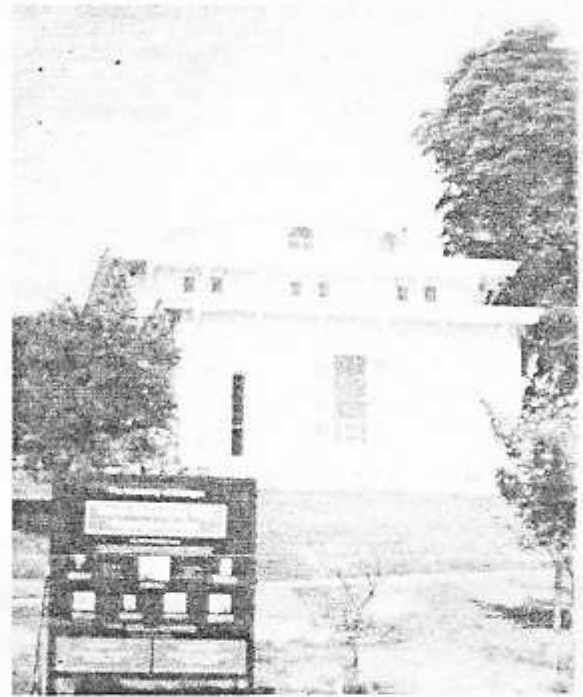

Reflections *אנויטורס* of the University Lowbrow Astronomers

October, 1998

The Detroit Observatory used to be the Lowbrow's old stomping grounds for those of you old enough to remember. April, 1994 was the last time the Lowbrows had a regular meeting there. You have read about the renovation of the Detroit Observatory in the December, 1995 and October 1997 *REFLECTIONS*. Now hear about the story first hand as we welcome Dr. Patricia S. Whitesell, Project Manager for the renovation, as she presents "The University of Michigan Detroit Observatory: - Its History and Restoration." Please note the this presentation will occur in Room 182 of Dennison Hall - that's the large Auditorium in the low building in front of the Physics and Astronomy Building. Photograph of the renovated Detroit Observatory by Mark Deprest.



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 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 is canceled if it's cloudy or very cold at sunset. For further information call (313)480-4514.

This Month:

October 16 - Meeting at Dennison Auditorium - Dr. Patricia S. Whitesell presents "The University of Michigan Detroit Observatory: - Its History and Restoration."

October 17 - Public Star Party at Peach Mountain Observatory - Who will spot Comet 21P/Giacobini-Zinner in Ophiuchus at +/- mag 9.8 ?

October 18 - ATM Group - Mtg time & location TBD

October 24 - Public Star Party at Peach Mountain - Saturn is one day past opposition.

Next Month:

November 14 - Public Star Party at Peach Mountain Observatory - Jupiter & Saturn high in the southern sky.

November 17 & 18 early am - LEONIDS METEORS WATCH ! - Possible stormy weather; meteor storm that is. More info from B. Friberg on this BIG event to follow!

November 20 - Meeting at 807 Dennison - Speaker TBD

November 21 - Public Star Party at Peach Mountain Observatory - Comet Giacobini-Zinner at perihelion - mag 9.8

November 22 - ATM Group - Mtg time & location TBD

The University Lowbrow Astronomers' Officers Meeting

September 18, 1998 18:00 EDT

Held at "The Brown Jug"

Submitted by Mark Deprest

Officers in attendance:

Mark Deprest, President

Lorna Simmons, Vice-President

Dave Snyder, Vice-President, webmaster

Paul Walkowski, Vice-President

Bernard Friberg, Observatory Director, Newsletter Co-Editor

Chris Sarnecki, Newsletter Co-Editor

Fred Shebor, Observatory Key-Holder

Officers unable to attend:

Doug Scobel, Treasurer, Membership Chairman

The purpose of this meeting was to discuss the over-all state of the club and how we, as your elected officers, can meet the needs of the membership. It was unanimously agreed, by the officers, that the over-all state of the club is VERY HEALTHY and has an active membership.

Topics discussed:

University affiliation and club issues. Bernard Friberg agreed to check into this area further.

