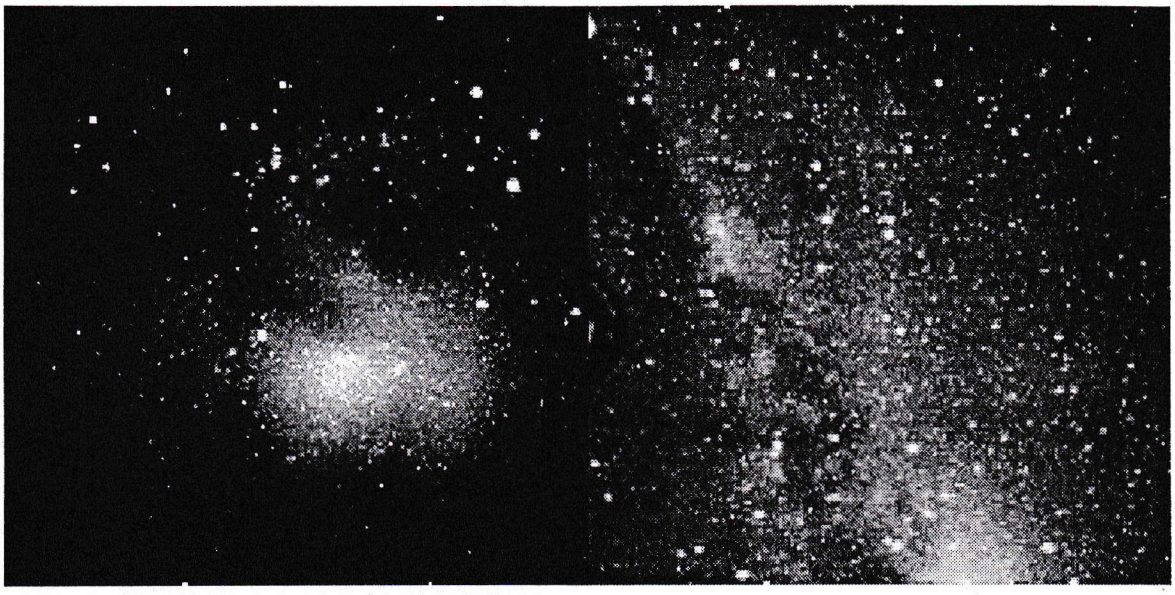
REFLECTIONS



REFLECTIONS

June 1993

The Aurora Australis (right) against Crux/Centaurus, and the Milky Way in Scorpius/Norma/Ara. Taken by Andy Coulthard in May 1993 at the Amundsen-Scott Station in Antarctica, using a Lynxx CCD camera with a 4.2 mm FL lens. The images are about 36° on a side.

Kurt Hillig
Editor

Of 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 Detroit Observatory at the corner of Observatory and Ann Streets in Ann Arbor. 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; map on page 7) on the Saturdays before and after the new moon; the star party is cancelled if it's cloudy at sunset. For further information, call Stuart Cohen at 665-0131.

This Month:

June 18 - Meeting at the **Detroit Observatory**. The Computer Subgroup puts on its first annual gee-whiz show! Don't miss it!

June 19 - Public Open House at the **Peach Mountain Observatory**. New Moon, Jupiter's a great early-evening target, and Saturn rises around midnight for all the true die-hards to see...

June 26 - Public Open House at the **Peach Mountain Observatory**. First-quarter Moon, for the lunatics, and other goodies!

Cheaper than Truth!

Do you have trouble observing faint objects – when you switch eyepieces it goes out of focus? If so, your eyepieces are not parfocal! Go get some rubber rings with a square cross-section 1/8" on a side. Slide the rings on the eyepieces to prevent them from sliding down the focusing barrel. Adjust each one of your eyepieces so that they are always in focus, and you now have a set of parfocal eyepieces! Suitable rubber rings come from 1 1/4" U-drains found under your bathroom sink. Replacements can be found at any hardware store – in fact, you should probably buy the replacements first (unless you want a wet floor). If you have long-barrel eyepieces, or if you want to use your eyepieces when you're wearing gloves, rings 1/4" square in cross-section are used for the seals in kitchen sink drains. They about double the diameter of the eyepieces so you can easily hold onto them. Finally, this gives you a cheap way to make eyepiece holders – cut a row of holes in a piece of cardboard and slide the eyepieces into them. The rubber rings prevent them from falling through!

Next Month and Beyond:

July 1 - Computer Subgroup Meeting location to be decided at the June 18 club meeting. We've been given the go-ahead to add commercial digital setting circles to the 24" McMath scope – we'll get an update on the progress of the project plus our usual collection of neat software.

