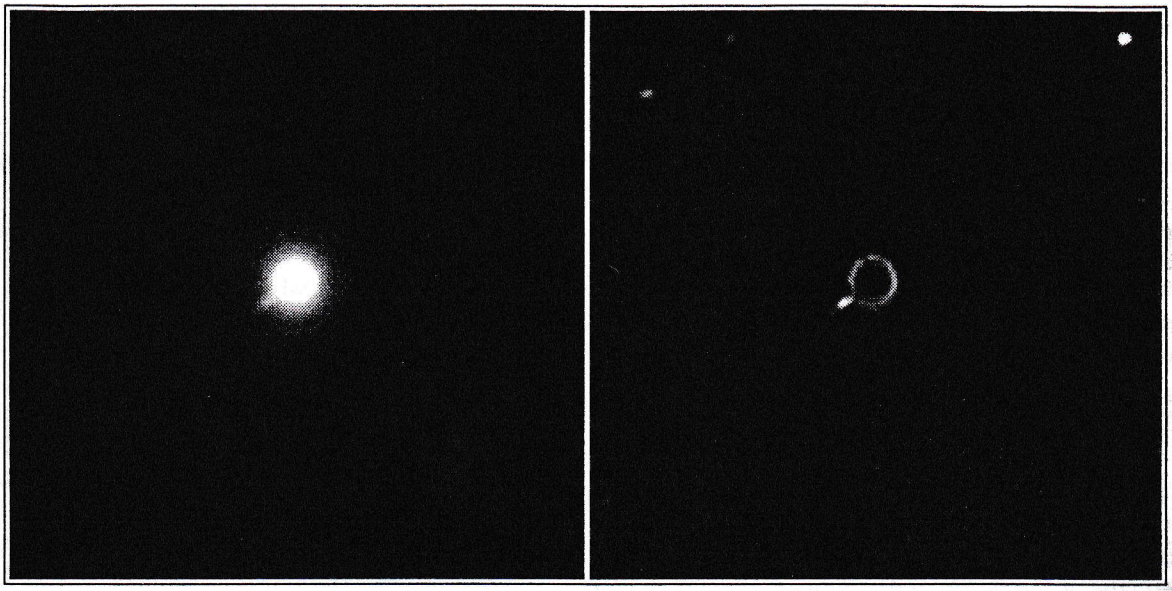
REFLECTIONS



REFLECTIONS

April 1993

A CCD image of M87, taken at the 1993 Texas Star Party by Jack Newton. The original image is on the left; the one on the right has been processed to enhance edges. Image processing by Jack Newton, Roger Tanner and Kurt Hillig.

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 monthly, at the 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 (cancelled if it's cloudy at sunset). For further information, call Stuart Cohen at 665-0131.

This Month:

April 16 - Meeting at the **Detroit Observatory** in **Ann Arbor**. Elections! The slate of nominees is still secret – come to the meeting to find out if you're on it! The president-elect buys the beer at theBrown Jug – with a little help from the rest of the officers and members, of course.

April 17 - Public Open House at the **Peach Mountain Observatory**. We've been clouded out for several months now, but if the IRS has milked the sky like it has us there might not be enough juice left to make clouds with....

April 24 - Public Open House at the **Peach Mountain Observatory**. Jupiter and Mars are both up, there's a new supernova in M81, comet Shoemaker-Levy's in view!

Stranger than Truth? Cheaper than Truth!

Wonderful, what the mail can bring! This month it's an offer from a well-known astronomer, who apparently needs some scratch to buy more observing time on Hubble.... For only 50 bucks, he'll send you a videotape telling you everything you need to know about how to buy a telescope! Watta deal! Who needs to do anything as embarassing as ask questions - or as difficult as finding someone local who can help? Who needs to save up the cash to put a Telrad on her new Coulter? TV Rules!

Remember - this column is for YOU to write – we want the wierdest, most outrageous, cheapest or just plain stupidest thing you've run across. Call Kurt at 663-8699 with your discoveries!

Next Month and Beyond:

May1 - Computer Subgroup Meeting at **Roger Tanner's** house (a Saturday). Call Roger at 981-0134 for directions.

May 15 - Public Open House at the **Peach Mountain Observatory**. The Moon is in the Seventh House, and Jupiter's aligned with Mars... (How much longer can I get away with using this line? It's been three months now!)

May 21 - Meeting at the **Detroit Observatory**. Partial solar eclipse this morning, too! Topic TBA. (The new VP's better get cracking on this!)

May 22 - Public Open House at **Peach Mountain.**

Spring Fever? Cabin Fever? Hay Fever?

Sometimes I think I should just get a CD drive and the Hubble Guide Star catalog and simulate my astronomy from now on. Think about how many clear nights we've had in the past two months! But if I can't get images and articles from LBA members (hint hint) how will I ever see non-stellar objects? Guess I'll keep grinding my new mirrors anyway...

