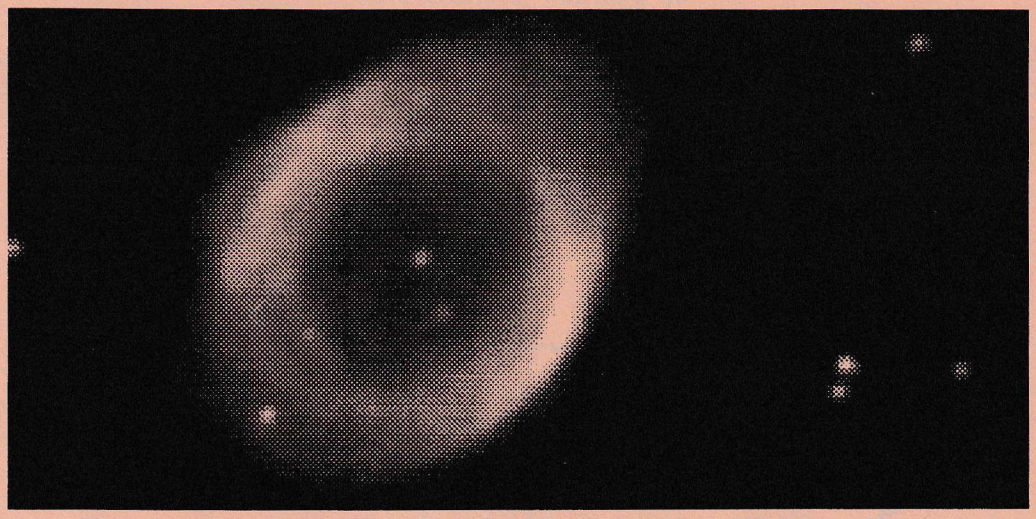
REFLECTIONS



REFLECTIONS

The Ring Nebula (M57) taken by Jack Newton with a 25" f5

July , 1991

R. Tanner, ed.

University Lowbrow Astronomers

The University Lowbrow Astronomers is a club of astronomy enthusiasts which usually meets in the historic "Detroit Observatory" on the corner of Observatory and Ann Streets in Ann Arbor. The meetings start at 7:30 on the third Friday of each month and are open to the public. For further information, call Fred Schebor at 426-2363.

This Month:

July 19 - Meeting, Detroit Observatory in Ann Arbor. Roger Tanner will present a slide show and relate the interesting things he saw at this years **Texas Star Party** and **Riverside Telescope Makers Conference.**

Next Month:

August 1 - Computer Subgroup Meeting, This month the meeting will be held at **Kay Wilkes** house at 7:30. Note that this date is a **Thursday**. The meeting will be a demonstration of Kay's bullentin board system and the astronomy software and information it contains. For more information and a map, see Subgroup Report for more details.

August 3 - Open House, Peach Mountain Observatory, bring scopes.

August 10 - Open House, Peach Mountain Observatory, bring scopes.