July 16 - Meeting at the **Detroit Observatory**. To a wine connoiseur it's a Trokenbeerenauslese, to an organic chemist it's tributylamine, but for LBA's it's just TBA!

July 17 - Public Open House at the **Peach Mountain Observatory**. Dark skies + hot muggy weather + mosquitos = Heaven!

July 24 - Public Open House at **Peach Mountain**. Art Fair ends today - maybe we can attract some of the stragglers?

August 1 - Computer Subgroup Meeting location TBA.

When I heard the learned astronomer,
When the proofs, the figures, were ranged in columns before me,
When I was shown the charts and diagrams, to add, divide, and measure them,
When I sitting heard the astronomer where he lectured with much applause in the lecture-room,
How soon unaccountable I became tired and sick,
Till rising and gliding out I wandered off by myself,
In the mystical moist night-air, and from time to time,
Looked up in perfect silence at the stars.

– Walt Whitman.

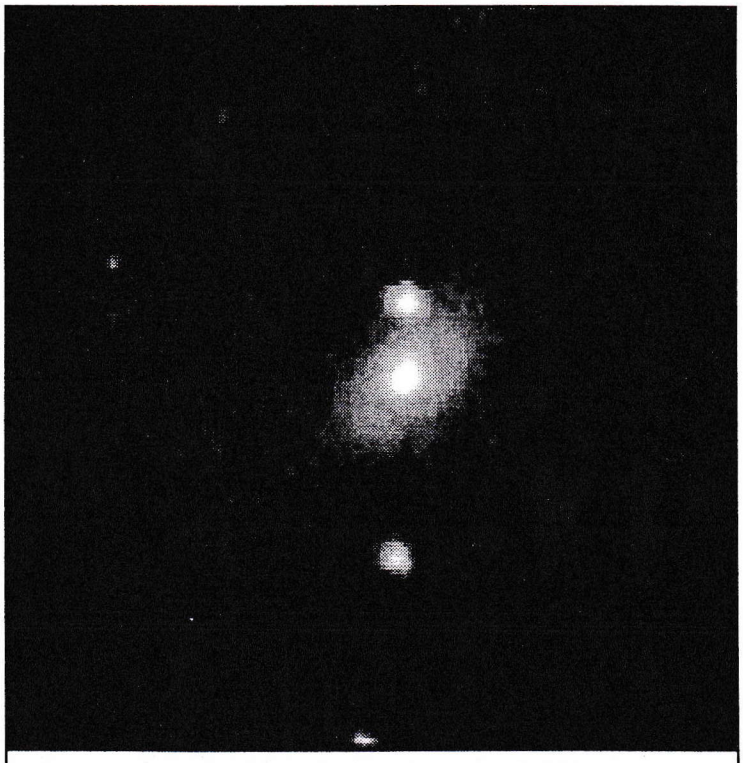
TSP '93 – The 1993 Texas Star Party

by Roger Tanner

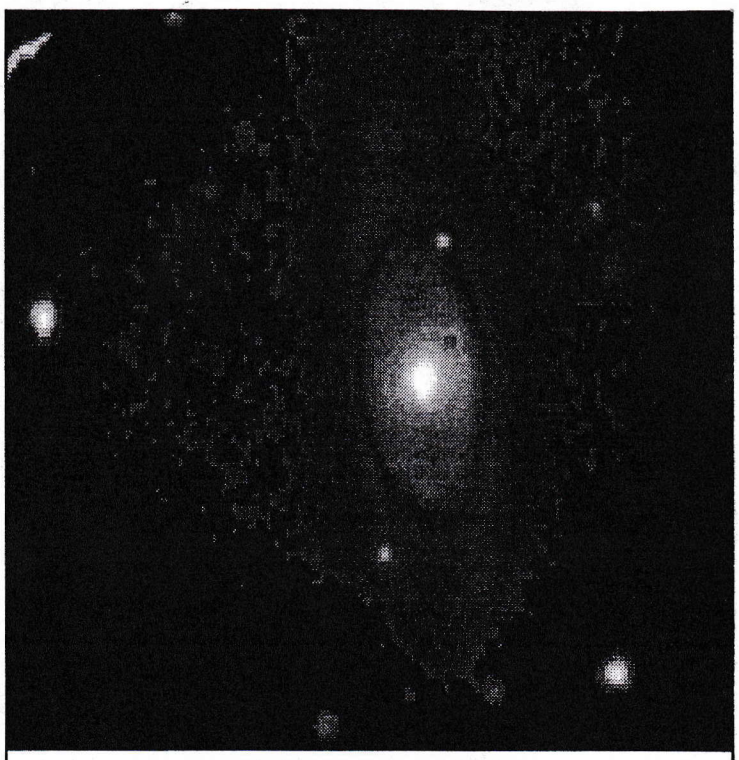
B[illegible]ose and I attended the '93 TSP and had an enjoyable time. [illegible]ear all of the good observing nights were at the begin[illegible] the week. The attendance was very high – on the first d[illegible] telescope fields were as full as they normally are on Wednesday; actual registration was 702 people. The skies were not as good as I have seen them at the TSP 2-3 years ago, maybe the high humidity and Pinatubo dust took its toll. Several people from New Mexico and Arizona were complaining that they left better skies at home!.