Club financial liabilities and should the club incorporate as a non-profit organization. Chris Sarnecki and Mark Deprest are working on this topic.

Reduction of membership rates for seniors age 55 and older to \$12. Proposed at the meeting, voted on and ratified unopposed by the members in attendance.

Proposal by the officers to have the Club become a member of the International Dark Sky Association. Paul Walkowski agreed to find out the particulars on this topic.

To help reduce the burden of the newsletter editors, a proposal to include the Abrams Planetarium Sky Chart and Calendar a regular feature. This is a two page document that is produced by Michigan State University Abrams Observatory. Chris Sarnecki is looking into the particulars of this.

It was agreed by the officers that a one year subscription to *Reflections* be given to any non-member speaker as our way of saying "Thank You" for your presentation.

A number of other suggestions were also presented to help reduce the monetary surplus we as a club are

currently experiencing. The purchase and installation of a working CCD or video camera system for the 24" McMath. To be used for club member imaging archives and public open house viewing. New or updated "Lowbrow accessories" such as: hats, T-shirts, golf shirts, sweatshirts, etc...

How to Do an Effective Web Search.

by Dave Snyder (dgs@umich.edu)

Finding materials on the web is rather similar to the process of finding a book in a library. A large library may have millions of titles, yet it is possible to locate the information you need if you have a strategy. A similar approach is needed to find information on the web. Unfortunately finding things on the web is a little more tricky than finding things in a library; but once you get the hang of it, it isn't that hard.

Terminology

Before I continue, I will define a few terms. Note some of these definitions are not universal. Do not be surprised if you see usage that conflicts with these definitions.

Search Engine - A search engine is a list of web pages maintained by a computer program called a robot. A robot periodically scans for web pages to add to its list. Each robot does this in a different way.

There are many search engines such as Alta-Vista, Excite and so on. I prefer Alta-Vista. In the past Alta-Vista has done a better job of finding the web sites I wanted than other search engines, however your experience may be different. Generally it is a mistake to rely solely on the search engines that you may find predefined within your web browser or the first search engine you may find. Doing so will prevent you from exploring other, possibly better, search engines.

Search engines are rather simple-minded. They often return more information than indices (see below), but there usually is much more noise in that information. Search engines usually do better than indices if you have a complex query. However in some cases it is better to simplify the query and use an index rather than persisting with a complex query using search engines.

Index - A list of web pages maintained by real live breathing human beings. By far the most extensive index is Yahoo, <http://www.yahoo.com>.

Some indices are simply a list of web pages and others will prompt you for a search request. In either case, a good index often will give better results than a search engine for simple queries. While the number of pages returned is smaller with an index than with a search engine, each page is more likely to be a useful page. On the other hand, the number of categories in most indices is comparatively limited. So a web site that has pictures of Mars, Jupiter and Saturn might be classified as "Planet Images" and you might find it under planet or image but probably will not find it under mars, jupiter or saturn. This fact must be kept in mind whenever you use an index.

URL - the address you need to locate a web page, such as <http://www.astro.lsa.umich.edu/>

Web Browser - software available for most computers that allows you to look at web pages. The most common web browsers are Netscape Navigator, Netscape Communicator and Microsoft Internet Explorer.

Web Server - software that listens for requests from web browsers and responds with web pages. All web sites have a least one web server which is usually left running 24 hours a day.

Simple Queries

For your first attempt you must select an index or search engine, remembering the strengths and weaknesses of both. However be prepared to switch as you continue your search.

If your request can be described in one word, the request is a simple query. Here it is best to start with Yahoo or another index. If you do not get the results you want, then and only then should you consider switching to a search engine. The reason for this is easy to understand. Search engines can give thousands of pages for simple queries. In a futile attempt to be helpful, they often list the pages in order of relevance. However, in most cases this is no better than placing the pages in a random order. So you are left with a long list and few clues as to which pages are useful and which ones are not useful.