Membership Renewal Time is Here!

LBA Club membership for most of us needs to be renewed every April. (Those of you who upset our schedule by joining in mid-year aren't exempt – just deferred for a while.) Check your mailing label – if it says "Exp 4/93" then your number's up! The treasurer's address is on page 7.

Computer Subgroup Report

The computer subgroup meeting was called to order at 7:30 PM on April 1, 1993. However, the first subgroup member arrived at 7:45 PM; the second arrived at 10:30.

Given the light turnout, a number of topics were not discussed. We did spent a good deal of time looking at specs and designs of CCD cameras, as these are starting to come down in price to the point where moderately serious amateurs (as opposed to fanatics) can afford to do both high-quality "digital astrophotography", and even some serious astronomical research (e.g. photometry of supernovae or of variable stars; the pros don't have enough scopes and grad students to do these themselves, and amateurs often are invaluable in these studies).

Topic number two was autoguiding. Some of the early low-end CCDs were designed primarily to be used for guiding rather than imaging, but it seems like overkill in many respects. One alternative which we explored is the use of a device called a quadrant photodiode – think of it as a 2 x 2 pixel imaging array – to follow a guide star. With a little machining, one can make a mount in which the photodiode can be centered under the image of a bright guide star. With the star defocused so that its spot partially fills the diodes (it's got to be bigger than the gaps between the four quadrants), and with the diodes oriented N-S-E-W, the RA error is measured by the difference between the E and W signals, and the DEC error by the N-S difference. A couple of op-amps and reed relays (or if you're into manual guiding, a couple of meters) and you're all set. Of course there's no computer involved in this...

Topic three was image processing – this time on a Macintosh IIcx instead of a DOS/Windows-based PC. On display was NIH Image. A public-domain image processing package from the National Institutes of Health, it comes complete with Pascal source code so you can add your own features. Being aimed at cell biologists rather than astronomers, it lacks several features we'd like to have – but we ran some movies downloaded from NASA (Galileo's recent Earth-Moon flyby and an orbit around Venus c/o Magellan) and they looked mighty impressive! See page 1 of this issue of *Reflections* for another sample of its work.

Last on the agenda was a demo of the *Voyager II* Dynamic Sky Simulator from Carina Software. A complete rewrite of the previous version (including translating it from FORTH into C), this makes very effective use of color and is much faster (and bigger). There are lots of nifty new features, including an optional "photo gallery" – a library of PICT-encoded images (some really nice ones, too) plus the ability to add your own images to the library.

Like many sky simulators, you can roam at will through the heavens, zooming in and out, selecting sets of things to display. Nice graphics here – the constellations' line drawings are quite detailed, and you can outline the Milky Way. Click on an object and a box of info on it pops up. If there are images for the object, an extra button is added to the box; click the button to cycle through the images.

Oops, out of space; if the meeting's ever at Kurt's house again (it's at Roger's in May) you can see it for yourself!

What's New? Lots of things!

Comet Shoemaker-Levy 1993e

Article 31696 of sci.astro:
From: Johannes Kepler Universität Linz
Date: Thu, 1 Apr 1993
Subject: Re: Shattered Comet

Using a 2.2m telescope, as much as 17 nuclei have been found within the "central bar", which is about 1' long and oriented east-west. According to the first elliptical orbit by B.G.Marsden, the comet was in perihelion on December 5, 1989. Nobody had seen it then, so the object has possibly brightened when it broke up (and I suppose it will fade within a few weeks or so). It was nearest to Jupiter on July 28, 1992 (0.04 A.U.). I don't think it hit something when it was near Jupiter - the gravitational pull (or tidal forces) of Jupiter should be strong enough to break the comet up.

Picture and tentative ephemeris on the next page.

Supernova 1993J in NGC 3031

From: palmer@cco.caltech.edu (David M. Palmer)
Subject: Supernova in M81
Date: 30 Mar 1993 16:30:04 GMT

From IAUC 5731:

...F. Garcia, Lugo, Spain, discovered a possible supernova on March 28, 5' southwest of nucleus of NGC 3031 = M81 ... 30" NE of mag 14 foreground star.

Filippenko: UC Berkeley: 45" W, 160" S. of nucleus.

Davis and Schlegal spectrum: March 30.3 spectrum blue and remarkably featureless. Only clear absorption lines are narrow Na ID and CaII H+K, of interstellar origin. Filipenko believes probable is Type II a few days after explosion. However, Type Ia SN 1991T also looked like that. Depending on type, distance, extinction, could reach Mag 8 in next two weeks, making it secod brightest (after SN 1987A) since 1972.