The area which Brian, George Semple (a friend of mine from the Chicago area) and I set up in was the middle field. This site does not have the best horizons, but it was right across from our bunkhouse, which is great at the end of a long night. The upper field is the biggest (about the size of a football field) and usually has the big scopes, although a brand new 25" was set up just across from our area. There were a few 30+ inch scopes this year, and probably six 25" scopes. Jim Lawrence and his 17" binoc's didn't make it, although a 10" pair showed up just down the field from us (which I didn't get to look through).

The imaging I'm doing these days is getting to be too much work. We set up in a RV spot which had it own power separate from the general telescope power. This allowed me to run the computers and my scope, which take too much power to be on the regular telescope power line (it was also required by the rules). This worked fine until someone drove over the power cord for all of the RV sites, twisting it and shorting it out. The ranch rigged up a heavy extension cord to get us back into service, but by then the sky was cloudy. Oh, well, everyone else was having fun....



NGC 4102, imaged by Roger Tanner at the 1993 Texas Star Party

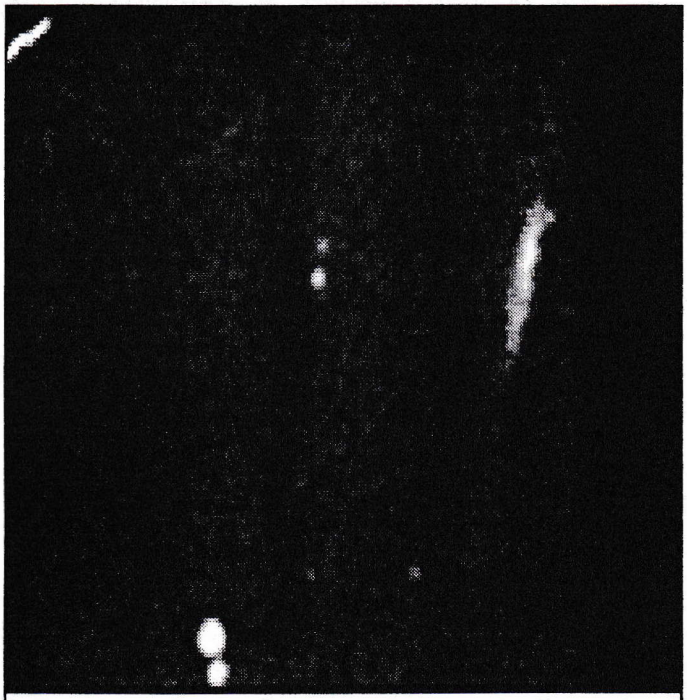


NGC 4274, imaged by Roger Tanner at the 1993 Texas Star Party

Brian had brought his 8" Celestron and was happily looking up faint galaxies and nebulas in the southern sky. George was doing the same with the home brew 10" he'd just built from a Coulter Odyssey – the only thing left of the original scope was the mirror cell, focusing mount, and the diagonal holder. His design is convertible from a equatorial mount fork to a Dobsonian just by tilting the base. His drive is a stepping motor geared to a polar disc, which could keep objects in the field for up to 20 minutes.

The subject of who has allowed astronomy become an addiction came up, I insisted that I can control it any time I want, but I don't think I was believed. Brian left from the star party to drive to Montana to interview for a couple of jobs there. (The locations just happen to have dark skies, which he wants along with the outdoors.) George insisted that he can quit anytime – but he was last seen leaving the star party with a 22" diameter plastic worm gear to replace his roller disk drive. That's the way it starts, you know – next he's going to be trying to take pictures with his 10". George is also moving to Arizona and going back to school. He casually mentioned that the skies from his Mom's back yard near Prescott, Arizona are darker than the TSP. Oh, he can stop *any* time, sure...