When expressing the request, there are a few guidelines that will improve your results. For nouns it is generally best to use the singular (for example use "planet" not "planets"). However for nouns with an irregular plural, you may need to try two searches, one with the singular and one with the plural (for example

"observatory" and "observatories") or you may need to express this as a complex query. For all words, it is generally best to type the word in lower case. Use galaxy, not GALAXY.

Two Word Queries

A slightly more complex query is a two word query. This is phrase that requires two words; such as "binary star". These are cases where an index and a search engine might both be useful.

For the first example, I will use Yahoo to look for pages on binary stars. The request should be typed in quotes

"binary star"

Yahoo will return all web pages that have "Binary Star" or "Binary Stars" in the category name, but excludes categories such as "Hollywood Star", "Binary Code" and "Stars and Binary Systems." Yahoo returned 14 web pages for this query.

For the second example, I will use Excite to look for pages on binary stars. Type the request without quote marks:

binary star

Excite returns 874,968 pages (or at least I did when I just tried it). The vast majority of these have nothing to do with astronomy. It includes pages that mention the word binary but do not mention the word star and vice-versa. As was the case for simple queries, the pages are ordered by relevance. However, even though the order leaves much to be desired, thankfully it places the ones that mention both words first. Hence you don't need to look through all 875 thousand pages; just look at the first few and if you are unhappy, refine the search.

Complex Queries

All other queries should be considered complex queries. In general as queries get more and more complicated, indices are less and less useful. Unfortunately not all search engines use the same syntax to express queries. The following steps do not work on all search engines.

For both Yahoo and Alta-Vista, you can give a list of words and use + to indicate a word that must be present and - to indicate a word that must not be present. For example:

+astronomy +space -ufo

finds pages that mention astronomy and space and which do not mention UFOs.

A useful trick which works with Alta-Vista is to add the string

url:.edu/

to the query. This restricts the query to sites that have .edu/ in the URL. In other words, only web pages from educational institutions will be selected. For example:

+astronomy +space -ufo url:.edu/

This removes commercial sites, effectively weeding out a lot of junk from the results; it probably will remove a few useful sites in the process, but hopefully not too many. The notation for a complex query varies, you should determine the notation a particular search engine expects before attempting a complex search.

Refining the Search

At this point you will have one of the following:

- A null result (no web pages at all)
- An inadequate result (too few web pages)
- An excessive result (too many web pages)

If you have no web pages or too few web pages, you need to expand your search.

- Pick a broader topic (instead of mercury try planet).
- Switch from an index to a search engine.
- Pick a different search engine.
- Try a similar word (moon instead of lunar, jupiter instead of jovian).
- Try both singular and plural of the word (if it is a noun). (planet tends to bring more web pages than planets, but that isn't true for all search engines).

If your result includes more than a hundred or so (don't be surprised with a search result of several thousand), you may wish to refine your search. If you decide to refine your search, you have several options.

- Switch search engines.
- Use an index rather than a search engine (if you do this, you probably will also need to simplify the search query).
- Use a more complex query.
- Use narrower terms (jupiter instead of planet).

Some search engines provide a form marked with "refine your search" or something similar. The way these work varies, but you can try it.

Of course you might just live with a huge result (in many cases you have no choice) and scan through the list of URLs looking for a few good ones out of the many that don't meet your needs.

How to interpret the URL

When you have a list of web pages, for each page there is a URL and a description. Obviously the description will help you decide if this is an interesting page, but you should also look at the URL itself. It contains information which tells you something about the site. For example lets examine the following URL

<http://www.astro.lsa.umich.edu/Public/lowbrows.html>

The first part (http) is the "protocol". While http is the most common, you will sometimes see other protocols.

The next part (www.astro.lsa.umich.edu) is the computer name of the web server.

If this ends in .edu, .org, .gov or .mil this is a non-profit, educational or government agency. Such sites are not trying to sell anything and usually are good sources of information.

If this end in .com or .net it is usually a commercial site. Note: there are exceptions. In particular many .net sites are non-profit organizations devoted to internet development. Some commercial sites, such as aol.com, provide web pages for individuals, so an aol.com URL might be a web page set up by an individual and not by AOL itself. These sites are generally not good sources of information, but there are numerous exceptions.

