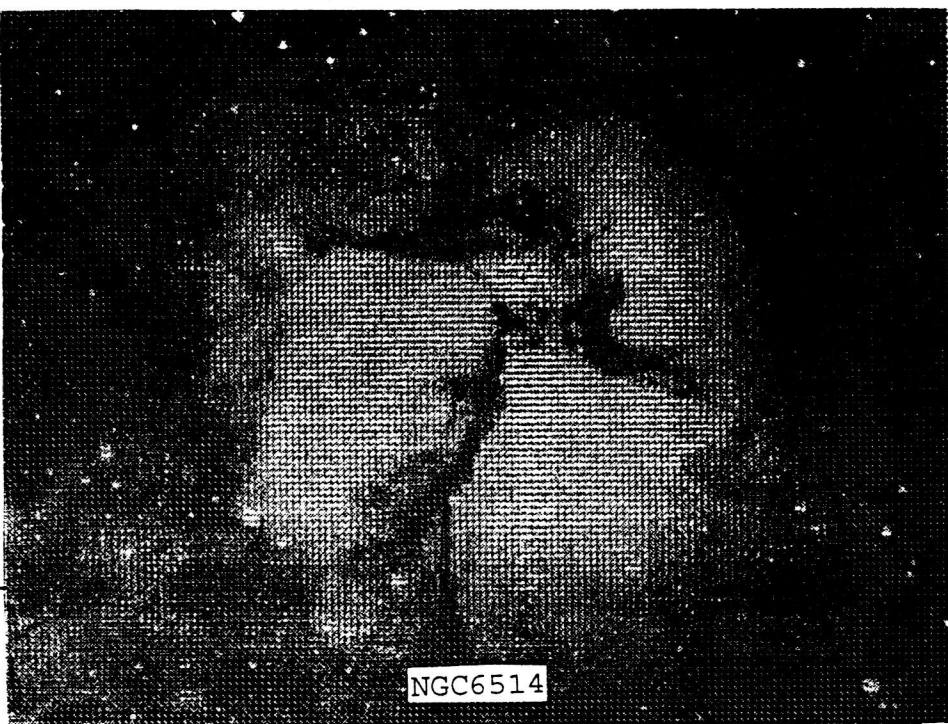


REFLECTIONS

REFLECTIONS



NGC6514

November 1994

Bernard Friberg and Douglas Warshow Editors

Of the University Lowbrow Astronomers

The University Lowbrow Astronomers is a club of 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 also held twice a month at the University's Peach Mountain Observatory on North Territorial Road (1.1 miles west of Dexter-Pinkney Road; there is a map near the end of the newsletter) on Saturdays before and after the new moon; if it's cloudy or very cold just before sunset, call (313) 480-4514 to see if the event is cancelled. For further information, contact Bill Razgunas at (313) 995-0934.

This Month

Next Month

November 1	Computer subgroup meeting. Time and location TBA.	December 1	Computer subgroup meeting at Doug Warshow's place (1010 Catherine, #408) at 7:30 PM. Call (313) 998-1158 for directions.
November 5	Open house at Peach Mountain.	December 3	Open house at Peach Mountain.
November 17	Penumbral lunar eclipse.	December 16	Meeting at 807 Dennison. Time again for Fred Schebor's Artsy Meaningless Slide Show.
November 18	Meeting at 807 Dennison Hall. Steve musko will speak about TOMS and Chris Sarnecki will talk about the new Angell Hall observatory.	December 21	Winter solstice at 9:23 PM EST. The longest night for observing you will get for another year!
November 26	Open house at Peach Mountain.	December 31	Scheduled open house. Call (313) 480-4514 to confirm.

CALENDARS ARE IN!

The Hansen Planetarium "Wonders of the Universe" wall calendars have arrived! These calendars have excellent photos, but even better are the daily notes on the sun, moon, planets, meteor showers, eclipses, and other astronomical phenomena. I saw a copy at Borders' and there's actually more astronomical type pictures than last year - even a couple from the Hubble Space Telescope. Yeah!

Prices are the same as last year, eight dollars for club members (that's more than three dollars off what you'd pay anywhere else!) and nine for non-members. I'll be bringing them to each of the next few meetings. Start thinking now about possible Christmas/holiday gifts or selling them where you work.

LOWBROW SHIRTS!