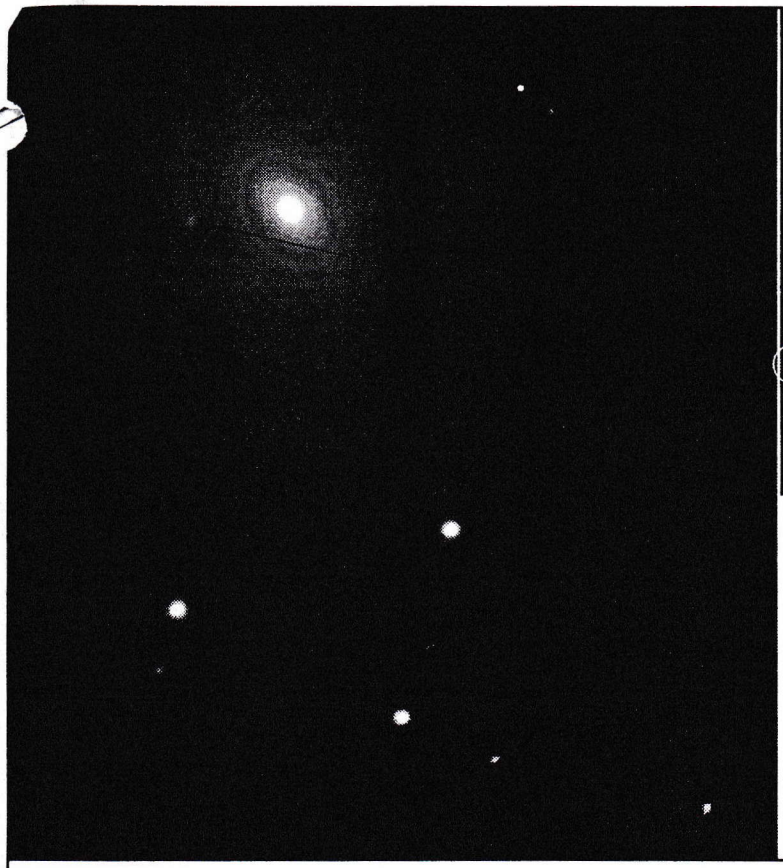
Hartwick et al. University of Victoria: position = 9h51m19s.27, +69d15'25".7 (epoch 1950)

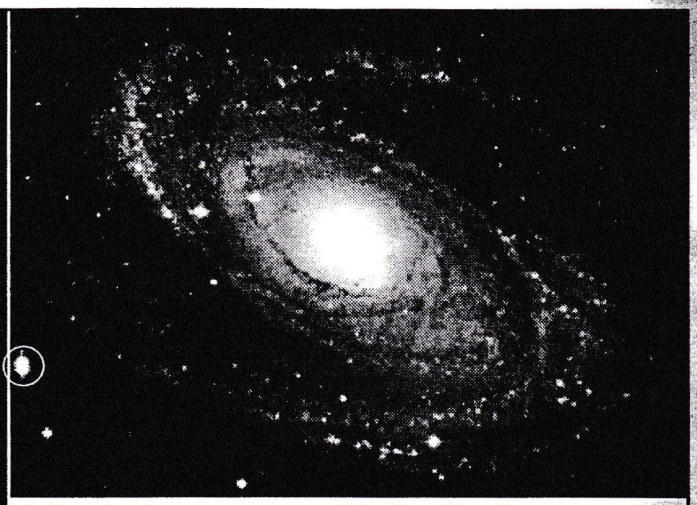
Garnavich and Hong, Dominion Astrophysical Observatory: Spectra March 30.25 show weak H alpha and He I features, consistent with type II.

Pictures on the following page.

NEW KUIPER-BELT OBJECT?

On March 28th 1993, J.Luu (U.C.Berkeley) and D.Jewitt (U.Hawaii) discovered a solar-system object that appears to be farther from the Sun than Pluto. The preliminary orbit for this object, designated 1993 FW, puts it 42.5 astronomical units from the Sun. Its orbital inclination is estimated to be 8 degrees, though right now it lies almost precisely in the ecliptic plane. If this distance is correct, then 1993 FW joins another object, 1992 QB1 - which was also found by Luu and Jewitt - as the first likely members for a huge swarm of cometary bodies collectively termed the Kuiper Belt. This cloud of objects, lying not far beyond the orbit of Pluto, was predicted from analyses of the orbits of short-period comets which are thought to originate in the belt.





(Above right) An image of M81 extracted from the deep-space object image library for the Voyager II program for the Macintosh computer (Carina Software). The line connects the same star in both images to illustrate the differences in scale and alignment of the two pictures. SN1993J is around magnitude 10.5 now. You can clearly see from these images that it is comparable in brightness to the core of M81 – the supernova really is as bright as the rest of the galaxy.

