

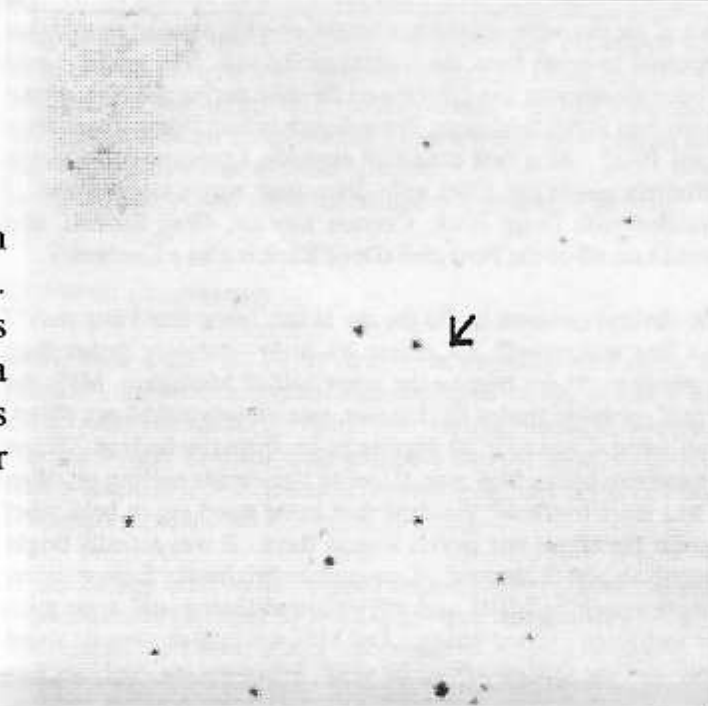
REFLECTIONS SNOITTECERF

of the University Lowbrow Astronomers

May 1998

Potentially Hazardous Asteroid 1997 XF11

The uncertainty in the orbit of this Near-Earth asteroid was reduced when Dr. E. Helin and K. Lawrence found "pre-discovery" observations (shown at the right) of 1997 XF11 in Palomar data obtained with the PCAS program in 1990. Its closest approach to the Earth, while still a "near miss," is no longer as close as previously believed.



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, weather permitting, at the University's Peach Mountain Observatory on North Territorial Road (1.1 miles west of Dexter-Pinkney Road; see inside for directions) on Saturday evenings before and after the new moon. The event may be cancelled if it is cloudy or very cold at sunset. For further information, call (313) 480-4514.

This Month

- May 15 Meeting at 807 Dennison.
7:30 pm Ann Arbor Space Society
- May 17 ATM meeting.
Time and location TBA
- May 23 Open house at Peach Mountain.
- May 30 Open house at Peach Mountain.

Next Month and Beyond

- June 19 Meeting at 807 Dennison
- June 20 Open house at Peach Mountain.
- June 21 ATM meeting. Time and
location TBD.
- June 27 Open house at Peach Mountain.
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Deep Sky Observing - Texas Style

by Doug Scobel-----

"Wooooowwwwwww!" The cry rang out another time in the predawn darkness as another bright meteor streaked across the star-filled sky. Those that were lucky enough to be looking at the right area of the sky were treated to a bright, quickly moving meteor that appeared to come from the constellation Lyra. The annual Lyrid meteor shower was just the icing on the cake during the 20th annual Texas Star Party, held at the Prude Ranch in Fort Davis, Texas from April 19-25. As a first time TSP attendee, I can attest that it was definitely worth the 1700 mile drive (one way!) to get there. I attended with Doug Bock, Clayton Kessler, Greg Burnett, and David Lee, all of the Ford club (Doug Bock is also a Lowbrow).