Speaking of holiday gifts, we still have Lowbrow T-shirts and sweatshirts. We have two excellent logos, which were designed by club members Kathy Hillig and Chris Sarnecki, and are printed on high quality 50% cotton/50% polyester blend shirts. As of this writing, we have:

Galaxy logo:

<i>T-shirts:</i>	<i>Sweatshirts:</i>
3 x medium	3 x medium
2 x large	1 x large
3 x extra large	no extra large

Silhouette logo:

<i>T-shirts:</i>	<i>Sweatshirts:</i>
1 x medium	1 x medium
5 x large	3 x large
no extra large	1 x extra large

Prices are \$10.00 and \$16.00 (members), and \$14.00 and \$20.00 (non-members) for

the T's and sweats, respectively. They make excellent gifts for others or yourself!

Note that I'm not barking these calendars and shirts for my own benefit. These items are important fund-raisers for the Lowbrows. The money we make off them gets put right back into the club - mainly as improvements for the Peach Mountain observatory. I'll be bringing them in to the next few meetings, so bring in your checkbook or cash. Once they're gone, they're gone!

LAST CALL FOR OBSERVER'S GUIDE/SKY PUBLISHING ORDERS!

Also, if you are interested in purchasing a 1995 Observer's Guide, by the Royal Astronomical Society of Canada, let me know ASAP. These guides have all the astronomical data that the serious (or non-serious, for that matter) observer will ever need in 1995, and are highly recommended! I will only order as many as those for which I have requests, so let me know now if you want one. Your price will be \$15.50 (that's my cost). Unlike the calendars, we purchase the RASC guides from Sky Publishing as a convenience to our members, as they give us a ten percent club discount. In fact, they'll give us a ten percent discount on *anything* we order through the club, so let me know if you intend to order anything from their catalog and I'll pass the savings on to you.

I'll bring a copy of the catalog with me to this month's meeting in case you do not have one. This will be your last chance, as I will place the order no later than December 1. If you can't make the meeting, just give me a call. •

-- Doug Scobel

A NEW STUDENT ASTRONOMY GROUP

by Stuart Cohen

Sarah Winfrey, a LSA student at the University of Michigan, has organized an undergraduate astronomical study group for occasional lectures and using the new telescopes atop Angell Hall. The next meeting will be on November 30. There will be a lecture on the effects of Comet Shoemaker-Levy 9 on Jupiter, sponsored by the Student Astronomical Society and Students for the Exploration and Development of Space. For further information, contact Ms. Winfrey on the Internet at sewin@astro.lsa.umich.edu. •



NGC1365

JOSEPH TAYLOR SPEAKS AT U. OF M.

by Douglas Warshaw

Joseph Taylor, discoverer of the first known binary pulsar system, spoke before a large audience at the third annual Ta-You Wu Lecture in Physics at Rackham Amphitheatre on October 27. The discovery, made in 1974 at the University of Massachusetts at Amherst, by Taylor and his graduate student Russell Hulse. The binary, named PSR 1913+16, provides an excellent opportunity to study the effects of gravitational radiation, whose existence was first predicted by Albert Einstein earlier this century.

The pulsars emit strong radio beams as they rotate. The path of one of these beams is occasionally pointed at Earth (once per rotation). The result is repeating radio "beep" occurring every 59.0299979883(7) milliseconds: as accurate as the most advanced atomic clocks. Using this time base, Taylor was able to observe the change in the orbital periods of the pulsars as they lost energy via the emission of gravity waves. He determined that the semimajor axes of the bodies decreases at a rate of approximately 3 millimeters per orbit.

Some background data:

Primary mass: $1.442(3) \times \text{Mass}(\text{Sol})$

Companion mass: $1.386(3) \times \text{Mass}(\text{Sol})$

Precession of periastron:

4.226605(30) degrees/year

[For Mercury, it's 43 seconds of arc
per century.]

Variation of rotational period:

$8.62629(8) \times 10^{-18}$ sec/sec

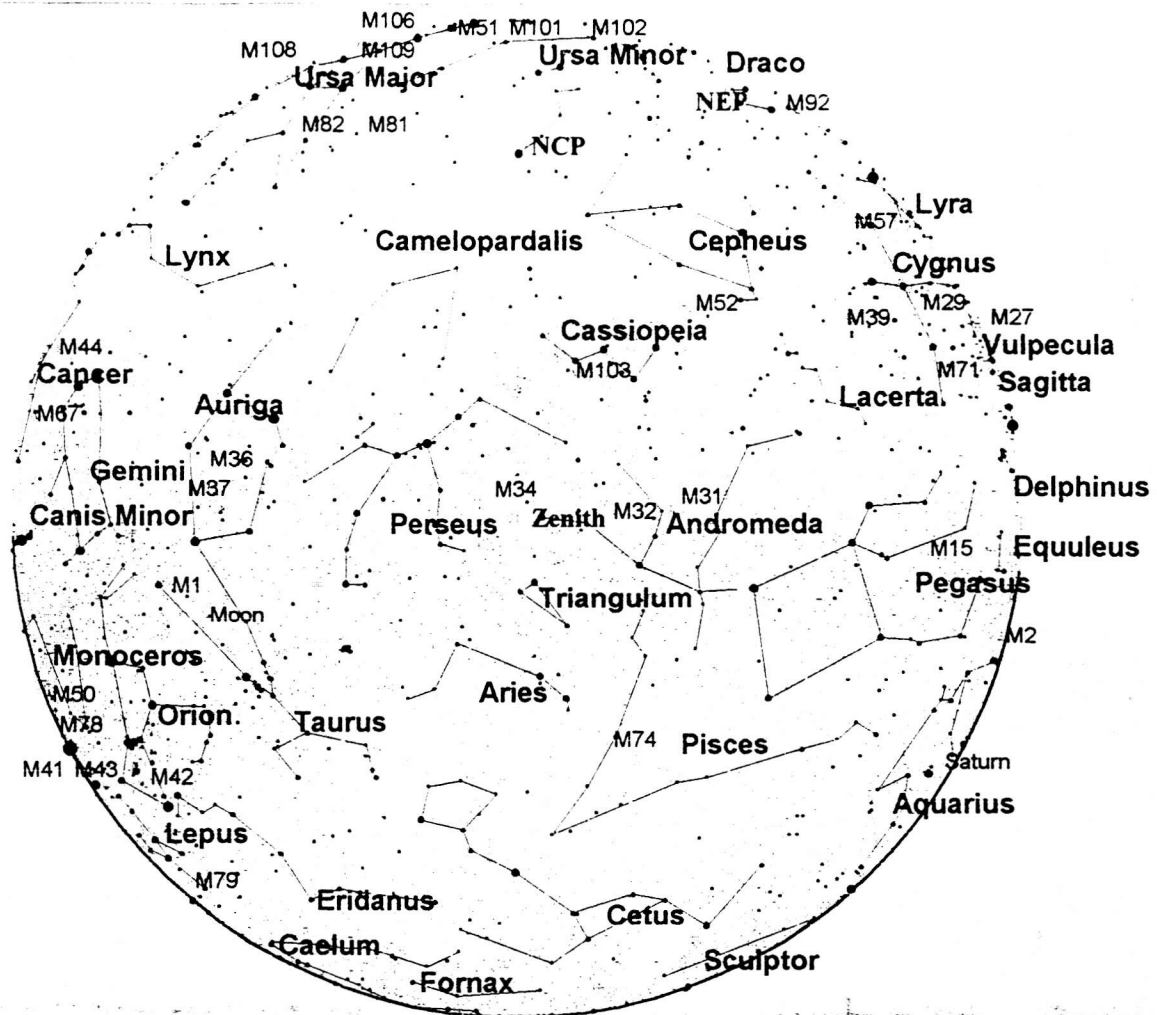
Orbital period: 27906.9807807(9) sec

Semimajor axis: 702041 km

Eccentricity: 0.6171309(6) •

NGC1566.GIF





<u>Projection</u>	Horizon View		
<u>Time</u>	Local	Nov 19, 1994AD, 10:00pm (Night)	
	Universal	Nov 20, 1994AD, 4:00am	Julian date 2449676.6667
	Siderial	02:20.0	
<u>Epoch</u>	Universal	Dec 18, 1993AD, 9:52pm	Julian date 2449676.6667
<u>Location</u>	Earth		<u>Centered on</u>
	Lon.	83°56'12"W	RA 2h20m01s
	Lat.	42°23'54"N	Dec. 42°06'30"
	Altitude	0.000 km	Azm. 180°35'48"
	Time zone	-6.00	Alt. 89°42'36"
<u>Zoom Factor</u>	0.340	<u>Field of View</u>	180°00' * 180°00'