(Above left) An image of supernova SN1993J near M81, by Michael Richmond of Princeton University (who unfortunately neglected to provide details as to where / when / how taken). The image scale is about 300 arc-seconds on a side. The original image was converted from FITS to GIF format and posted to the sci.astro network news group by Pat Murphy of the National Radio Astronomical Observatory. At least nine programs and five separate computers were needed to transfer original image from Princeton to the Macintosh where *Reflections* is produced and to convert it to a printable format!

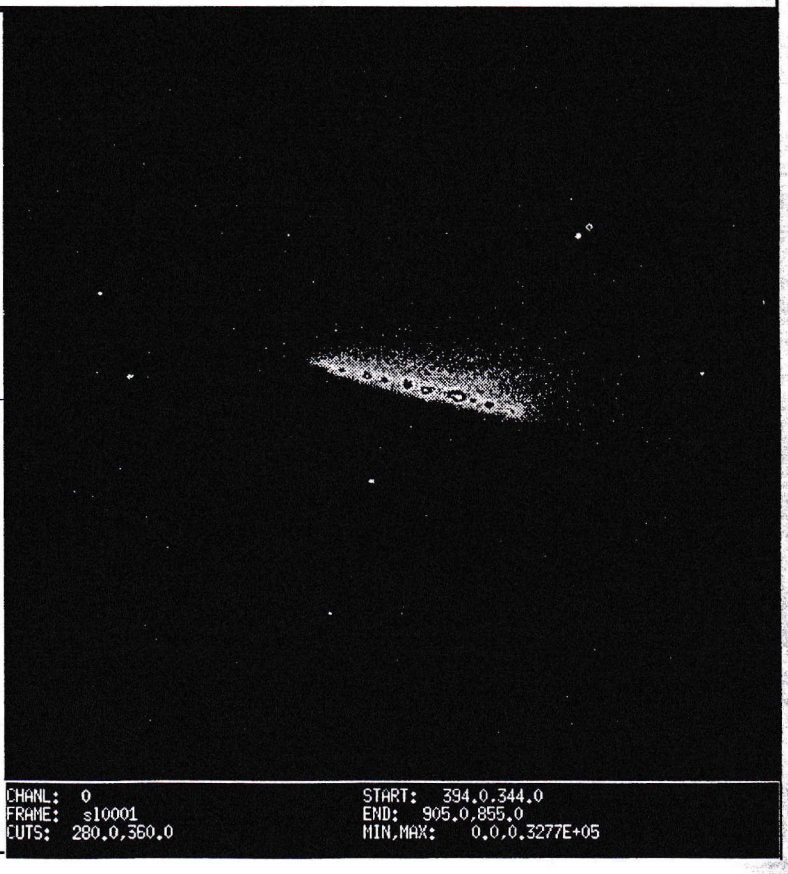
Here is an ephemeris of 1993e "Shoemaker-Levy" from IAUC 5726:

	R.A. (2000.0)	Dec.
1993 Mar 24	12 26.84	-04 04.6
1993 Apr 03	12 21.99	-03 35.3
1993 Apr 13	12 17.26	-03 06.9
1993 Apr 23	12 13.11	-02 41.2

Recent estimates give magnitudes between 13.5mag and 16.7mag.

From: ml@chiron.astro.uu.se (Mats Lindgren)
Subject: Re: Shattered comet
Date: 2 Apr 1993 17:12:52 GMT
Organization: Uppsala University

Here is a GIF87 picture of the splitting comet [Shoemaker-Levy 1993e]. I obtained it with the 1.54m Danish telescope, equipped with a 1080x1040 Tektronix CCD, at the European Southern Observatory at La Silla in Chile on the night March 27-28. The exposure was made through a V filter for 30 seconds at a zenith distance of some 60 degrees, which means that the seeing was not too good. Nevertheless one can clearly see 9 condensations.



U-M considers selling woodland properties

by Kurt Hillig

The following is mostly news, and partly editorial, and has little to do with astronomy *per se*; but it's an issue which the Lowbrows should keep in mind, and talk about once in a while. If we don't do any long-range planning, someone else may do it for us, and we might not like the results.

The headline above appeared in the Ann Arbor News on Thursday, March 25, 1993. The story below it read in part:

"Three large properties that have been studied by natural resources and biology students at the University of Michigan for decades may be put up for sale ... because of waning interest and increasing financial difficulties. Among the properties that might go on the block ... [is] the 770-acre Stinchfield Woods off North Territorial Road in Dexter Township."

On Friday, Stu Cohen got a call from George Lattimer (who runs the radio observatory at Peach Mountain) to let him know that a public meeting would be held on Monday, March 29 to discuss the future of the Stinchfield Woods. Stu called other club members, and a large contingent of LBA members arrived ready to to battle that night.

Fortunately, this was all a misunderstanding.

The University of Michigan's School of Natural Resources and Environment (SNRE) manages a number of properties around the state. In past years these were used for both teaching and research by the SNRE and in particular by its forestry program – which the University phased out several years ago.