I spent several nights trying to get a good image of the comet Shoemaker-Levy, which broke up after passing near Jupiter in March (see photo in the April '93 issue of *Reflections* - Ed.). I met David Chandler, who wrote *Deep Space 3D*. David was hunting down the three comets in the sky that night with his 24" trailer-mounted telescope on the upper field. He gave me the coordinates to the Shoemaker-Levy, and George and I found it easily the first night even though it was only a 14-15th magnitude smear. I



Comet Shoemaker-Levy (1993e), imaged by Roger Tanner at the 1993 Texas Star Party

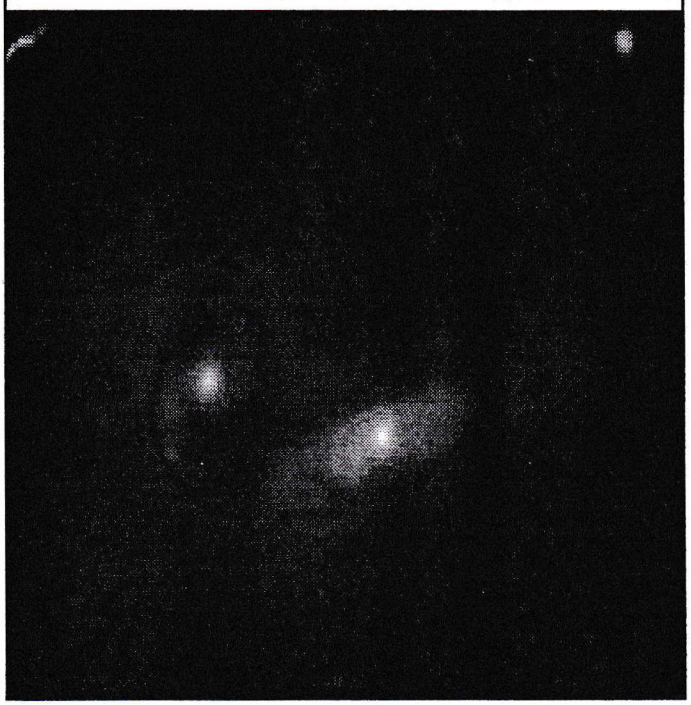
got a few images of it, but was fighting wind gusts. I gave the best one to Kurt for the newsletter along with some of the galaxies that George and Brian were looking at (see them scattered throughout the newsletter - Ed.). On the second night, I tried out an idea for lowering the thermal noise in the CCD by draping a Zip-Lock bag filled with ice over the heat sink on the camera – this helped, but the skies weren't very steady and the image was just not as good as the first night. I'd been thinking of something to pump water through the ice in my cooler and planned a trip to the nearest big town to buy copper and plastic tubing, a windshield washer pump, and a 12 volt power supply at Radio Shack. Brian saved me from certain madness with the simpler ice bag idea. In talking to David Chandler, he mentioned he is modifying his Deep Space 3D program to be more usable in the field because of the increasing number of computers outdoors at night. He is also interesting in getting into CCD imaging to help him see more detail in the comets, and we got into talking about CCD cameras (surprised ?). I mentioned the soon-to-be-announced kit Richard Berry is working on, and David was very interested.

I also talked to Emil Bonanno, who was at the vendors booth selling his star chart program *Megastar*. He printed up a finder chart for the comet, which showed about 40 stars in a 1x1.2 degree field, based on the coordinates I got from David Chandler. People at the TSP are usually willing to help you out - maybe Texas hospitality rubs off on them as they drive in. Anyway, he is going to come out with a version of Megastar on CD-ROM which has 60,000 deep sky objects. He also gave a good talk on the problems with the Hubble Guide Star Catalog during his talk on his program. The HGSC is not complete at any particular magnitude, as only enough stars were included in each square degree of the sky to insure that guide stars would be present. This presents a problem for amateurs who may be looking for a particular object near a star as it may not on a chart produced with the HGSC. The other problem is that the magnitudes in the HGSC are only accurate to 0.3 magnitude or so. This can lead to misrepresenting the star brightness on a star chart, again confusing the user. He finished by reminding everyone to consider the use the catalog was intended for, and to remember that this is still the best we have for finding faint objects.

One of the most interesting speakers this year was Dr. Paul Hickson, who talked about his experiments on large liquid-mirror telescopes for studying compact galaxy clusters. This is the liquid mercury-mirror telescope that was written up in *Sky and Telescope* recently. He wants to build a big scope (>4 meters) cheaply enough that it can be dedicated to a single observing project. This project is to search out all of the galaxies in an area of the sky down to 24th magnitude. The secret to success in these scopes is the air bearing which supports the mercury mirror. With just the right bearing and drive system, he can get a seeing-limited image. These types of scopes are limited to only looking at the zenith, but this is OK for the survey type of work Dr. Hickson wants to do. He is going to use a CCD which is scanned at the same rate as the sky moves across the chip. This will give him about 100 second exposures, which the calculation show will get him to his target magnitude. One complication is he wants to measure these galaxies with 40 narrow band visual and infrared filters to allow them to determine the recession velocity, and distance!

