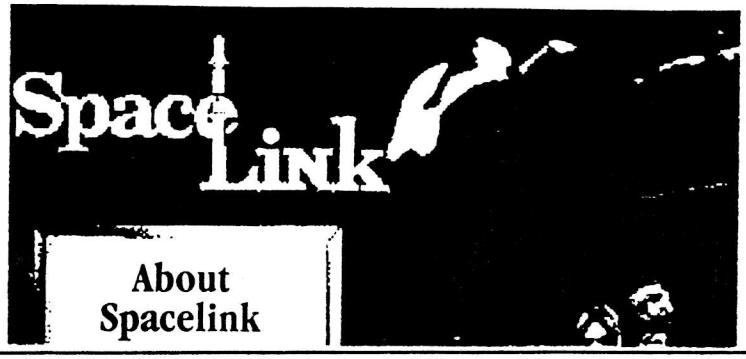
REFLECTIONS

National Aeronautics
and Space Administration



REFLECTIONS

September 1995

NASA's Spacelink is an electronic information center that computer users can use to access the latest in NASA news and educational services. More inside this issue of *Reflections*.

Chris Sarnecki
Editor

Of the University Lowbrow Astronomers

The University Lowbrow Astronomers is a club of Astronomy enthusiast 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 Bill Razgunas at (313) 995-0934.

This Month:

September 15 - Meeting at 807 Dennison. Jim Abshier will be speaking on "Home Made Radio Telescopes".
September 15-17 - Astrofest 95. The midwest's biggest annual gathering of Amateur Astronomers in Kankakee, Ill.
September 23 - Public Star Party at Peach Mountain Observatory. Fall is officially here at 8:13 am EDT.
September 23 - Public Star Party at Leslie Science Center. The Lowbrows are being called upon to do double duty. Come prepared to participate at either Star Party.
September 24 - New Moon at 12:55 pm EDT
September 30 - Public Star Party at Peach Mountain Observatory - Lowbrows co-hosting the Friends of Stinchfield Woods "Walk on Peach Mountain" at 7:30 pm. We expect large crowds, bring your telescopes.

Next Month:

October 20 - Meeting at 807 Dennison. A slide show report of Astrofest 95 and amateur telescope making presented by members of the Lowbrow contingent.
October 21 - Public Star Party at Peach Mountain Observatory. Mercury is just past greatest elongation (18 degrees west of the Sun). Peak of Orionid meteors shower October 20 - 24.
October 24 - New Moon at 12:36 pm EDT
October 28 - Public Star Party at Peach Mountain Observatory. Venus is on the rise at dusk. Why is this statement an oxymoron ?
October 29 - Daylight Savings Time ends. (Or should we say night light losing time ends) Set your clocks back one hour. More time for observing !

From the President

by Bill Razgunas

When I think of Astronomy, I think of people doing things together. If you want to see the beauty of the night sky, but can hardly see a star in your back yard, you can join the Lowbrows at Peach Mountain for a memorable treat (weather permitting). If you don't know how to choose a telescope, you can find others in the Lowbrows who would be glad to help you make an intelligent choice. We hate to see anyone buy a telescope that costs a lot of money and which is difficult to see the Moon with. If you own a telescope and have never used it because you need some help, bring your telescope to an Open House. Other Astronomers would be glad to help you through the learning curve of using your telescope. But most of all, when I think of Astronomy, I think of the sense of wonder, amazement, and love of the night sky that serves as a common bond for all those who are willing to let their hearts be open to it.

This month's Reflections is devoted to the beginning Amateur Astronomer. Included in this issue are articles on how to get started in Astronomy, a tribute to John Dobson, a special open house/star party that the Lowbrows are co-hosting with the Friends of Stinchfield Woods (Peach Mountain), Abrams Planetarium's *Sky Calender* and companion star chart (reprinted with permission of Abrams Planetarium), and more. The novice will find much to offer from the Lowbrows, but most of all the enthusiasm of sharing the vastness of the Universe to all interested in the pursuit of Astronomy.