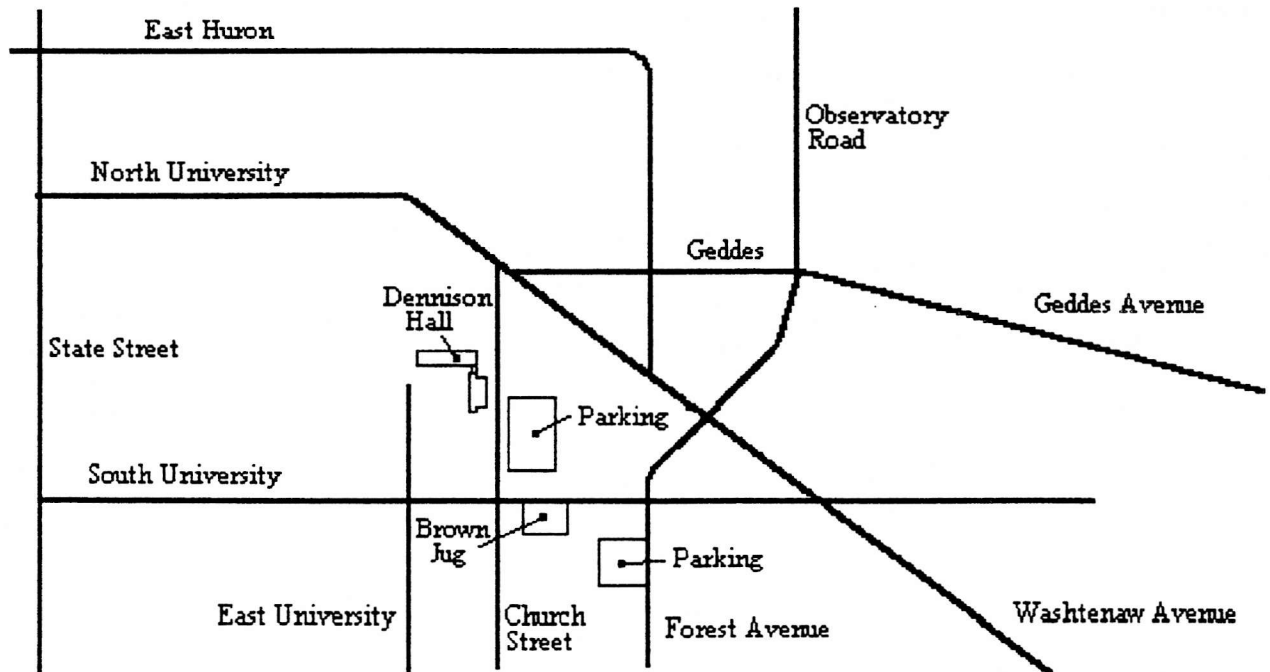
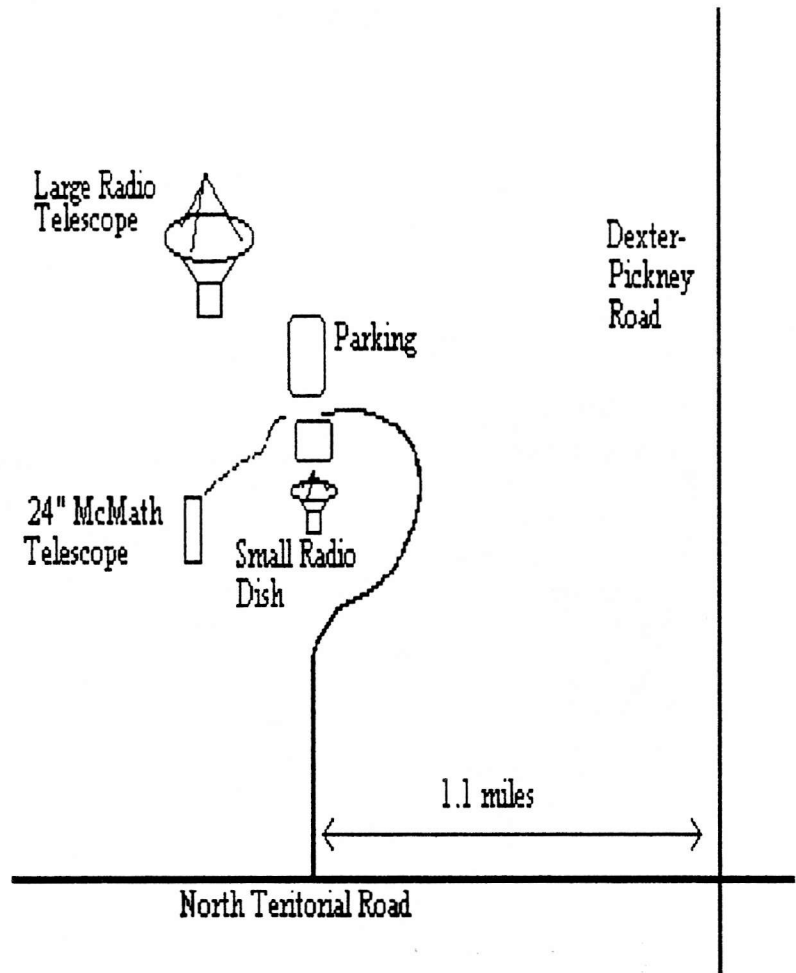
<u>Solar System Objects</u>		<u>Stars</u>	<u>Galaxies</u>	<u>Nebulae</u>	<u>Star clusters</u>	<u>Quasars</u>
☿ Mercury	♆ Neptune	● -1.6	☐ Elliptical	☉ Reflection	☉ Open	☉ Quasars
♀ Venus	♇ Pluto	● -1.0	☐ Spiral	♁ Planetary	☉ Globular	☉ BL Lacertae
♁ Earth	☾ Moon	● 0.0	☐ Spiral bar	☉ Bright	☉ Associated with nebulosities	
♂ Mars	☼ Sun	● 1.0	☐ Irregular	☉ Dark		
♃ Jupiter	♁ Asteroid	● 2.0	☐ Peculiar	☉ HII region		
♄ Saturn	☄ Comet	● 3.0	☐ Undefined	☉ Other regions		
♅ Uranus		● 4.0				
		● 5.0				