Dr. Hickson also has a catalog of compact galaxy clusters which amateurs are just starting to look at. These clusters allow one to test several theories of galaxy formation and dynamics. His catalog is currently being considered for publication and could be available in a few months. He developed this catalog by studying the blue plates in the Palomar II sky survey as a grad student. At the star party, several of the people who look for faint objects were looking for the Hickson galaxies and were showing

NGC 4567 and 4568, imaged by Roger Tanner at the 1993 Texas Star Party



Computer Subgroup Report
by Stuart Cohen

At the last lowbrow meeting, the club members authorized the computer sub-group to consider the immediate purchase of a commercial optical encoder system for the 24" scope. At the following computer subgroup meeting, there were four issues related to this that the computer group discussed: 1) finding hardware immediately that could be installed relatively easily on the scope, 2) finding something that could be upgraded to use with a computer in the future, 3) to find something that the club could afford, and 4) to have something that had a sufficient number of objects in its database.

Discussion immediately focused on the NGC-Max, because one of our members, Steve Musko, has one for sale. Several members were very familiar with the device. One of the encoders has a rubber drive wheel; the other one takes a miniature timing belt for its drive. It has a digital LED display, which gives it a readout like setting circles, but most importantly, it has an RS-232 port that can be used with a computer if desired. In particular, it can be used with the DOS program T*he Sky*. Two additional concerns were discussed. One is the effect of buying a used piece of equipment, and the second was what, if any, responsibilities Steve Musko had once the equipment was sold. It was understood that the NGC-Max was sold "as is" so that if it was damaged by weather out at the observatory, it would be our responsibility. However, since it is a solid state device, it is unlikely that it would be damaged, and most likely, if there ever is a failure, it would be in cabling, which can be repaired easily, because they are telephone jack-style cables. These can be purchased readily.

Although once sold, Steve would assume no further responsibility for it in the legal sense, as part of the computer sub-group he has a vested interest in insuring that the system works. As a club member he would volunteer to do whatever he could to insure that the system is installed correctly, and that once installed, is maintained correctly.

Since this unit is the only one on the market which has the RS-232 port so that it could be upgraded, and was being offered to us for $500 which is about 25% off its usual price, the sub-group voted to accept Steve's offer, and purchase his unit. Tom Ryan took possession of it and will look into designing a disk for the rubber wheel to run on, and a drive belt for the right ascension. Once the unit is installed and working correctly, the sub-group will look into a proposal for buying the additional hardware and software to run *The Sky* program using the existing club computer. This will entail three additional costs. One is the program itself, and the other two are that the club computer has neither a monochrome monitor nor a VGA card. Each of these items is expected to cost approximately $150, but this will be made as a separate decision (donations from anyone who has working spares around would be gratefully accepted!).

Considerable discussion revolved around making the unit weatherproof – from dipping it in epoxy to putting the whole unit in a plastic, mouse-proof box. It was decided that an additional power supply would be purchased and everything mounted inside a box so that the unit would stay warm if left on continuously. An experiment will be made to see how far the display can be separated from the encoders without the occurrence of a transmission error. If the distance is big enough, then the display will be mounted to the wall, independent of the telescope. This will be done to enable the telescope to be moved over large angles by hand and then the hand paddle would be used for fine steps to the final object.

Instructions for single-star alignment will be posted inside the observatory. With luck, we should see the digital setting circles functional in one or two months.

TSP '93 continued...

them to Dr. Hickson visually for the first time. Although he has studied them using exotic CCD cameras on the Canada-France-Hawaii Telescope on Mauna Kea for several years, he has never seen them visually!

Tony Hallas gave a sound and slide show which put our own artsy-meaningless slide shows to shame. He has composited NASA images, his own astrophotos and background shots to put together some neat stuff. He story starts out as a trip to Mt. Pinos to shoot some astropix, and ends up borrowing a Space Shuttle to go into orbit to get rid of light pollution. Somehow he managed to work in some crystal growth visualization done on a computer.

The featured speaker was Donald Parker, who talked about CCD imaging and how this would cure the darkroom blues. His slide show had several very humorous slides and kept the packed auditorium in stitches for almost an hour. Don't miss a Don Parker slide show! He also showed the same incredible images of Mars, Jupiter, and Saturn that he'd shown at the Winter Star Party in Florida.

The cloudy nights at the end of the TSP gave everybody a good night's sleep before leaving, and the first day's drive was easy for a change. I took three days to get down there and three to get back. But I'm not addicted – I can quit any time, honest!

The May LBA Meeting – continued from next page...

Paul Etzler and Bill Durrant are talking to the University on the question of whether we may collect money at the public open houses sponsored by the Lowbrows. More news will be available as the work proceeds.