"Astronomy offers one of those pleasures which follows the law of increasing, rather than diminishing returns. The more you develop it, the more you enjoy it" - *Viscount Grey*

"Dobsonian - Schmobsonian" - *

[John Dobson, that most revered of Amateur Astronomers, turns eighty this September 14th. I came across the following comment while recently reading his book How and Why to Make a User-Friendly Sidewalk Telescope. This statement, while in reference to the San Francisco's Sidewalk Astronomers, to me best describes what the Lowbrows and Amateur Astronomers everywhere do while sharing the cosmos with the public. - Ed]

"When educationally entertaining the public, which is the primary function of the Sidewalk Astronomers, we try to get the brighter objects. We get the planets and the Moon if they're available, then the bright globular clusters and the bright clouds of gas and dust from which new stars are forming in the spiral arms of our own Milky Way. And we talk to them at length about the things that they see. We talk about the glass beads on the Moon. We talk about the gegenschein and the zodiacal light. We discuss the equatorial bulge of Jupiter, and its rate of spin. We discuss the rings of Saturn and the tidal effects that would smash any moon that gets to close. We show them spiral galaxies face-on and edge-on showing the dust lanes in the spiral arms. We show them dust clouds in our own spiral arms. We show them young stars and old stars, bright stars and colored doubles, lest perchance they think the stars are all the same. We discuss the origin of the galaxies from hydrogen falling together in the gravitational field. We discuss the birth, growth, and terminal ailments of stars, and point out that our bodies and our earth are but recycled supernovae - star dust. For exploded stars we show them the Veil and the Crab. With the 24-incher we see the stars of the Crab. In this way the discussions and observations run on through the night till nearly morning."

[It is interesting to note that John uses the terms "We talk/discuss" and "We show" repeatedly in this short statement. That must say volumes about Schmobsonian philosophy]

* - *An actual John Dobson quote*

Friends of Stinchfield Woods

by Bernard Friberg

The Lowbrows and The Friends of Stinchfield Woods will be co-hosting "A Walk on Peach Mountain" starting at 7:30 pm on September 30th. The Friends of Stinchfield Woods is a group established to provide volunteers for fund raising, maintenance and educational activies for the 777 acre tract of forest called by the same name (also known as Peach Mountain to the Lowbrows). The Friends will be providing guided nature walks and a bonfire. Visitors will be on the outlook for owls and the ever popular luminescent mushrooms (really fungus). The Lowbrows will be hosting the scheduled open house at the observatory, a constellation talk, and slide show. A University of Michigan grad will be giving a talk on the gravity wave experiment at the small radio telescope. Last year's very successful "Moon Walk" attracted in excess of 600 visitors. Lowbrow "volunteers" will be needed to assist the public around our portion of the site, to bring telescopes, and generally show the Cosmos to the public.

Right from the Start

by Christopher Sarnecki

*** (This article is best read out UNDER THE STARS where the ideas discussed here may be visualized. Of course you will need a flash light, but that is OK as long as you put a red cover over it so as not to disrupt your night vision :-)

IT'S NOT EASY BEING GREEN - According to that great vaudevillian, Kermit T. Frog "It's not easy being Green". Seeing the night sky for the average person, may mean so many stars with no reason or logic for their meaning. This is where we all start. If we stop for a moment and try to understand the night sky it is amazing what we can see. You can begin to understand the night sky and in as little as a half of an hour.

NATURALIST OF THE NIGHT - Amateur Astronomers are really "Naturalist of the Night" according to Terence Dickerson, noted author on Amateur Astronomy from Ontario, Canada. We are all Naturalist of the Night! The appeal of the night sky to many is that it is visual.

SPACE /TIME - The first thing we have to understand about the night sky is that we are looking out into a great space. Far larger that the average person can understand. Tremendous distances and volumes of space make for a vast area to place celestial objects such as galaxies, star clusters, nebulae, Suns (other stars), and planets. These objects occupy a single point with in the volume of space for a specific moment in time. This is the concept of what Astronomers call Space /Time. The sky we see to night is a single moment of this Space/Time, never to be repeated or duplicated. Appreciate the moment.

ANTHROPOCENTRIC MAN - (or should we say "Person" to be politically correct ?) Anthropocentric man conceived every thing in the Universe in terms of human values. The Earth was the center of the Universe. This anthropocentric Universe was conceived by ancient man based on the understanding of their world at the time. Stars were just a lid over the night sky.

The night sky was the ancient's television. If, after a hard day of hunting and foraging for food, if you had some spare time, you looked at the sky. After a while you notice the celestial dome moved. Within the star field you also noticed that some of the individual STARS MOVED (Planets). After a while you determined that the times of the seasons could be charted according to when certain stars rose or set.

The night (and day) sky moves.