If it ends in .us, this usually means it is part of a state or local government such as a public school or library.

If it ends in a two letter abbreviation other than .us, this indicates the site is located in a country other than the United States (for example .de for Germany or .fr for France).

The last part (Public/lowbrows.html) is sometimes omitted and specifies a specific file on that web server. If it begins with a tilde (~), it generally indicates the web site is broken into directories, each of which is maintained by a different person. So ~abc is probably maintained by a different person than ~xyz.

Summary

By understanding a little about how search engines, indices and URLs work it is usually possible to obtain a list of web pages that satisfy a certain request. However you must remember that search engines, indices and for that matter materials on the web are products of imperfect humans. Expecting perfection is not reasonable.

My approach is to switch between Yahoo and Alta-Vista to find web sites. Once I have a list of web pages I expand the search or refine the search until I have a manageable list. When you do this, be persistent. It may take several attempts before you get a reasonable list of pages and don't be afraid to switch search engines. From this list you can examine the URLs to help decide which pages are reasonable and which are not.

If you have trouble getting started, you might try

<http://www-personal.umich.edu/~dgs/lowbrows/links.html>

This is a short index of astronomy sites I constructed. While it is not intended to be exhaustive, it is a good place to start and there are pointers to other sources of information.

Things for a Rainy Day

By Lorna Simmons

So it is raining, or cloudy, or the neighbors turned on all of their outside lighting to stop the burglars' invasion from above. Perhaps there is a full moon. You wash down another Prozac and stick your head underneath the pillow, hoping for swift deliverance from this world.

Now, stop right there! Amateur astronomers in Michigan must be flexible. Perhaps you can get a degree in Meteorology and learn to enjoy the cruel weather. You may even pray for rain. I know, I know. It is always like this in Michigan. But there are other enchanting things to discover. You might even end up getting depressed when the night is clear! This column is directed toward things one can do when the weather is unwilling. Take your pick.

All right, already, hope is just around the corner! For starters, if you have nothing better with which to

occupy your mind, you can begin by counting the clichés in this column.

I, myself, do not get depressed on rainy or cloudy days. That kind of weather always gives me an excuse to stay in and read passionately about my favorite subjects or to use my computer for study or play. I do not even feel guilty about leaving my telescope neatly packed away in foul weather. I begin Plan X: READ!

Let me start out with one of my favorite reference books, "Longman Illustrated Dictionary of Astronomy & Astrophysics." I have seen it on the shelves at the Bloomfield Township Public Library and at the Westland Public Library. Your own public library may very well have a copy. I have found it more useful than any other little book in my collection because of its format and portability. It is difficult to find a place which sells "Longman". Borders informed me a long time ago that it could not order it, because it is printed in Great Britain. You probably will need to go over to Canada. As it so happened, after I had made telephone contact with a bookseller in downtown Windsor, Ontario, Canada, three copies of the book "magically" turned up on Border's (Birmingham-13 Mile at Southfield) shelves.

The last printing of my copies (I bought all three that were on their shelves) was in 1988, so it is not as current as perhaps it should be. But I believe almost all of the information is still valid. I seldom search for any topic without finding it defined in this little volume, complete with illustrations and ready to literally "point" you in the direction of similar material within its covers. It is an illustrated astronomy and astronautics dictionary, but the subjects are arranged adjacent to other similar subject-matter. Therefore, you can read it like any ordinary book; however, you must always use the index in order to find specific subjects. This great little book has seldom let me down.

A similar book, but one which is organized alphabetically, is: "The Facts on File Dictionary of Astronomy," Third Edition (1994), edited by Valerie Illingworth. It too, is full of important information, this time in Astronomy and Astrophysics. To coordinate the information, you must skip around throughout the volume, which can be bothersome and time consuming. However, it has yet to let me down in my search for understanding.