As part of its graduate program in resource management, a group of students formed teams to develop plans for the SNRE's future use of these properties. One team – the Stinchfield Woods Master's Project (SWMP) – explored five possible scenarios in evaluating the options. These scenarios ranged from a "worst-case" one, in which the properties are sold for development, to a "best case" one in which the SNRE resumes extensive research and teaching activities on these lands and makes a financial commitment to continue their maintenance.

While the worst-case scenario was largely responsible for most of the rumors and newspaper articles, Harry Morton, the Associate Dean of the SNRE, stated unequivocally that the SNRE and the University was not and would not consider selling Stinchfield Woods. He did say, however, that some University-owned lands in the UP are likely to be sold, and that some timber sale from Stinchfield Woods is also likely – largely to thin out some of the old monoculture stands, to reduce the fire hazard and to help control diseases which are spreading through the Woods.

The meeting held on March 29 was organized by the members of the SWMP to present their work to date and to get feedback from the neighboring residents, prior to preparing their final report (to be submitted to the Dean of the SNRE at the end of April). The SWMP had conducted surveys, both of the neighbors and of people they encountered in the woods during several of their "inventory" sessions – in which they evaluated the makeup and health of the forest. Apparently they never came to the Woods at night, as they seemed quite surprised by the number and concern of the astronomers, both professional and otherwise. And along with our concerns were those of many other people, both locals and "city folk".

Attendance at the meeting was high – about 100 people showed up – and included students and faculty from the SNRE and Astronomy departments, nearby residents (and not-so-nearby ones as well), and of course the LBA's. Many issues were raised and discussed, including what needed to be done (and why anything needed to be done), what it would cost, which departments contribute to the maintenance, what public uses would be appropriate / acceptable / desirable, how the Woods affects local water supplies, what other organizations (DNR, Nature Conservancy, Sierra Club, Boy Scouts) might have an interest, etc.

A number of conclusions appeared to come out of the meeting – although the final report isn't in yet. Among these are:

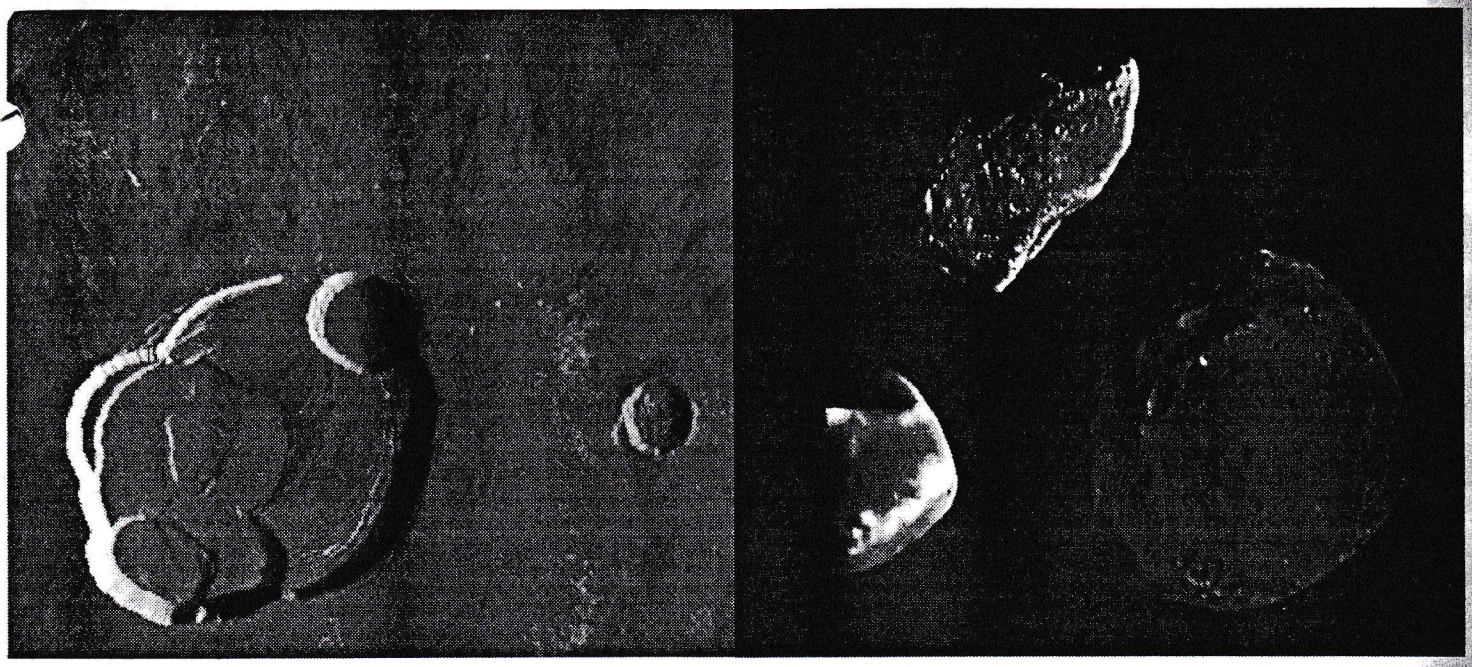
1) The best-case scenario isn't going to happen – the money just isn't there, nor is the demand for forestry education high enough to justify rebuilding that program.