EARTH ROTATES (on it's axis) WEST TO EAST. This causes the...

STARS , PLANETS (and Sun) TO MOVE EAST TO WEST.

AESTHETIC HUMANS - Humans are aesthetic beings. To better understand the order the night sky humans imagined figures of animals or their Gods on the celestial dome. Later, The ZODIAC's 12 constellations were mapped out along the ECLIPTIC (Plane of the Solar System) to aid in plotting the "wandering stars" (Planets). Mythology was born!

EARLY COSMOLOGY - An early model of the Universe, used to explain the motion of the stars, Planets and Sun was based on something called the GEOCENTRIC MODEL; or the Earth centered model of the Universe. A series of nested rotating globes, each at an ever increasing diameter, was assigned for the Stars, Planets, Moon, and Sun to ride on, with of course the Earth at the center.

MODERN COSMOLOGY - (The 1 minute lesson) - In the middle parts of the present epic the following significant events took place:

- Nicholas COPERNICUS, (Polish Catholic cleric, astronomer, mathematician), develops the HELIOCENTRIC (Sun centered) model of the Universe.
- Johannas KEPLER, (German Astronomer, Mathematician and part-time Astrologer), conceived the motions of the planets. Later with Isaac NEWTON, (English Theoretical Physicist), confirmed this mathematically.
- GALILEO Galilei, (Italian, Astronomy's first notable telescope observer), brought credibility to the heliocentric model of the universe by the OBSERVATION OF THE JUPITER/ MOON SYSTEM.

TOOLS FOR UNDERSTANDING THE SOLAR SYSTEM AND CONSTELLATIONS - Obtain a Planisphere. A planisphere is a two dimensional map centered on the northern or southern pole of the celestial sphere. It generally shows the major stars and constellations and has the ability to rotate the map to a particular time of year. Planispheres are generally designed for a specific latitude by ten degree intervals.

Abrams Planetarium makes a wonderful set of monthly star charts with a companion calender (a copy is included in this issue) that describes significant events that can be observed with your naked eye, binoculars, or a small telescope. Subscription rates for these charts are $7.50 per year and can be ordered from Sky Calender, Abrams Planetarium, Michigan Stat University, East Lansing, MI 48824.

Astronomy and *Sky and Telescope* magazines are two Astronomy based monthly publications that cater to Amateur Astronomers. *Astronomy* is generally considered a more entry level publication while *Sky and Telescope* appeals to the more advanced Amateur Astronomer.

AIDS IN VIEWING THE NIGHT SKY - Get dark eye adapted. Do not observe in light polluted areas if possible. Avoid white light. Put a red cloth over your flashlight to maintain your dark eye adaption. Observe away from cites. Go out into the country if you can. Observe with friends for safety reasons. Dress warmer than required for the expected weather. Plan your observing run. What do you expect to see tonight. What are possible observing goals ? Take something to drink and eat if you expect to be out for any length of time. Work with the sky you have. Mostly go out and observe.

EXERCISES WITH THE NIGHT SKY

- SOLAR SYSTEM - Line up the planets in the night sky (Jupiter, Saturn) including the one you are standing on as well as the Moon. What you have created is the ECLIPTIC or plane of the Solar System. Now imagine where the Sun is (below the west horizon if you do this in the early evening) and visualize the Solar System in your mind while moving out into space with each planet.

- SUMMER TRIANGLE - Look for the bright ASTERISM (a group of stars representing an object or figure) formed by Vega, Deneb and Altair.

- CONSTELLATIONS - Using the Abrams Planetarium star charts view the bright constellations.

- SATELLITES - Look for "moving stars" against the star fields. Best seen after twilight when the Sun helps to illuminate the satellite's solar panels or spent tumbling space craft.

- STELLAR TEMPERATURES - The following bright colored stars tell us about the surface temperature of stars. From coolest to hottest:

Antares, Alpha Scorpii, red in color, has a surface temperature of 3500 K. Also, check out Mu Cephei or the "Garnet Star". This star has the strongest red color of any red supergiant in the sky.

Arcturus, Alpha Bootis, is yellow-orange in color and has a temperature in the range of 4000 K.

Sun, (Alpha Solar System ?), is a yellow star, but don't look at it to confirm this feature. The Sun has a surface temperature of about 5500 K.

Altair, Alpha Aquilae, yellow-white in color is in the 7000 K range.