The obvious question is, "Is the sky at the Texas Star Party dark"? Is a frog waterproof? Of course it's dark - certainly darker than anything you'll see here in the lower half of Michigan. M13, the "great" globular cluster in Hercules, was an easy naked eye object, even when it was only 20 degrees or so above the horizon. When the summer Milky Way rose, it looked like clouds moving in; when it was more overhead, the dark dust lanes stood out in bold relief against the bright star clouds around them. It was actually bright enough to cast a shadow! Low surface brightness face-on spiral galaxies such as M101 and M83 showed their spiral arms even without using averted vision. And M51 not only showed its spiral arms, but the fainter regions between the arms were easily seen as well. The dark skies also made galaxy-hopping possible and fun. Just pick a page from Uranometria 2000 and hop from faint galaxy to faint galaxy. I spent one entire night logging more than fifty galaxies in the Coma galaxy cluster, some as faint as 14th magnitude per square arc-minute. Doug Bock also did some galaxy-hopping in the Coma cluster and in Centaurus with his 20 inch Obsession.

There is one drawback to having such dark skies, though. After sunset, some of us wanted to observe some deep sky objects in the west before they sank below the hills. But that dang Zodiacal Light was brightening the sky too much! I have seen hints of it here in SE Michigan, but never like this. The huge wedge of light reflecting off dust in the plane of our solar system ran right up through Gemini and partly obscured Auriga, Orion, and Monoceros. It was almost enough to make us pack up and go back to Michigan (just kidding!).

Another plus for the TSP is its southerly location. At about thirty and a half degrees latitude, about twelve more degrees worth of southern deep sky targets are available. The naked eye view is enhanced, too. Scorpius is a glorious sight when you can see it in its entirety, tail included, suspended above the bright Sagittarius star clouds. It really does look like a scorpion! Objects that are low in the southern sky from up here, such as M83, are much better placed for observing. But the high point had to be seeing the incredible globular cluster Omega Centauri. M13 literally pales in comparison, as it is roughly half the size and more than two magnitudes fainter. At about 200x, the view through my 7mm

bright stars against the milky background of countless more unresolved stars. It was truly an awe-inspiring sight! Another treat was Centaurus A, the famous X-ray emitting galaxy. Its dark, broad dust lane was very easily seen against its round glow. (Interestingly enough, at declination -43 degrees, Centaurus A should rise almost five degrees above the horizon from here in SE Michigan, although I've never heard of anyone looking for it from up here). I spent the first few nights completing the TSP's "Great Southern Skies Challenge", which challenged the visual observer with forty deep sky objects south of minus thirty degrees declination (but of course I observed them all!).

We were able to observe and/or do photography seven out of seven nights. We arrived Sunday morning around 1:00 am local time. Not enough time to set up scopes. Besides, we were pretty much wiped out after almost thirty hours straight on the road. But still we "forced" ourselves to stroll around the grounds, looking up at the pitch black skies through binoculars, or one of the few scopes that other attendees had already set up, or just with the naked eye. Sunday night was clear and dark - although lacking in steadiness. Heavy duty observing and photography started in earnest, as Michigan weather patterns train you to go for the gusto when you get the opportunity. Monday night started out with a good old-fashioned western dust storm, as a front blew through during evening twilight. Everyone scrambled to cover up scopes and equipment, as it was impossible to observe in the wind and dust. Retiring early, we set the alarm for 2:00 am, and awoke to find that the wind had diminished considerably. So on went the warm clothes, down went the hot chocolate, and observe we did until moonrise. Tuesday through Thursday nights were clear, too. After Tuesday night, morning twilight started before the moon rose, so all nighters were in order. Sleep? We don't need no stinkin' sleep! That's what daylight is for. Friday night we finally got some haze and clouds, but there was still enough holes through which to observe some brighter showpieces. But, we actually welcomed the opportunity to go to bed early, since we were bugging out the next day.

About the only drawback to the Prude Ranch site is that it is dusty! Fine, gritty, windblown dust is everywhere, and it gets into virtually everything. Simply walking stirs it up. There are signs all over stating "5 mph - no dust", but even idling along your vehicle raises a cloud of it. It gets into focusers, camera lenses, charts, scopes, clothing, virtually anything that's left outside for any length of time. Plus, there's always some wind blowing during the day, so you had to keep your scope covered with a tarp when not in use. TSP veterans even stake their scopes to the ground, in case one of those Texas-sized dust devils came roaring by. It was kinda fun watching all the 20 and 25 inch Obsession weathervanes twisting around, always keeping their tail ends pointing into the wind. By the end of the week, the bearing surface of the teflon pads on my dob were solid brown. Fortunately, they cleaned right up once I got home and gave the whole thing a good washing. But, this is why the sky is good and dark there. It is, after all, a desert mountain location. Desert means dry, dry means low humidity, and low humidity means transparent air. Gotta take the bad with the good (but not necessarily the ugly, right, Doug?).