A Digital Setting Circles Program was endorsed by the membership. A vote determined that the Computer Subgroup is now authorized to make the necessary purchases for encoders, software, etc for installation on the McMath telescope. [See the computer group report in this issue - Ed.].

D.C. Moons showed a fine set of slides taken using the McMath telescope. It's good news that it is really functional!

The featured speakers were Tom Ryan and Doug Nelle. Both did an excellent job communicating their experiences with making/modifying telescope hardware. Two quotes were worth noting: Doug Nelle on grinding mirrors: "Time is not an expenditure for an amateur, it is an investment." – attributed to an unknown source. Tom Ryan on the vibrations of his telescope's fork mount: "This is a very bad design, and I didn't know why until a few hours ago." Tom added that improvements are on the way! Both Doug and Tom spoke well with emphasis on the lessons they have learned. They stuck to the Thomas Edison's own lesson: "Results! Why, man, I've gotten lots of results. I know several thousand things that won't work."

Thanks to all whose contributions made this meeting a success!

A Night on Peach Mountain

by Ralph Seguin

Well, it was a super clear night last night, so I dragged my scope out to the Mountain and joined two other stargazers (Doug and Bernard).

Site:	Peach Mountain
Time:	Tuesday May 25, 1993 10PM – 3:20AM
Seeing:	9 out of 10!
Darkness:	Skyglow from the east, and the Moon was up until past 11. Nice and clear though. Once the Moon set, it was great.
Temp:	Dropped to about 43°F or so.
Scopes:	Ultima 8" SCT (mine), the McMath 24" Cassegrain, 13" Dobsonian (Doug's)
Film:	Ektar 1000

I unpacked my scope at 9:40 or so and set it up. Did a rough polar alignment using the single star method (I was more interested in observing than photographing). It took me a while to get used to swinging the huge McMath scope around, but I got better at it as the night wore on. I think that somebody really should get a diagonal for the scope (not the finders), as I was really straining to view some of the objects.

All in all, it was an excellent night for viewing. It got a bit cold and my U8 dewed up towards the end, but still well worthwhile. I was surprised that there weren't more people out there! I'm really looking forward to heading out there again soon.

Object	Notes
M81, M82	Looked great, put on my reducer/corrector and it looked even better. Looked INCREDIBLE in the 24"!
M104	Looked great in all scopes. McMath 24" showed it incredibly. Easily visible bulge in all scopes. Could see the dust lane.
M51	Could see a spiral even in my 8" scope. The 24" gave excellent views of the spiral. I came back to M51 at about 2:30 so I could take some pictures of it. -2:30, Ultima 8, prime focus, 12 minutes. My scope dewed up (got to get a dew-zapper soon!) -2:54, McMath 24", prime focus, 12 minutes.
M57	Looked great in my U8 with 18mm eyepiece. Looked very nice in Doug's 13" with 7mm and even better with the filters he was experimenting with (Deep Sky and Oxygen III). The McMath 24" was not as nice as the 13" with filters. Deep in the glow from Ann Arbor.
M27	Looked great in all scopes. I tried out my Celestron LPR filter with my U8 and it gave much better detail. The Oxygen III and Deep Sky filters worked very nicely. Deep in the glow from Ann Arbor.
M5	Looked incredible in all scopes.
M13	Looked incredible in all scopes.
M101	Faint, but visible in Ultima 8. A bit more in Doug's 13" and you could make out great detail in the McMath 24"
M64	Looked great in all scopes.
NGC4565	Looked great in all scopes. Definitely razor sharp edge on :>
Lagoon Neb.	Incredible in Doug's 13" with filters. I have to get some of those filters.
Owl Nebula	Again, incredible in Doug's 13" with filters.
Saturn	Looked great in all scopes. Deep in the glow from the east though. Took some probably foolish snapshots :> -3:10, McMath 24", prime focus, 8 seconds, 10 seconds, 12 seconds

The May LBA Meeting in Review

By Bill Razgunas

Paul Etzler announced that a Dexter township meeting was coming up on May 25, 1993. The meeting promised to be timely with regard to addressing future light pollution in the Peach Mountain skies. (I talked to Paul following the township meeting. There is good news and bad news. The bad news is that a township survey revealed that 30% of the people surveyed indicated that if retail service establishments must be allowed to grow up, the intersection of Dexter-Pickney and North Territorial, is the prime site. This intersection is very close to the Peach Mountain Observatory. The good news is that 54% of the people surveyed were opposed to any development at all. Interest in light control was well received because many people are opposed to development in general. Dexter township residents can help by calling the Dexter Township Hall (426-3767) and making their feelings known. Paul Etzler will be keeping the Lowbrows informed, as news develops.)