Megrez, Delta Ursae Majoris, a white colored star is in the 9000 K temperature range. Megrez is the star that connects the bowl and the handle of the Big Dipper.

Regulus, Alpha Leonis, is blue-white in color and has a surface temperature of about 15000 K.

Blue stars are the hottest stars. At first I couldn't think of a star in the Spring/Summer sky that fit in this category, so I went outside and looked up and what did I see but.... Spica, Alpha Virginis, a blue star with a temperature at about 20,000 K. This star is really BLUE. Confirming stellar temperatures is a subtle art. Do not expect to confirm this beyond the bright stars since the eye does not distinguish colors for faint objects.

BINARY STARS - As the sky begins to darken but it is still too light to search for faint fuzzies it is fun to observe double stars. Below is a list of some fine doubles in the summer sky.

Mizor/Alcor, Zeta Ursa Majoris - One of the best optical doubles is actually a triple system in binoculars or small telescopes.

Cor Caroli, Alpha Canum Venaticorum (that is Canes Venatici) - A nice bright and dim pair.

"Cats eyes", Upsilon Draconis - I don't know if that is the correct name but that is what I call this pair of identical 4.9 mag white stars located in the head of the dragon.

Double/Double, Epsilon Lyrae - In telescopes at higher magnification four stars are seen in this quadruple system.

Rasalgethi, Alpha Herculis - (I think this name can only be pronounced correctly by someone who speaks fluent Arabic) means "head of the kneeling one" and is a pretty orange and blue double.

Albiero, Beta Cygni - Called the Maze and Blue star by the locals for obvious reasons. I always save this one for last because the colors are so vibrant no other binary can compete with this one in the public's eye.

GETTING STARTED - Don't underestimate naked eye observing . It is a great way to learn the Cosmos. Use Binoculars mounted on camera tripod. Avoid cheap department store (Junk Yard) telescopes that advertise 600x power magnification. Obtain a set of simple star charts, such as the Sky Calender from Abrams Planetarium. Join a local Amateur Astronomer club such as Ann Arbor's University Lowbrow Astronomers. Go to star parties such as the Lowbrows bimonthly public open house at the McMath telescope on Peach mountain. The Lowbrow's Star Parties are held on the Saturday on either side of the new Moon. The party is canceled if it is cloudy at dusk. Call our recorded phone message at 480-4514 for up-to-date information. MOST OF ALL OBSERVE. It is amazing what you will see if you try !