Daytime activities during the week included napping, developing film, eating, hiking, napping some more, taking pictures, spending mucho dinero at the vendors', eating some more, fossil hunting, cleaning eyepieces, swimming, still more napping, watching out for dust devils, doing Batman and Yoda impressions, and engaging in conversation ranging from meaningful debate to meaningless drivel. We also took in a special technical tour of nearby McDonald Observatory, home of 82", 107", and 9.2 meter telescopes. The 9.2 meter, the third largest telescope on the planet after the twin Keck telescopes, is scheduled to be fully operational before the end of the year. The hosts gave us a really nice, informative tour.

Not a bad way to spend a week, eh? If you are really into deep sky observing or photography, you owe it to yourself to attend the Texas Star Party at least once. And don't let that long drive deter you. As that little pointy-eared green guy once said, "Do, or do not. There is no try".

Okie-Tex '98 - 15th Anniversary

Submitted by Doug Scobel

The 15th annual Okie-Tex Star Party will be held October 18 through October 25, 1998 at the Prude Ranch in Ft. Davis, Texas. The Ft. Davis area is well-known for its extremely dark skies. Scheduled guest speakers include Richard Berry, Robert Burnham, David Eicher, and Alan Dyer. Doug Scobel will have copies of the flyer at the May meeting.

Recent News and Observations

Credit JPL and NASA

Last Updated: 8 May 1998

Long-Period Comets

- C/1995 O1 (Hale-Bopp) is ~9.2 (5/8)
- C/1997 D1 (Mueller) is about 13.5 (2/23)
- C/1997 J2 (Meunier-Dupouy) is about 11.5 (5/7)
- C/1997 T1 (Utsunomiya) is fainter than 12.5 (4/30)
- C/1998 H1 (Stonehouse) is about 10.5 (5/8)
- C/1998 J1 (SOHO) no daylight sightings (5/8)

Short-Period Comets

- 29P/Schwassmann-Wachmann 1 is 13.5 (4/24)
- 43P/Wolf-Harrington is ~ 14 (3/24)
- 55P/Tempel-Tuttle is now in conjunction (3/4)
- 62P/Tsuchinshan 1 is fainter than 13.5 (3/25)
- 69P/Taylor is ~ 11.9 (3/25)
- 78P/Gehrels 2 is ~ 14 (3/25)
- 88P/Howell is ~ 14.5 (4/20)
- 95P/Chiron is about 16 (2/4)
- 103P/Hartley 2 is ~12.5 (4/15)
- 104P/Kowal 2 is about 14 (3/24)

- 128P/Shoemaker-Holt 1 is ~ 15.2 (3/25)
- 132P/Helin-Roman-Alu 2 is about 16 (2/23)

IAUC 6894 (May 5, 1998) announces the discovery of C/1998 J1 (SOHO) by S. Stezelberger (SOHO-LASCO Consortium) of a bright comet in the northwestern corner of the field of view of the C3 coronagraph, some 8 deg from the sun. The computed parabolic orbit by Marsden (same circular) indicates that perihelion will occur on May 8.9 with a perihelion distance of 0.17AU and that the comet might be brighter than -1 (and about 9 degrees away from the Sun). The comet is expected to move towards the southeast and may become visible as an evening object in the last half of May (with the Southern Hemisphere favored).

C/1998 H1 (Stonehouse)

IAUC 6883 (April 26, 1998) reports the discovery of a comet by Patrick Stonehouse. After some confusion on the position, the comet was confirmed by Alan Hale, Gordan Garradd, Akimasa Nakamura, and Y. Ikari. Hale estimates that the comet's $m_1=10.7$ with a diameter of 4.5'. Garradd records a 30" tail in PA 205 deg. Nakamura reports a tail > 5' in PA 202 deg.