A third book, "The Handy Space Answer Book", by Phillis Engelbert and Diane L. Dupuis, also has a lot of important information. There are short discussions of various topics which are again (as in Longman) grouped

together by general subject-matter. You will find it a pleasure to read. It is the kind of book that you can pick up and put down with regularity without having that usual feeling of discontinuity. Just place a bookmark at the page and continue later when it again rains, snows, drizzles, or clouds up.

With these three books, you are now ready to read any other popular astronomy book with the full knowledge that most of the important definitions and explanations are in one or more of them, complete with illustrations where needed. These books are not intended for the professional astronomer. Of course, there are other, more elaborate books. These three seldom abandon me.

Now, to begin with the real meat. A good book to start with, if you have not yet read it, is Stephen Hawking's "A Brief History of Time." The only mathematics equation in the book is $E=MC^2$! I, myself, found that I could tackle more difficult scientific articles and books after reading it the first time. Soon thereafter I read it a second time in order to preserve the knowledge I had gained. I believe "A Brief History of Time" is a book which all knowledgeable people should read. Non-scientists most likely will need to struggle with some of the concepts. Of course, time marches on, and the information contained in some of these books might be out of date. However, if you are a neophyte, you will never know the difference.

In the future, I shall lead you down the garden path of books on astronomy, physics (including astrophysics and cosmology) which have been written for the general, non scientific public. Occasionally, I might spice it up with profound, deep beyond understanding, tomes which you can immediately forget. They are there to keep one humble.

But do not forget these books; you may need one of them later.

Questions by Children and Teachers

by Mark Deprest

Each year for the past four years I have taken my telescopes and accessories to my daughter's school and give a small presentation to the kids in her class. The last two years I have also been invited to be part of the school's science day. During their science day, they have parents and friends who are somehow

involved in a particular science, such as, astronomy, medicine, telecommunications, etc. come in and give a small presentation to a couple of classrooms. I am looking forward to participating this year again in the early part of November.

I am always amazed at the questions that are posed by the children and teachers. Some of these questions are pretty easy to answer, but every once in while someone will ask a question that has me look just a little deeper to find the answer. Here is a sampling of those research provoking questions and the answers.

Q: Has anyone ever been hit by a meteor?

A: Yes! On October 9, 1992, a meteorite slammed into a parked car, then owned by Michelle Knapp in Peekskill, New York. The car was a 1980 Chevy Malibu and the meteorite was about 27 pounder. According to SKY & TELESCOPE (January 1994), Mrs. Hewlett Hodges of Sylocuga, Alabama, was struck in the hip on November 30, 1953, by a meteorite that crashed through her living room ceiling.

Q: Is it true the Moon is moving away from the Earth?

A: Yes! This has been confirmed by more than a decade of lunar ranging experiments using the laser retroreflectors left on the Moon by Apollo astronauts. The rate works out to be about 3.8 centimeters per year, and fossil sediment layering records show that this motion has been constant for more than 900 million years at the same rate.

Q: Which Planet is hotter, Mercury or Venus?

A: Venus, at a surface temperature of 900 degrees Fahrenheit. This is a result of the greenhouse effect trapping most of the infrared energy and not allowing it to escape back into space. Because Mercury has no such atmosphere at high noon it only gets up to about 800 degrees, but that temperature drops very quickly the moment night falls.

Q: Why do the planets orbit the Sun in the same line (plane)?

A: This is a reflection of the way in which the cloud that collapsed to form our Sun was rotating. According to computer models of such collapsing, rotating clouds, they show that they rapidly form into a flattened disk. The planets then formed out of this disk of heavier materials and gasses and will orbit the star in the same plane as the original disk.

Q: Why doesn't Mercury and Venus have moons of their own?

A: Because they are too close to the Sun. Any moon with too great a distance from these planets would be in an unstable orbit and would be captured by the Sun. If they were too close to these planets, they would be destroyed by the tidal gravitational forces. The zones

around these planets where a moon could exist is very small and no body was ever captured into orbit or was formed there when the planets were first being formed.

Q: What do you know about the North Star?