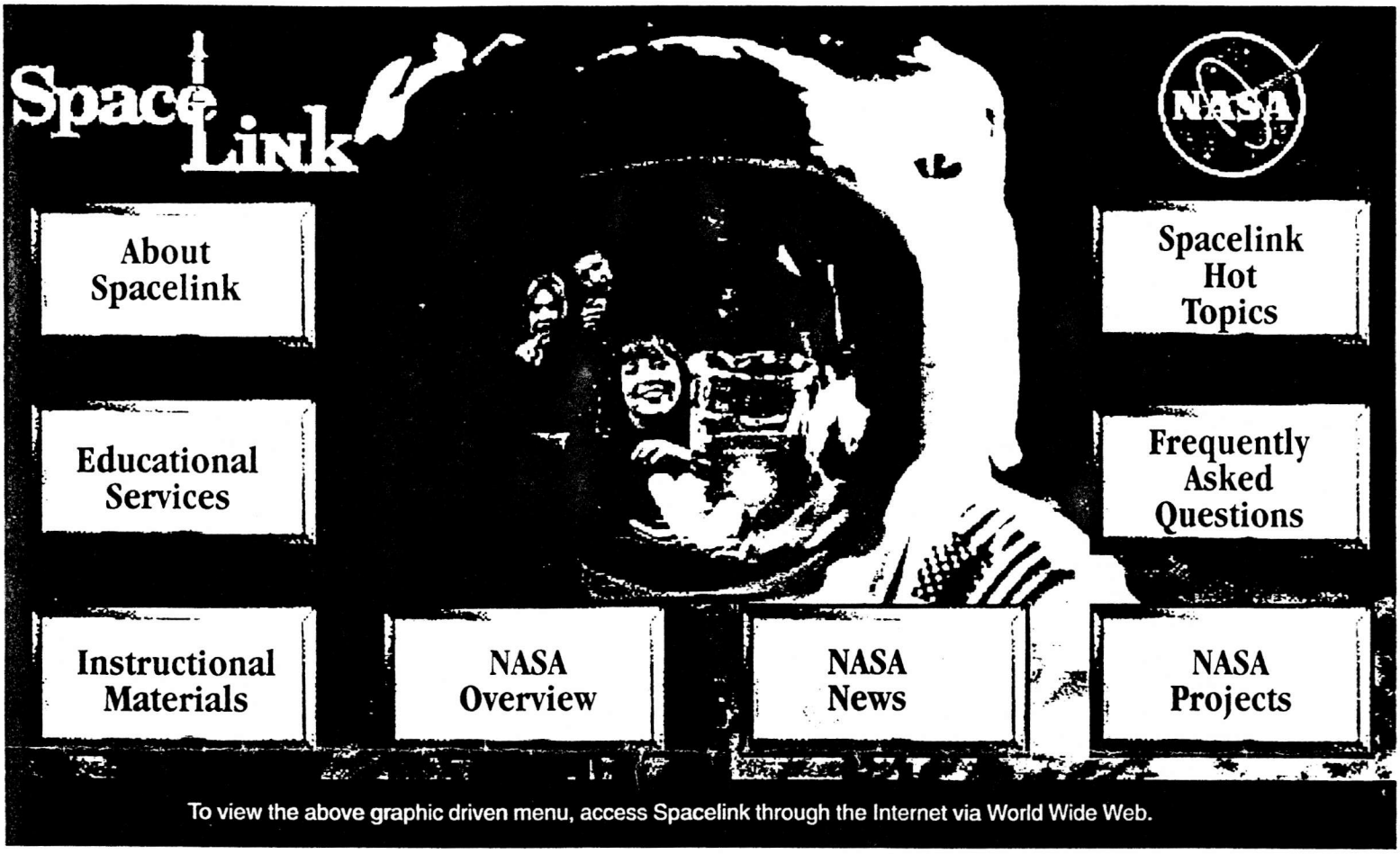
For Sale

17.5" Truss Tube Newtonian Reflecting Telescope. Newly recoated 98% dialectic coated primary, 3.5" secondary. JMI NGF1 focuser, 1 1/4" and 2". 11.5" right ascension drive, 6" declination drive with hand control. Large equatorial fork mount. Assembly weight 600 pounds. $2.500 or trade for a 5" or 6" refractor. Call Tom Pettit at (313) 878-0438.

[First Telescope ? Perhaps not. Fine first telescopes can be purchased for approximately $300 to $500. Contact telescope retailers found in Astronomy or Sky and Telescope magazines. - Ed]

National Aeronautics
and Space Administration

Educational Service	
Teachers, Faculty & Students	Grades: K - Post Doctoral



NASA Spacelink is an electronic information system designed to provide current educational information to teachers, faculty, and students. Spacelink offers a wide range of computer text files, software, and graphics related to the aeronautics and space program. For callers who reach Spacelink via the World Wide Web, the system offers links to additional educational resources.

Documents on the system are chosen for their educational value and relevance to aeronautics and space education. Information and educational materials are available on topics including:

- lesson plans
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- schedule for NASA Television

The system may be accessed by computer through direct-dial modem or the Internet.

Modem line:	(205) 895-0028
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Data format:	8-N-1
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For more information, contact: Spacelink Administrator, Education Programs Office, Mail Code CL01, NASA Marshall Space Flight Center, Huntsville, AL 35812-0001. Voice phone: (205) 961-1225
E-mail: comments@spacelink.msfc.nasa.gov

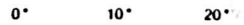
EP-332 March 1995

PLANETARIUM BUSINESS OFFICE:
(517) 355-4676
CURRENT SKY INFORMATION:
Call (517) 332-STAR

SKY CALENDAR OCTOBER 1995

An aid to enjoying the changing sky

Use this to measure angular distances between objects on diagrams below.



Planetwatch: To see Venus this month, you'll need a very clear sky and an unobstructed view of the WSW horizon shortly after sunset. On Oct 1, from lat 40° N, Venus sets just 1/2 hour after sunset, so begin looking no later than 15 minutes after sunset, while it's still 2° up. By Nov 6 Venus will set an hour after the Sun and during that month will begin to be noticed by casual observers. Note the shift in time for the diagrams showing Venus: Oct 4 shows sky 1/4 hr after sunset; views for Oct 18 and 25 are for 1/2 hr after sunset; Oct 26-28 and 30 show sky at "dusk", about 3/4 hr after sunset. By Oct 30 Venus closes to within 20° lower right of Jupiter. Since Jupiter is in a darker sky, at mag −2.0 to −1.8 it remains the most prominent "star" at dusk, even though it is quite low in SW by month's end. Mars is to lower right of Jupiter, by 24° on Oct 1, closing to 8° by Oct 31. Binoculars will help pick out this 1.4-mag "star" in the twilight glow. Don't confuse Mars with Antares! Next month's *Sky Calendar* will feature a very compact gathering of the aforementioned planets. Stay tuned!

