snyder, webmaster
http://www-personal.umich.edu/~dgs/lowbrows/



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