A preliminary orbit on IAUC 6887 (April 27, 1998) indicates that perihelion was on April 14.2, 1998 UT at a distance of 1.49 AU. The comet, currently about magnitude 10.5 should fade as it recedes from both the Earth and the Sun. The comet is moving north and west. Although visible from both hemispheres now, by early May the Northern Hemisphere will be favored.

C/1995 O1 (Hale-Bopp)

Last Updated: 8 May 1998

Reported observations:

- 1998 Mar. 26.402 UT: $m_1=8.4$, Dia.=, DC=5, Tail: trace...10x50 B...Terry Lovejoy (Moranbah, QLD, Australia)
- 1998 Apr 13.50 UT: $m_1=9.2$, Dia=4', DC=3...20x80B...Andrew Pearce (Nedlands, Western Australia)[Observation made with moon visible in eastern sky, however sky at comet's location still relatively dark.]
- *1998 Apr 19.48 UT: $m_1=9.2$, Dia=3.8', DC=3...20x80B...Andrew Pearce (Nedlands, Western Australia)
- *1998 Apr. 20.427 UT: $m_1=8.7$, Dia.=, DC=5, Tail: -...10x50 B...Terry Lovejoy (Moranbah, QLD, Australia)
- 1998 Apr 20.50 UT: $m_1=9.2$, Dia=3.6', DC=3...20x80B...Andrew Pearce (Nedlands, Western Australia)
- *1998 Apr 22.46 UT: $m_1=9.1$, Dia=2.0', DC=6, tail 3' in PA ~75 deg...20cm L(x45)...Michael Mattiazzo (Wallaroo, South Australia) [fan like tail]
- *1998 Apr. 26.385 UT: $m_1=8.8$, Dia.=8', DC=5, Tail: -...10x50 B...Terry Lovejoy (Moranbah, QLD, Australia)[Still fairly easy to see in binoculars with an extended coma]

Colorado meteor may have been part of Hale-Bopp

By Joseph B. Verrengia

Sunday's meteor may have been a stray chunk of the comet Hale-Bopp burning through Earth's atmosphere before plunging into Colorado's Plains. "Only the smoking rock can resolve the matter," University of Denver astronomer Robert Stencel said. He has calculated the orbit of the comet around the sun in relation to Earth's orbit, as well as having traced the trajectory of the fireball -- a chunk of flaming space rock.

Thousands of Front Range residents saw the fireball shortly after midnight Jan. 11. Judging by its flight path over Monument, geologists at the Denver Museum of Natural History and private collectors raced to southwest Elbert County on Friday to search for valuable pieces of the fireball, or meteorite.

It is uncertain that the debris originated with Hale-Bopp, Stencel cautions. But all the distances, angles, velocities and known orbits of the key celestial factors raise the odds considerably. "It's speculative, but there's enough to propose the connection," Stencel said.

If true, a piece of Hale-Bopp could well become one of the higher-priced items on the meteorite market. Prices range from a few dollars to \$90 per gram. Cometary fragments are rare, and Hale-Bopp was a sensational event.

One prominent dealer said he advocates sharing discoveries with many researchers for analysis, as long as private ownership is not outlawed.

"Collectors and institutions should work hand-in-hand," said Matt Morgan, owner of Mile High Meteorites in Lakewood. "If it were a piece of Hale-Bopp, it would be quite important scientifically." "It's the people who say that all meteorites should be in museums that upset me," Morgan said. "Why shouldn't I be able to own a piece of another world?" Of course, the clincher would be for scientists to examine a meteorite found along the fireball's flight path. Time is essential.

Jack Murphy, geology curator of the Denver Museum of Natural History, said trace gases and elements deteriorate the longer a meteorite sits on the ground.