Saturn, of mag +0.7 to +0.9 in ESE to SE at dusk, is high in southern sky in late evening, ideal for telescopic observation. In October we view the illuminated N face of Saturn's rings, inclined only 1.8° to 2.5° to our line on sight. But the Sun's light strikes the rings at an even more glancing angle, which decreases from 0.7° on Oct 1 to only 0.3° by month's end. Next month, we'll describe the effects of the once-in-three-decades sunset on the N face of the rings, which will take place Nov 17-21. Again, stay tuned! Titan, Saturn's brightest satellite, appears farthest E of the planet on the nights of Oct 4 and 20, and farthest W on the nights of Oct 12 and 28.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Moon past First Qtr D **Sunday Oct. 1 at dusk** Teapot S **Sunday 8** Full Moon. Penumbral eclipse deepest 6:04 a.m. Hawaii time; not visible mainland U.S.	**2** Mercury will pass inferior conjunction (nearly between Earth and Sun) on Wed Oct 4. **By end of next week and for rest of month, Mercury will be easy to see in morning sky.**	Jupiter Antares Mars SW WSW Venus	**Wed Oct 4, 15 min after sunset:** Antares & Mars become visible as sky darkens.	The Moon at **dusk**, five evenings: **Thursday, Oct 5 through Monday, Oct 9** γ Peg **Thursday 5** **Friday 6** Saturn δ Aqr **Saturday 7** approaching Full Aries **Sunday 8** past Full ENE **Monday 9** E ESE Fomalhaut SE		
	Monday 9 Tonight's moonrise occurs in evening twilight, before sky fully darkens. By Wed Oct 11, Moon rises after nightfall. Take advantage of dark skies Oct 11-28 to locate **Uranus.** Use binoculars and finder chart on Sept *Sky Calendar.*	**3½ hours after sunset, Oct 10-12:** Pleiades Capella **Tuesday 10** **Wednesday 11** Hyades & Aldebaran **Thursday 12** β Tau NE ENE E		**Dawn, Oct 12-14:** β Tauri, Bull's N horn **Saturday 14** Betelgeuse in SSW **Friday 13** Aldebaran & Hyades Pleiades in W Orion's belt **Thursday 12**		**Saturday at dawn:** **14** β Leo = Denebola, tail of Lion ε Vir Mercury E
Dawn: Castor Pollux **Sunday 15** **Monday 16** Moon at Last Qtr high SSE to S **Tuesday 17** Procyon	**Oct 18-20 at dawn:** Head of Hydra **Wed 18** *The Sickle* Regulus in ESE **Thurs 19** Denebola, tail of Leo **Fri 20** Alphard, heart of Hydra		**Wednesday Oct 18 30 minutes after sunset:** Jupiter Mars, Antares, and stars of Scorpius become visible as sky darkens. Antares Mars SW WSW Venus		**Friday, Oct 20 at dawn:** Mercury at greatest elongation, 18° from Sun. Mercury's best morning appearance of year lasts through at least next week. ε Vir Mercury δ γ Vir Arcturus in ENE E	**Sat Oct 21 at dawn:** Moon Mercury E ESE
Sunday, Oct 22, at dawn: Last easy old Moon Arcturus Mercury ENE E ESE	**Monday, Oct 23, 25 min before sunrise, S Florida:** Use binoculars. Mercury Very old Moon E ESE	**Wed Oct 25, 30 min after sunset** Jupiter Antares Mars Young Moon SW Venus	New Moon **Tuesday, Oct 24** 12:36 a.m. EDT	**Thursday at dusk:** **26** Jupiter Moon Antares Mars SW WSW Venus	**Friday & Saturday, Oct 27 & 28 at dusk:** **Sat 28** **Fri 27** Teapot Jupiter Antares Mars SSW SW WSW Venus	
Sunday **29** Daylight saving time ends; set clocks back one hour.	**Monday** **30** **at dusk:** Venus 20° lower right of Jupiter and closing 1° daily. Jupiter Mars SW Antares Venus WSW	**Monday and Tuesday 30 & 31 at dusk:** All stars shown are in Capricornus. α **Tues 31** D Moon β **Mon 30** at First Quarter, in south δ γ	**Tuesday October 31, at dawn:** Departing Mercury passes 4° N of emerging Spica. Binoculars give best view. Arcturus Mercury ENE E ESE Spica			