2) The worst-case scenario also isn't going to happen – if nothing else the deans and regents would find themselves drawn and quartered by an angry mob.

3) Other organizations aren't interested in Stinchfield Woods. The Sierra Club and Nature Conservancy, for example, are spread very thin, and focus their efforts on unique places; while the Woods is special, it's not unique. The DNR might buy it, but otherwise won't help – and if they did buy it we'd likely find snowmobile trails, lighted parking lots, all the things that nobody at the meeting wanted.

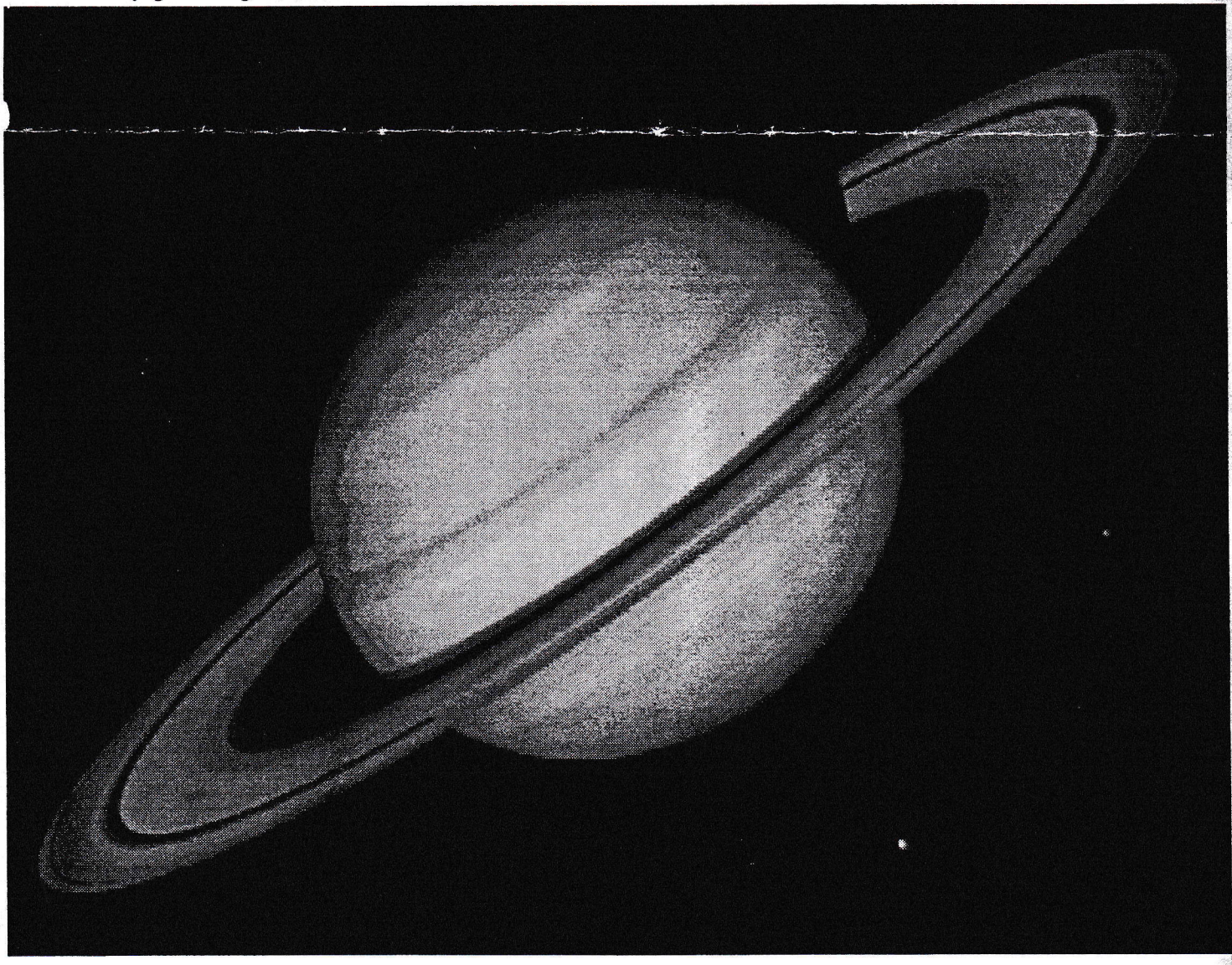
4) The best chance that the Stinchfield Woods has of retaining its special character – not quite wilderness, but almost – is for a coalition of people from both within and without the University to band together and take an active role in preserving and maintaining it. This will mean commitments of both time and money, and maybe sweat; working out ways to keep the community informed and involved – particularly newcomers to this growing area; opening and maintaining lines of communication between the SNRE, the Astronomy and the Atmospheric, Oceanic and Space Sciences departments, the Lowbrows, the Dexter Township Planning Commission, etc. etc.