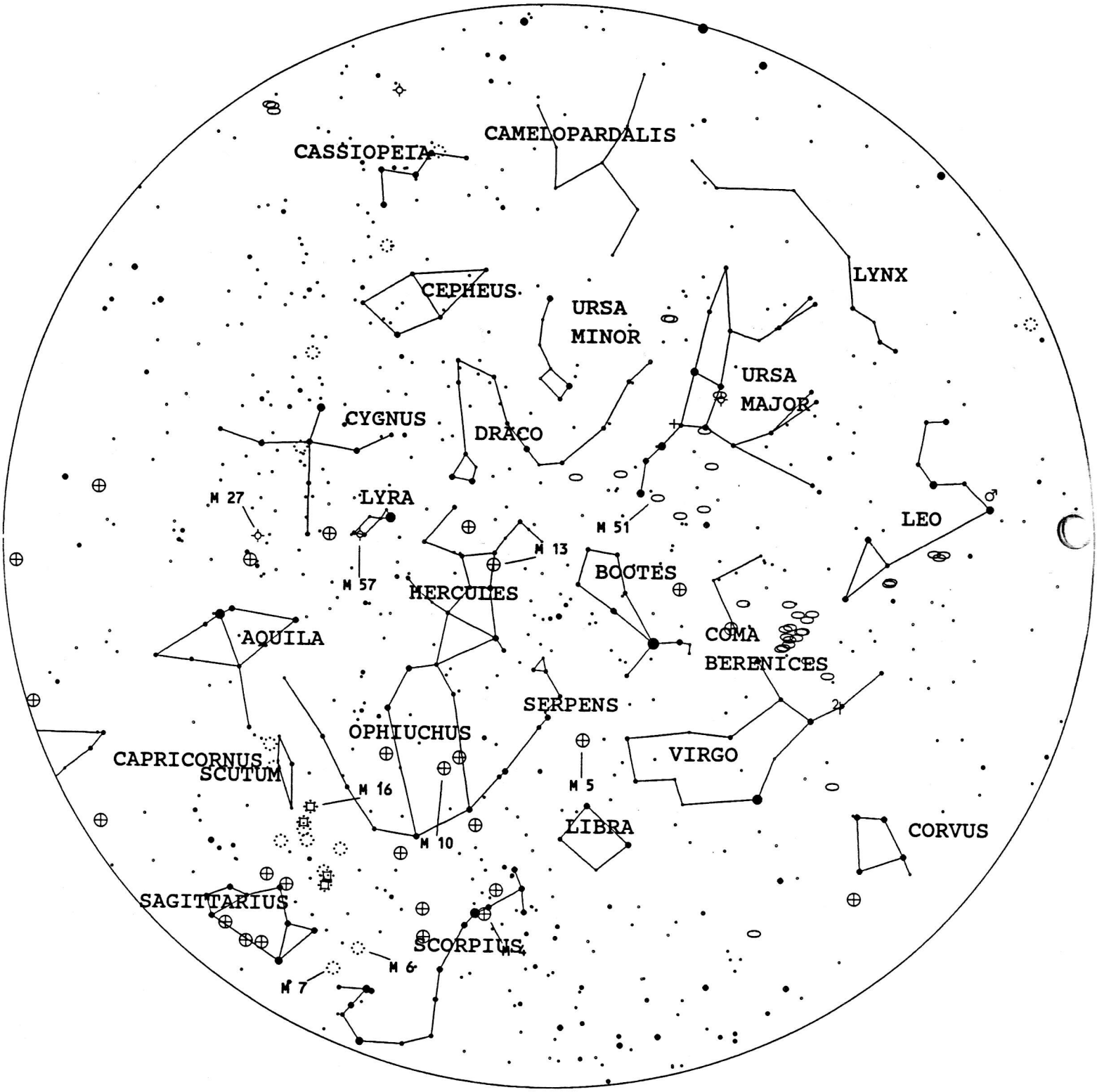
Did you know that the McMath 24-inch telescope, which is maintained and used by the Lowbrows is actually on a tract of land called Stinchfield Woods? Stinchfield Woods is owned by the University of Michigan. The University's management of this land includes a MISSION. The proposed MISSION for this land is five fold. The fifth item listed on their mission statement is closest to the Lowbrow's goals: "to heighten human awareness, understanding, and appreciation of the natural world." A Friends of Stinchfield Woods group is being formed to support their mission. Talk to Kurt Hillig for more information.

A request was made to see the 'classic' telescope mounted at the Detroit Observatory. Inquiries will be made.

May 15 Open House: about 50 people showed up. A group of Girl Scouts was among those who attended.

A Word from the Editor...