Our November *Sky Calendar* will feature:

- Three planets within a 7-power binocular field (6° wide) on 12 consecutive evenings, and within 2° one evening as Venus passes Jupiter
- Saturn's rings going dark as the Sun begins to shine on their face hidden from our view
- A spectacular Thanksgiving twilight gathering

Robert C. Victor, Jenny L. Pon, Robert D. Miller
ISSN 0733-6314

Subscription: $7.50 per year, starting anytime, from *Sky Calendar*, Abrams Planetarium, Michigan State University, East Lansing, MI 48824.

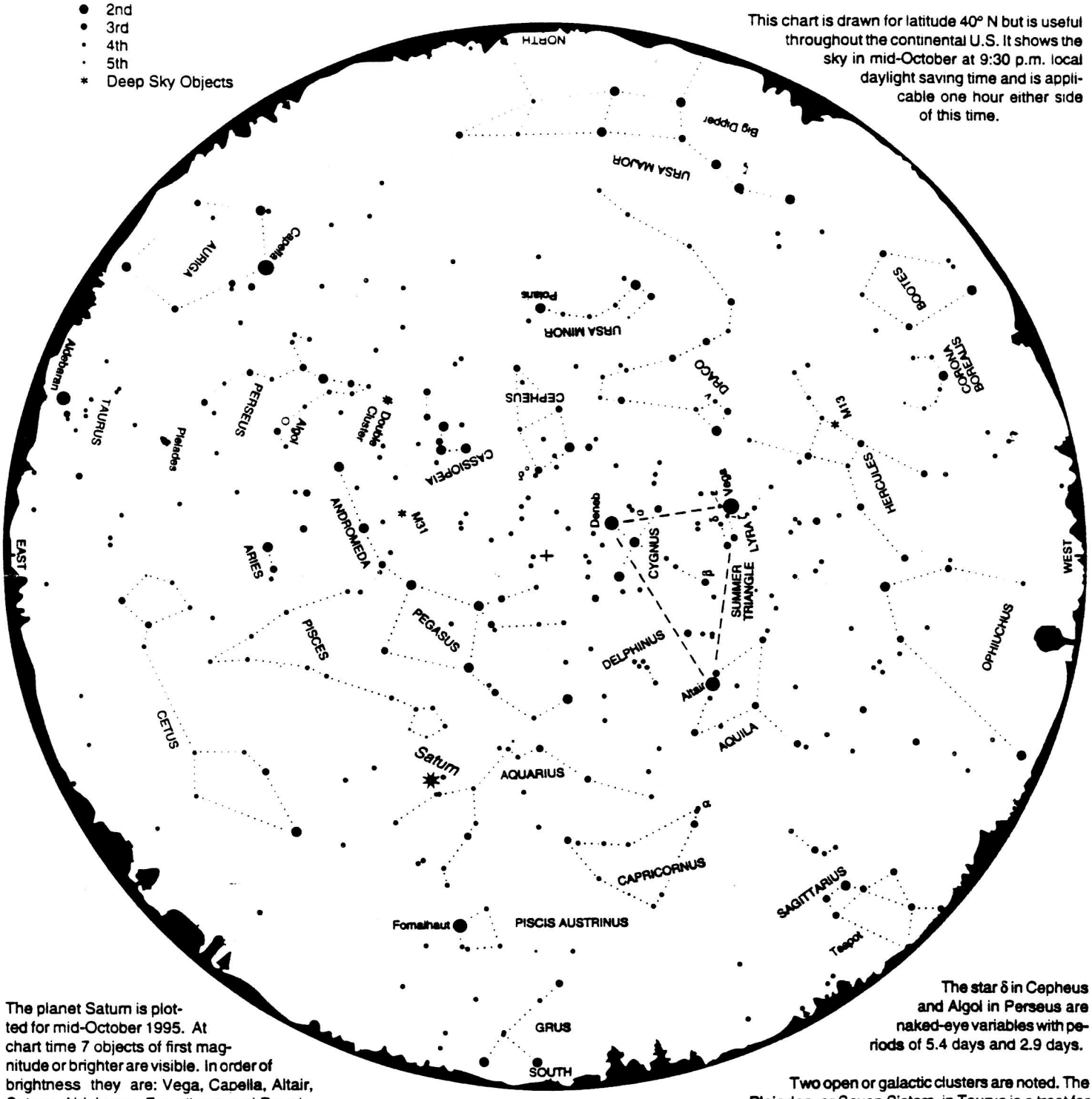
October Evening Skies

LEGEND
Star Magnitudes

- Zero or brighter
- 1st
- 2nd
- 3rd
- 4th
- 5th
- * Deep Sky Objects

Subscription: $7.50 per year, from ***Sky Calendar***, Abrams Planetarium, Michigan State University, East Lansing, MI 48824-1324.

This chart is drawn for latitude 40° N but is useful throughout the continental U.S. It shows the sky in mid-October at 9:30 p.m. local daylight saving time and is applicable one hour either side of this time.



The planet Saturn is plotted for mid-October 1995. At chart time 7 objects of first magnitude or brighter are visible. In order of brightness they are: Vega, Capella, Altair, Saturn, Aldebaran, Fomalhaut, and Deneb.

Our usual monthly maps are designed for stargazers just beginning to find their way around the sky. This month's map is useful for serious stargazing from dark locations. It contains many more stars, inclusive to magnitude 4.5, plus some fainter stars as needed to complete patterns or assist in locating special objects.

A selection of double stars (labeled with Greek letters) and "deep sky objects" is also plotted. All are visible with modest equipment; most are within the range of the unaided eye or binoculars.

The double stars, in order of decreasing angular separation, are ζ UMa, δ Lyr, α Cap, o Cyg, ε Lyr, ν Dra, ζ Lyr, β Cyg.

The star δ in Cepheus and Algol in Perseus are naked-eye variables with periods of 5.4 days and 2.9 days.

Two open or galactic clusters are noted. The Pleiades, or Seven Sisters, in Taurus is a treat for unaided eye and binoculars. The Double Cluster in Perseus is a fine object if the sky is dark.