Most meteorites come from about 10,000 asteroids -- large, orbiting leftovers from the formation of the planets 4.5 billion years ago. They frequently show the influence of volcanoes and the sun. But a meteorite from a comet would contain key chemical and mineral characteristics unlike anything found on Earth and other planets, including different ratios between heavy and light elements. It may have a higher metal content, too.

"Hale-Bopp has visited the solar system only a few times and it may be made of relatively pristine materials," Stencel said. "The further you go from the sun, the more original, pre-solar system material

it would contain."

Hale-Bopp won't reappear here until the year 5400.

Like Sunday's fireball, Hale-Bopp was a rare and spectacular event. It was visible to the naked eye for months. Its three tails, including a unique sodium tail, streamed for millions of miles. Up close, a comet is a spinning, tumbling chunk of ice and rock. As these dirty snowballs travel near the sun, their cores shed and spew gases and debris like geysers.

Hale-Bopp is 25 miles in diameter. It is as big as a mountain and one of the largest known comets.

Copy - Right?

by Christopher Sarnecki

Following in the footsteps of previous Lowbrow newsletter editors I try to bring to our humble publication something new and perhaps never printed before. In this report I claim possibly the most unexciting article ever presented in REFLECTIONS; but, bear with me. The information presented here is worth your consideration and attention.

At last month's Great Space Adventures Day held on the University of Michigan's north campus many Lowbrows gave generously of their time to help provide astronomy related visuals and equipment at our booth. I know the kids and the public enjoyed our contribution greatly. As luck would have it, our booth was set up directly across from a booth sponsored by National Aeronautics and Space Administration's (NASA) Lewis Research Center from Cleveland, Ohio. Towards the end of the afternoon, when the public attendance started to wane, I decided to pay a visit to our neighbor and we talked about a number of things. It seems that during the course of the day many Lowbrows wandered over to the NASA booth to pay a similar visit. The NASA booth had a spinning globe on top of a nice display show casing their many and varied space programs. Well, it seem that the globe was spinning backwards and many Lowbrows, wanting to maintain serenity in the cosmos (even at a very small scale), had remind the NASA representative of the fact. I of course did the same. By this late hour of the afternoon our NASA rep had had it and proceeded to let me know, in a nice manner, that he did not critique our exhibit. He could you know; these guys know a lot. On one issue he did take exception, and that is the use of NASA information without proper credit given to NASA.

Our NASA rep suggested that I log on to NASA web site and locate the guidelines for use of NASA material. The use of NASA materials in a public forum, such as the Great Space Adventures Day, or in a club newsletter, such as REFLECTIONS, require the acknowledgments identified below. In an effort to give NASA it's due I logged onto the web site for NASA, the Jet Propulsion Lab (JPL), and Association of Universities for Research in Astronomy/Space Telescope Science Institute (AURA/STScI). For the sake of

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JPL - Author: Brian Dunbar, **Curator:** Boeing Information Services, **Comments and Questions,** Last Updated: Nov 13, 1997, **Image Copyright Information.**