<u>Markers</u>		<u>Lines</u>	
NEP	Northern Ecliptic Pole	NCP	Celestial North Pole
SEP	Southern Ecliptic Pole	SCP	Celestial South Pole
		—	Horizon line
		—	Celestial equator
		—	Ecliptic

Places:

Dennison Hall is also known as University of Michigan's Physics and Astronomy building. It is found in Ann Arbor on Church Street about one block north of South University Avenue. This is also one block north of the Brown Jug, our after-meeting eating place. We meet in room 807.

The 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 and used 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:

The monthly meetings of the Lowbrows are held on the third 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 members' houses. See the calendar on p. 1 for the location of the next meeting. Public Open House / Star Parties are held on the Saturdays before and after each new moon at the Peach Mountain Observatory. Star Parties are cancelled if the sky is cloudy or the temperature is below 10°F at sunset - call 480-4514 to check on their status. Many members bring their telescopes; visitors are welcome to do likewise. Peach Mountain gets cold at night so dress warmly - and bring mosquito repellent!

Telephone Numbers:

President: Bill Razgunas 995-0934

Vice

Presidents: Kurt Hillig 663-8699
Stewart Cohen 665-0131
Tom Ryan 662-4188
Steve Musko 426-4547

Treasurer: Doug Scobel 429-4954

Observatory

Director: Bernard Friberg 761-1875

Newsletter: Douglas Warshow 998-1158

Membership: Doug Scobel 429-4954

Peach**Mountain**

Keyholder: Fred Schebor 426-2363

Dues:

Membership dues in the Lowbrow Astronomers are \$20 per year for individuals or families, and \$12 per year for students. This entitles you to use the 24" Mcmath telescope (after some training). Dues can be paid to the club treasurer, Doug Scobel, at any meeting or by mail at the following address:

Doug Scobel
1426 Wedgewood Drive
Saline, MI 48176

Magazines:

Members of the Lowbrow Astronomers can get a discount on subscriptions to any of these magazines:

Sky and Telescope: \$20 / year
Astronomy: \$18 / year
Odyssey: \$16.95 / year

For more information, please contact the club treasurer (Doug Scobel: 429-4954).

Sky Map:

The sky map in this issue of Reflections was produced by Keith bozin using Redshift for Windows CD-ROM drawn for the end of twilight on the monthly meeting date.

Newsletter Contributions:

Members (and non-members) are encouraged to write about any astronomy-related area in which they are interested. Call the editor (Douglas Warshow) at 998-1158, or send e-mail to 75054,310 via CompuServe to discuss length format, etc. Submission of photographs is also welcome. Announcements and articles are due 14 days before each meeting (i. e., the first Friday of the month). Contributions should be mailed to:

Douglas Warshow
1010 Catherine, Apt. 408
Ann Arbor, MI 48104-1647

University Lobrow Astronomers
1740 David Ct.
Ann Arbor, MI 48105

Check your membership expiration date on the mailing label!