M 31 is the famous Andromeda Galaxy, a collection of 300 billion stars located 2 million light years from Earth. It is barely visible to the unaided eye as a smudge of light. Binoculars in a dark location reveal an impressive oval.

Places:

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.

Times:

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.

Computer subgroup meetings are held on the first of each month, rotating among member's houses. See the calendar on the cover page for the location of next 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 mosquitos - bring insect repellent, and it does get cold at night so dress warmly !

Dues:

Membership dues in the University Lowbrow Astronomers are $20 per year for individuals or families, and $12 per year for students. 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 either at the monthly meeting or by mail at:

Doug Scobel
1426 Wedgewood Drive
Saline, MI 48176

Magazines:

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

Sky and Telescope: $24 / year
Astronomy: $18 / 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.

Monthly Sky Map:

The Abrams Planetarium *Sky Calender* and sky map in this issue of *REFLECTIONS* is reprinted with permission of Abrams Planetarium.

Newsletter Contributions:

Members and (non-members) are encouraged to write about any astronomy related topic of interest. Call the Newsletter Editor Chris Sarnecki at 426-5772 or e-mail to chrisandi@aol.com to discuss length and format. Announcements and articles are due by the first Friday of each month. Articles should be mailed to:

Christopher Sarnecki
4835 Holly Way
Ann Arbor, MI 48103

Telephone Numbers

President:	Bill Razgunas	995-0934
Vice Pres:	Mark Cray	283-6311
	DC Moons	254-9439
	Tom Pettit	878-0438
	Tom Ryan	662-4188
	Randy Stevenson	429-5099
Treasurer:	Doug Scobel	429-4954
Observatory Director:	Bernard Friberg	761-1875
Newsletter:	Chris Sarnecki	426-5772
Peach Mtn Keyholder:	Fred Schebor	426-2363

MONTHLY MEETING:

September 15 - 7:30 pm at Dennison Hall - Jim Abshier presents a Home Made Radio Telescope.

This month's *Reflections* is devoted to the beginning Amateur Astronomer. Let the Lowbrows help you "Take-off" into the vastness of space. Graphics by NASA.

University Lowbrow Astronomers
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