A: It is also called Alpha Ursa Minoris and Polaris. It is a +1.99 magnitude star that is classified as a F8 Ib star, which means it is a very luminous supergiant with an orange-yellow color and a surface temperature near 4000 Kelvin. It is currently about 54 arc minutes from the true north celestial pole, and by the year 2100, it will be less than 28 arc minutes from true north. Polaris is a double star, and its companion is about 18 arc seconds distant from our point of view. Its companion has an orbit of over 2000 years. Polaris is moving through space at a speed of about 20 kilometers per second and is about 360 light years away. It has a luminosity of 1600 times that of the sun and it may be a variable with a change in its brightness of about 0.01 magnitudes over a period of 3.9 days. There is also an unseen companion star to Polaris that has an orbital period of about 30 years.

These are just some of the question I get asked by second, third and fourth graders. My daughter is in fifth grade this year and I have asked the principal not to have a talk with them on science day, because I know I won't survive the questions there.

Dear Combrows:

I would first like to say "Thank You" from the bottom of my heart on your vote of confidence in electing me as your new President. I will do my best to uphold the high standards of the Combrows, and the office of President. I know that you all join me in wishing Mark Vincent, Ph.D. the best of luck in his new job, and I know that we will all miss him greatly. "Good-bye, Mark Vincent, Ph.D. good luck on the new challenges ahead of you."

*Thank You, all again and Clear Skies,
Mark Depest
President,
University Combrow Astronomers*

Messier Observer's Log

submitted by Paul Walkowski

I found this in Astromart and thought it would be of general interest.

The following was submitted via <http://www.astromart.com/> by: David Green (davidgreen@scvnet.com) on Saturday, September 26, 1998

Advertisement: The Ultimate Messier Object Log is a FileMaker Pro 4.0 database that contains relevant information for all 110 Messier objects. It contains various layouts to assist amateur astronomers in documenting their search for deep sky objects. (FileMaker 3.0 can read it as well.)

I have tried to include EVERYTHING an amateur astronomer might want to see regarding Messier Objects: pictures, astronomical coordinates, space for notes and viewing comments, descriptions, etc. It is sortable, printable, and customizable by you, the user. I humbly submit that it is one of the most useful tools you will encounter to assist you in searching for and viewing Messier Objects.

And the best thing is: IT'S FREE!

I created the Ultimate Messier Object Log as a labor of love. If it's useful to me, I hope it will be useful to others, as well. It is my gift to the astronomy community, and all those people who have helped me -- here on line, as well as at star parties.

Thank you.

The Ultimate Messier Object Log is "giveware." If you enjoy using it, I ask you to give it to a friend.

The Ultimate Messier Object Log is available at the following URLs:

<http://www.scvnet.com/~davidgreen/TUMOL.html>

<http://felix.scvnet.com/~davidgreen/TUMOL.html>

This is the first version of the database. I'm especially interested in your comments on how to improve it, bug reports, etc. PLEASE COMMENT! by e-mailing me at davidgreen@scvnet.com.

www.physics.lsa.umich.edu/saturday
University of Michigan Physics
(734) 764-4437

Saturday Morning

PHYSICS

Oct. 10, 17, & 24 **Dark Matters:
Unmasking the Invisible Universe**

The vast majority of stuff in our universe is invisible "dark matter" whose presence we know of only because of the great gravitational tug it exerts. Dr. Phil Fischer will talk about what is out there, how we measure its mass, and how its gravity affects everything we see—even light itself.

1998

Ann Arbor

Nov. 21 & Dec. 5 & 12

Physics and Pharmaceuticals

We can not directly see the shapes of DNA and proteins, so how do we deduce their structures? Dr. Jeanne Stuckey will demonstrate how researchers use X-ray crystallography to peer into cellular processes on the atomic level. What they see there helps them create therapies to fight killers from cancer to AIDS.

Oct. 31 & Nov. 7 & 14
**Black Holes, White Holes,
and Worm Holes**

A black hole contains matter so dense and compact, hardly anything can escape from it. Dr. Manasse Mbonye will introduce these stranger-than-fiction celestial objects and will consider a Pandora's box of questions. Can a child universe grow out of a black hole? Is the universe itself a black hole? What about white holes and worm holes? And what do black holes mean for time travel?