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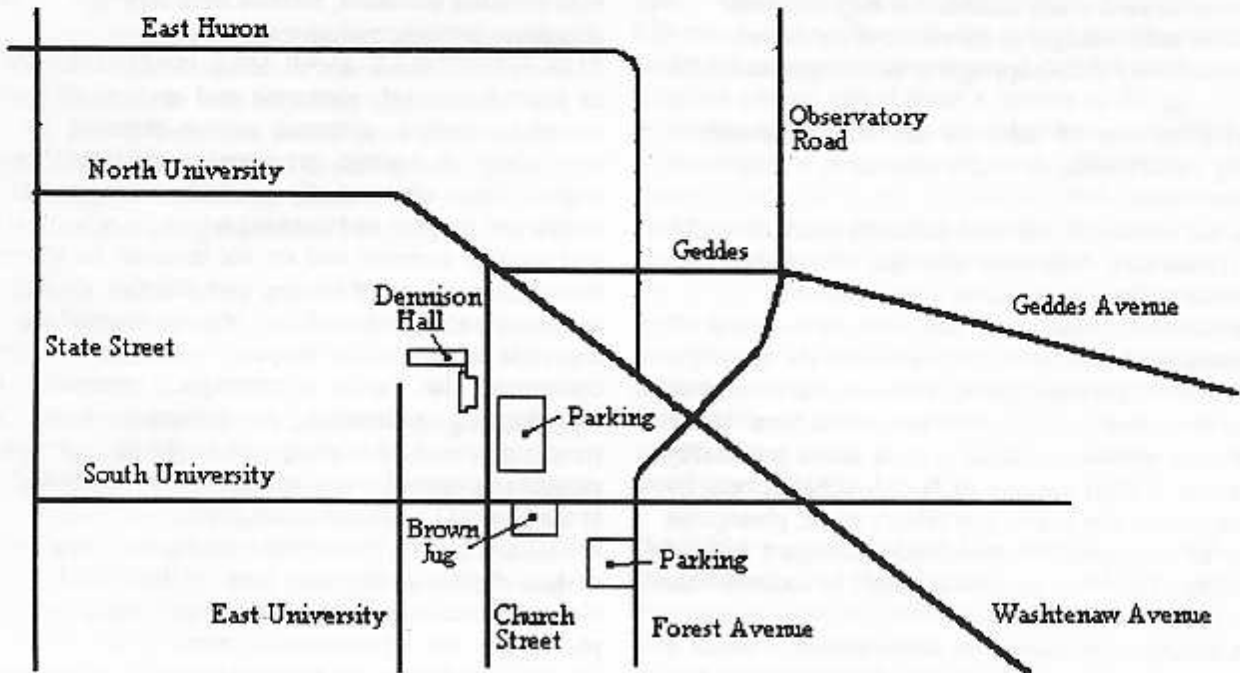
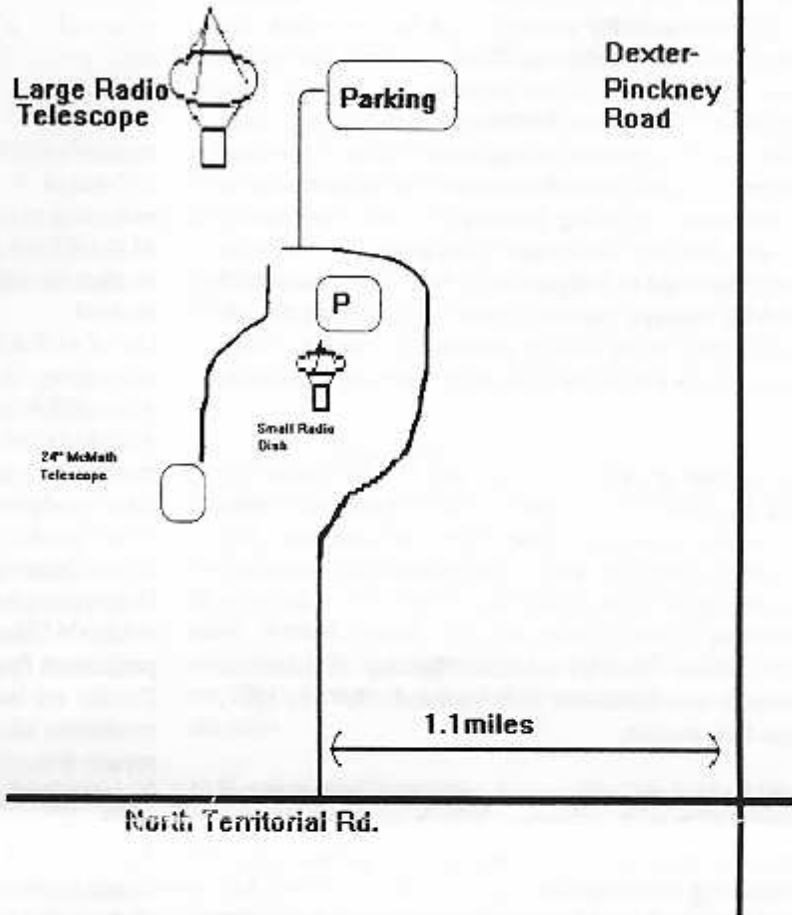
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Places and Times:

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. 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-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.