[From here on in this is an editorial, not a news report – feel free to stop reading now.] There was a strong sentiment expressed for forming a "Friends of Stinchfield Woods" group, to help preserve and protect it from the encroachment of civilization and the bean-counters' knives. The Lowbrows should take a good hard look at taking an active role in this. Elections are coming up this month – ask the candidates what they think!

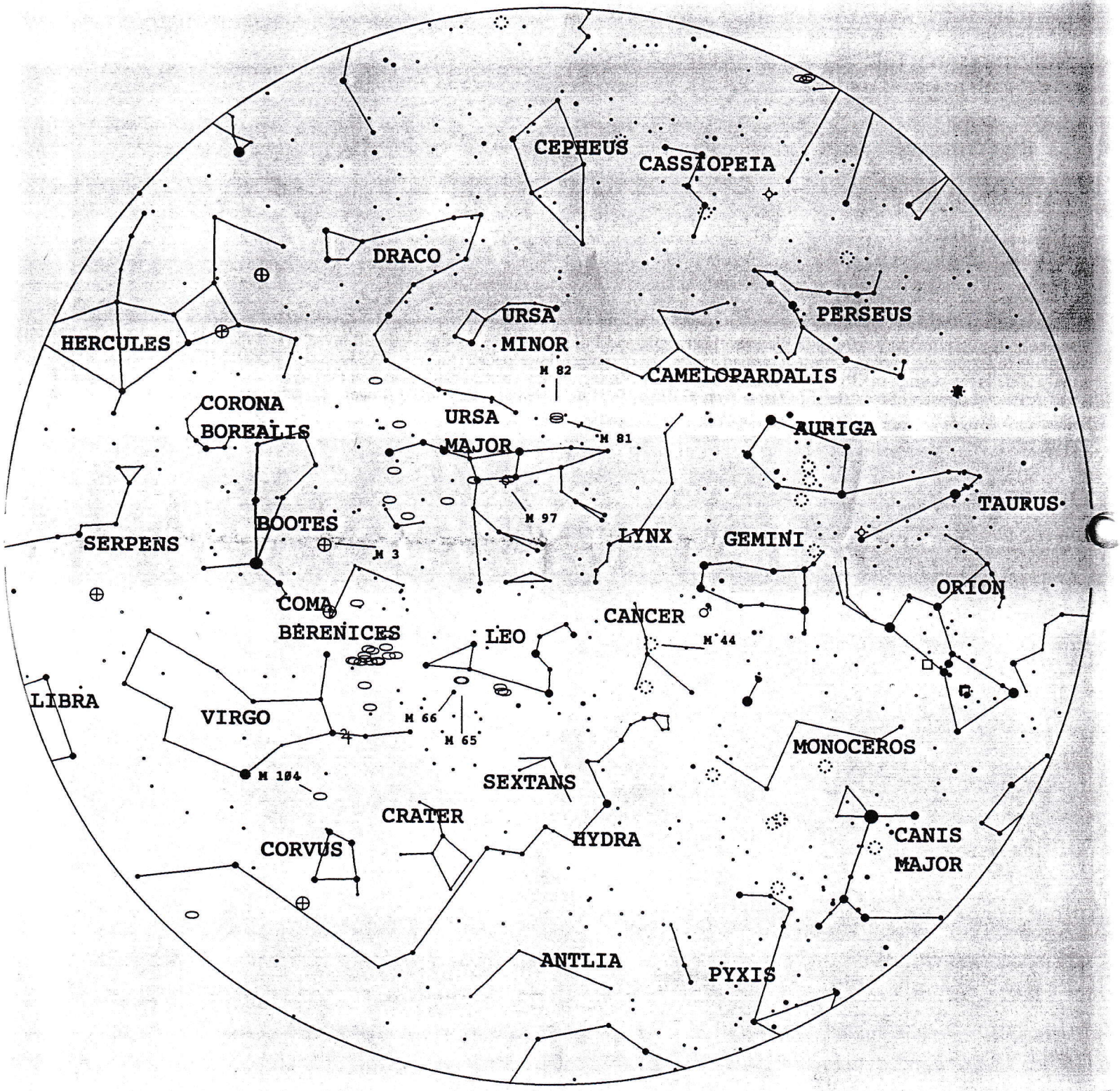


Since nobody submitted any articles or pictures this month, and I didn't feel like writing them all myself (and the weather hasn't been conducive to astrophotography), I present instead a selection of images downloaded from the NASA/Ames Research Center. Above left is the caldera at the summit of Olympus Mons, as seen by the Viking Orbiter (better seen if you turn the page upside down). Above right is a to-scale comparison of the asteroid Gaspra (top; Galileo 1991) with Deimos and Phobos (lower left and right; Viking 1977).