Observing notes like the one above are just the sort of stuff I love to publish (and you love to read)! If you spend a night on Peach Mountain – or at Palomar – or just in your back yard – write it up! We're a club, not a bunch of dilletantes. Besides, most of us don't get out often enough; we get most of our viewing vicariously. And who knows – you might just inspire someone else to call in sick the next morning like you did....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CASSIOPEIA
LYNX
CEPHEUS
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MAJOR
CYGNUS
DRACO
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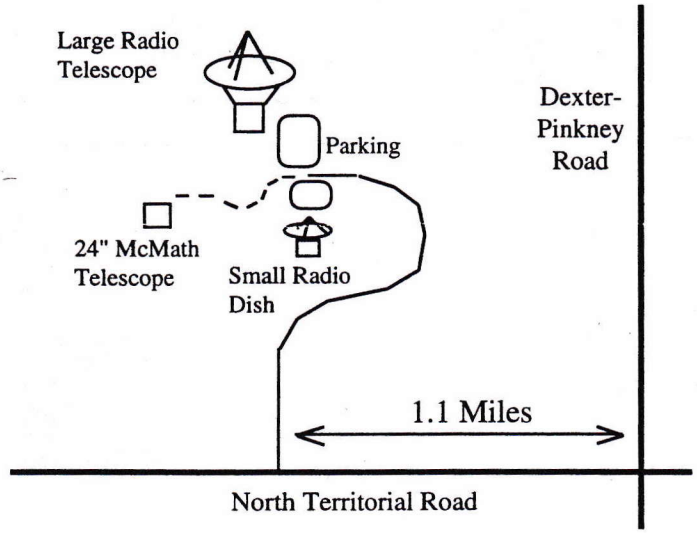
LYRA
M 51
LEO
M 13
M 57
BOOTES
HERCULES
AQUILA
COMA
BERENICES
SERPENS
OPHIUCHUS
CAPRICORNUS
SCUTUM
M 16
VIRGO
M 5
M 10
LIBRA
CORVUS
SAGITTARIUS
SCORPIUS
M 6
M 7

☞ Places:

The Detroit Observatory is in Ann Arbor, at the corner of Observatory and Ann Streets, (across from the old University of Michigan hospital and between the Alice Lloyd and Couzens dormitories on the UM campus). The Detroit Observatory is an historic building which houses a 19th century 12-inch refractor and a 6-inch transit telescope.

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-Pinkney 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 at the Detroit Observatory. During the summer months, and when weather permits, a club observing session at Peach Mountain will follow the meeting.

Computer group 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 at sunset – call 426-2363 to check on their status. Many members bring their telescopes; visitors are welcome to do likewise. Peach Mountain is home to millions of hungry mosquitos – bring insect repellant, and wear warm clothes!

☞ 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 a meeting or by mail at this address:

4653 Pitchpine W. #2D
Ypsilanti, MI 48197

☞ Magazines:

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

Sky and Telescope: $20 / year
Astronomy: $16 / year
Odyssey: $16.95 / year

For more information, contact the treasurer.

❒ Sky Map:

The sky map in this issue of *REFLECTIONS* was produced by Doug Nelle using *Deep Space 3D*.

✎ Newsletter Contributions:

Members (and non-members) are encouraged to write about any astronomy-related area in which they are interested. Please call the newsletter editor (Kurt Hillig, 663-8699) to discuss length, format, etc. Announcements and articles are due 14 days before each monthly meeting. Contributions should be mailed to:

Kurt Hillig
1718 Longshore Dr.
Ann Arbor, MI 48105.

☎ Telephone Numbers:

President:	Stuart Cohen	665-0131
Vice Pres:	Doug Nelle	996-8784
	Paul Etzler	426-1941
	Fred Schebor	426-2363
	Tom Ryan	662-4188
Treasurer:	Doug Scobel	434-2061
Observatory:	D. C. Moons	254-9439
Newsletter:	Kurt Hillig	663-8699
Membership:	Steve Musko	426-4547
Open House:	Keith Bozin	549-9525

Peach Mountain Keyholder:

Fred Schebor 426-2363

Monthly Meeting:

The Lowbrow's
Computer Subgroup
on
"All the Really Neat Software we Play With and Stuff Like That"

June 18, 1993 at 7:30 PM

At the
Detroit Observatory in
Ann Arbor

An image of the galaxy NGC4565 (the "Needle Galaxy") in Coma Berenices, by Roger Tanner at the 1993 Texas Star Party (story inside). This image was taken with an ST-4 CCD camera on a 17.5" f/4.5 telescope with a 2x focal reducer.

University Lowbrow Astronomers
840 Starwick
Ann Arbor, MI 48105