**Multimedia Presentations
for the General Public**

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from the public**

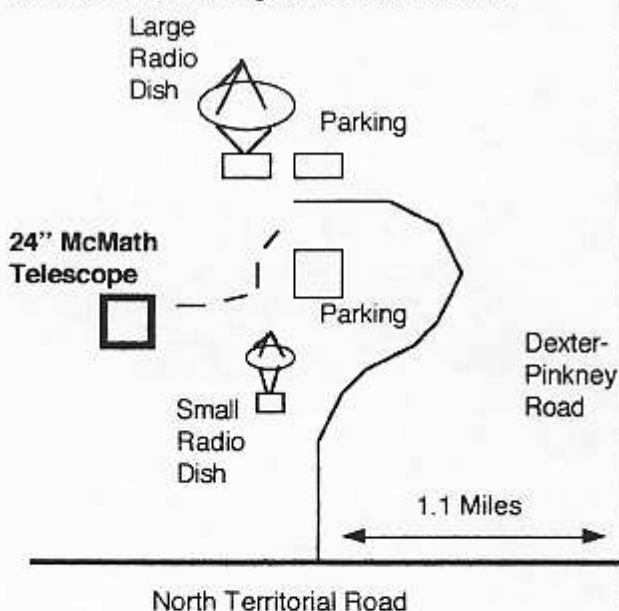
**Admission
is FREE**

10:30 to 11:30 A.M.
Refreshments will be served

170 Dennison Bldg.
Church between N. & S. University

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 807.



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-Pickney 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.

Monthly meetings of the Lowbrows are held on the 3rd Friday of each month at 7:30 PM in 807 Dennison Hall. During the summer months, and when weather permits, a club observing session at Peach Mountain will follow the meeting.

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.

Dues:

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 Doug Scobel at the monthly meeting or by mail at this address:

1426 Wedgewood Drive
Saline, MI 48176

Magazines:

Members of the University Lowbrow Astronomers can get a discount on these magazine subscriptions:

Sky and Telescope: \$27 / year

Astronomy: \$20 / year

Odyssey: \$16.95 / 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:

Bernard Friberg (743)761-1875 Bfriberg@aol.com

Chris Sarnecki (734)426-5772 chrisandi@aol.com

to discuss length and format. Announcements and articles are due by the first Friday of each month.

Telephone Numbers:

President: Mark Deprest (734)662-5719

Vice Pres: Lorna Simmons (734)525-5731

Dave Synder (734)747-6537

Paul Walkowski (734)662-0145

Treasurer: Doug Scobel (734)429-4954

Observatory

Director: Bernard Friberg (734)761-1875

Newsletter

Editors: Bernard Friberg (734)761-1875

Chris Sarnecki (734)426-5772

Keyholders: Fred Schebor (734)426-2363

Mark Deprest (734)662-5719

Lowbrow's WWW Home Page:

<http://www.astro.lsa.umich.edu/public/lowbrows.html>
Dave Synder, webmaster

Monthly Meeting: Oct. 16, 1998

7:30 pm

*Room 182 Dennison Hall Auditorium
Physics & Astronomy Building
The University of Michigan*

Dr. Patricia S. Whitesell,

presents

*"The University of Michigan
Detroit Observatory: - Its
History and Restoration."*

*Note: This presentation will occur in Room 182 -
Dennison Hall Auditorium (In the low building
next to the Physics and Astronomy Building)*



NGC 2440 - Cocoon of a New White Dwarf

credit: H. Bond (STScI), R. Ciardullo (PSU), WFPC2, HST, NASA. A white dwarf star emerging from the planetary nebula that surrounded it as it evolves to the next stage of its aging life. Astronomy Picture of the Day from April 26, 1998

<http://antwrp.gsfc.nasa.gov/apod/ap980426.html>

University Lowbrow Astronomers
3684 Middleton drive
Ann Arbor, Michigan 48105



Check your membership expiration
date on the mailing label!

11/1998

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