Monthly meetings of the Lowbrows are held on the 3rd Friday of each month at 7:30 PM in 807 Dennison



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Telescopes Wanted

Do you have a telescope for sale.? E-mail Bfriberg@aol.com or call 313-761-1875

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Announcement:

Do you have E-mail capability and you do not treceive the Lowbrow E-mail messages? Please notify Kurt Hillig (khillig@umich.edu), Doug Scobel (djscobel@ann-arbor.applicon.com) or Bernard Friberg (Bfriberg@aol.com)

Dues:

Membership dues are \$20 per year for individuals or families, and \$12 for students.

Checks made out to: University Lowbrow Astronomers and mailed to Doug Scobel, 1426 Wedgewood Drive, Saline MI 48176 .

Magazine Subscriptions :

As a member of the Lowbrows, you are entitled to substantial discounts on *Sky and Telescope* and *Astronomy* magazines. To qualify for the discount, however, you must submit all subscription requests through the club treasurer. Make the check payable to "University Lowbrow Astronomers."

The current magazine subscription rates are:

	<u>Normal</u> <u>Rate</u>	<u>Club</u> <u>Rate</u>	<u>Savings</u>
<i>Astronomy</i> *	\$34.95	\$20.00	\$14.75
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*Club rate allowed on 1 or 2 year subscriptions.

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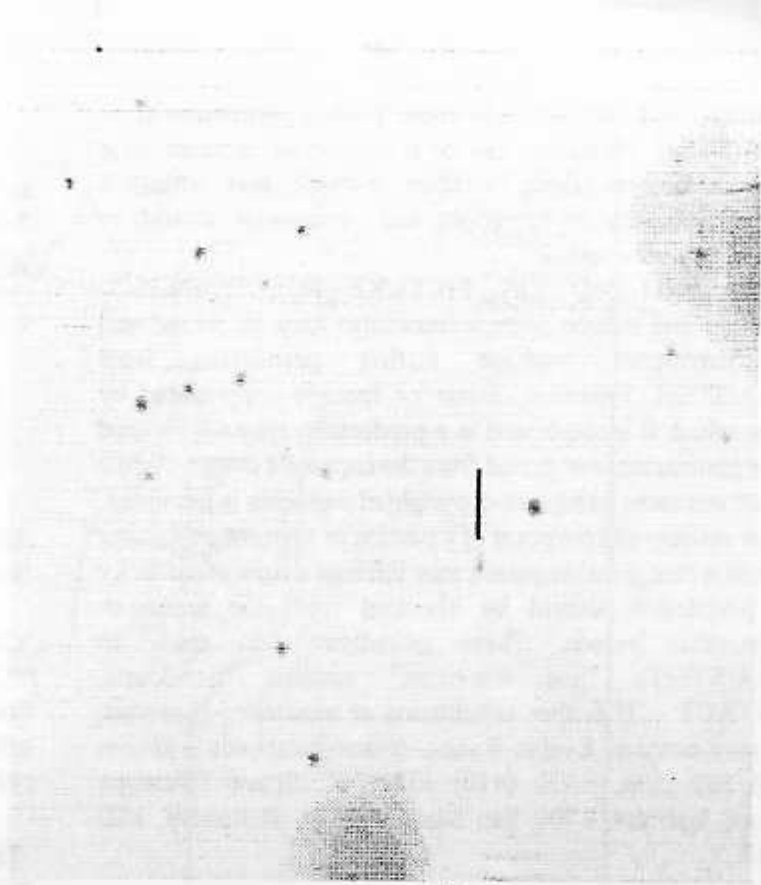
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**Monthly Meeting:
May 15, 1998
@ 7:30 pm**

Room 807 Dennison Hall (Physics and
Astronomy Building) at the University of
Michigan

**The Ann Arbor Space
Society is Providing
Speakers to Talk About
Space Issues**



**Asteroid 1988 EG
Makes A Close Approach to Earth**

**University Lobrow Astronomers
3684 Middleton Dr.
Ann Arbor, MI 48105**



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11/1998