Below is a Voyager 2 image of Saturn taken in 1981. Visible to the south and southeast are its moons Rhea and Dione, respectively.



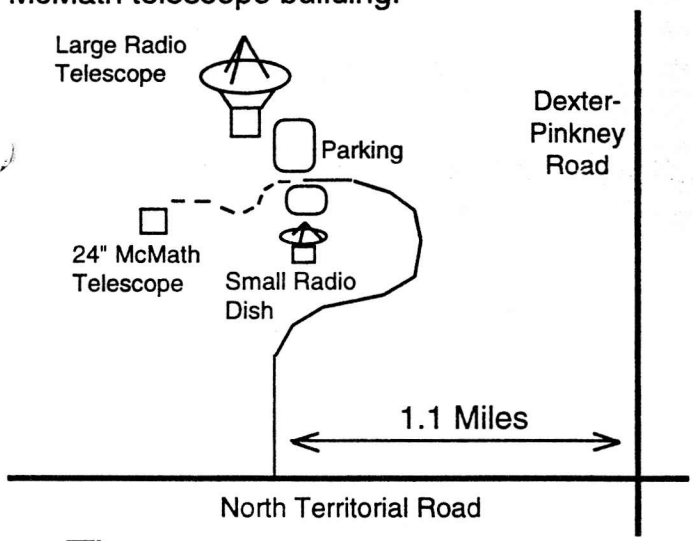
4/16/93 End of twilight, stars to 5th mag



☞ 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. 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 20-meter radio telescope, and the McMath 24-inch telescope 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 southwest (between the two fenced-in areas) about 300 feet to reach the McMath telescope building.



☞ Times:

The monthly meetings 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.

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 the 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, as it gets cold at night!

☞ 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, Ron Avers, at a meeting or by mail at this address:

9394 Anne
Pinckney, MI 48169-8912

☞ 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:	Ron Avers	426-0375
Observatory:	D. C. Moons	254-9439
Newsletter:	Kurt Hillig	663-8699
Membership:	Steve Musko	426-4547

Peach Mountain Keyholder:

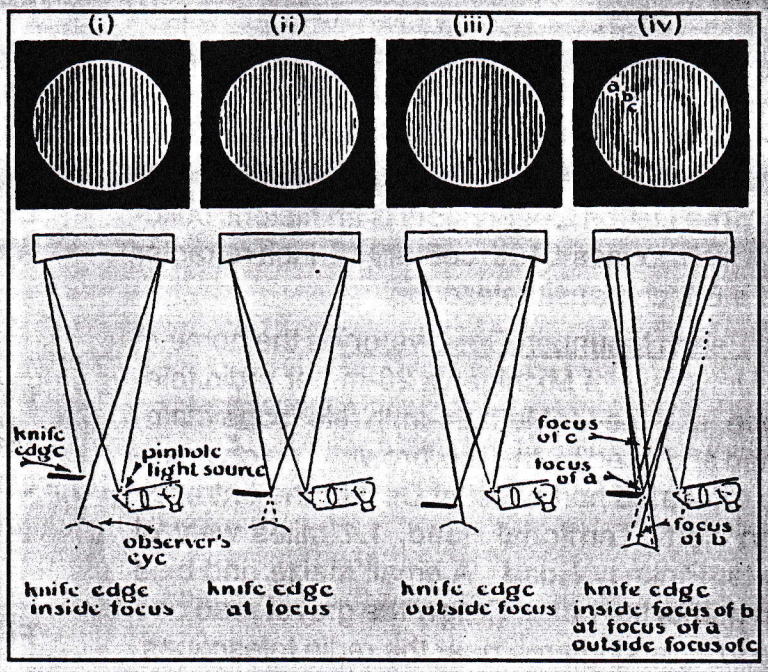
Fred Schebor 426-2363

Monthly Meeting:

The Members on "Democracy: Theory and Practice" or Elections!

April 16, 1993 at 7:30 PM

At the
Detroit Observatory in
Ann Arbor



The Foucault knife-edge method for testing concave mirrors. Developed in the 19th century, this is still one of the simplest and most accurate methods available for determining the focal length and figure accuracy of a mirror. From *Procedures in Experimental Physics* by John Strong, Prentice-Hall, 1938.

University Lowbrow Astronomers
840 Starwick
Ann Arbor, MI 48105