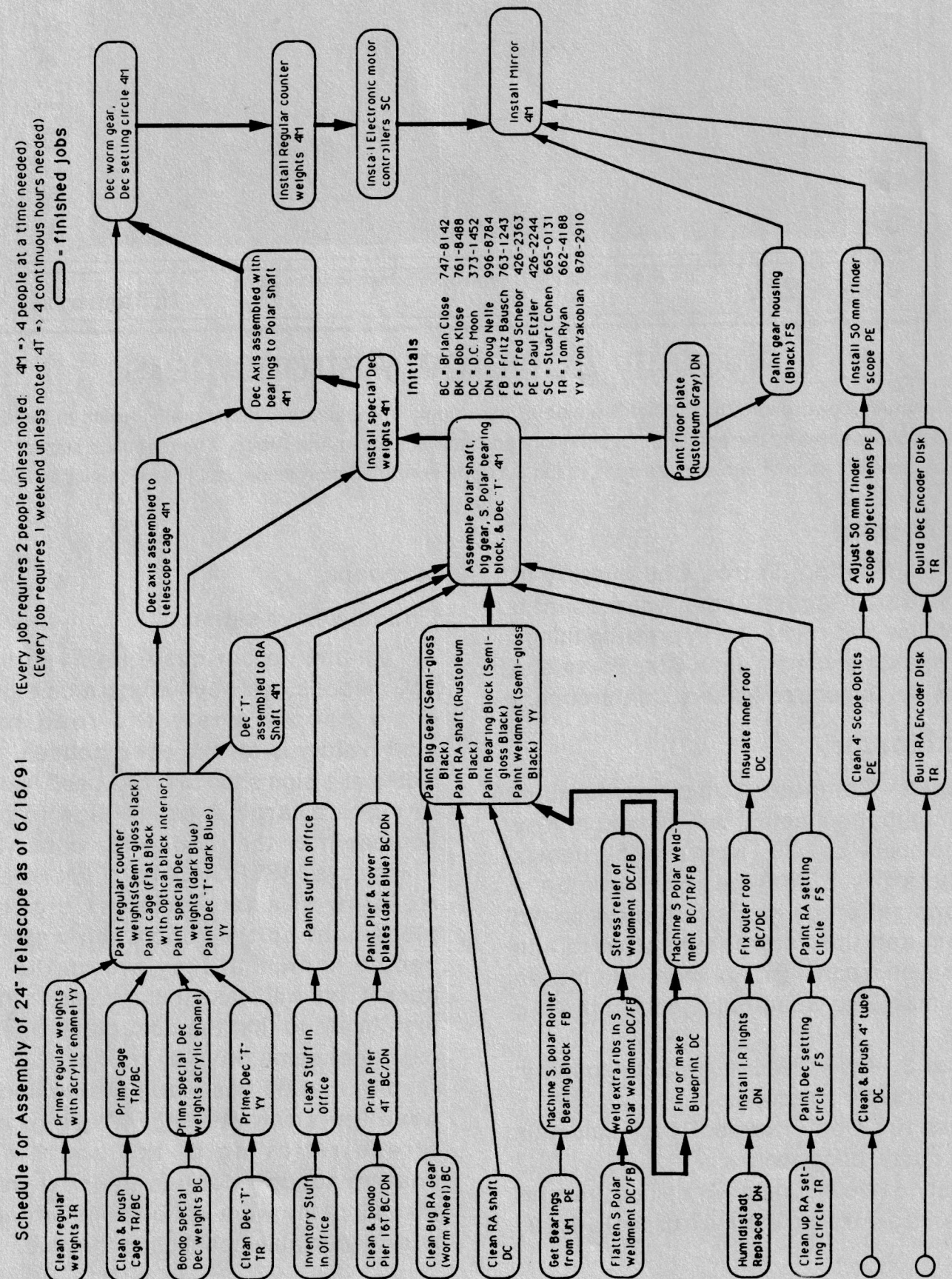
August 16 - John Lafitte will demonstrate his homemade **computer controlled 10" telescope.**

We now have signs!

Thanks to our observatory director, D.C. Moons, we have some nice signs to show people where the road to the observatory is for the open houses. D.C. works at a sign shop and has used his skills to make a large A frame sign to place accross from the road to the observatory which says "ASTRONOMY OPEN HOUSE". He also has two smaller signs for placement up the road each way to let people know that they are on the right track. This will make it much easier for the first timers to find the observatory and we might get some drive by traffic. D.C. also reports that he has made arrangments to have the straightening, welding, and , stress relieving of the south polar bearing support done in the next weeks. Also all of the work will be done for free as a tax deductable donation to the club.

Club News

The chart below has been prepared by Stuart Cohen to organize all of the tasks in finishing up the 24" project. This shows the complexity of the task. Look over the chart and if you find something you could help out on give D. C Moons a call.



Subgroup Reports

Computers in Astronomy Subgroup

The fifth meeting of the Computers in Astronomy Subgroup was held at my (Roger Tanner) house. There were so many people that I ran out of chairs. I lost count after 15 or so. The meeting had two youngsters and some vistors.

At the meeting Tom Ryan demoed an optics program for the IBM PC called MAX. Then Paul Schebor set up his Mac and demoed a program called Gravity 4.0.

MAX

Max is a program which can be used to design, analyze, and, optimize optical systems. The program can handle any optical system up to 250 surfaces. The program can handle any sort of surface which is a conic section. The program can also handle toroidal and holographic surfaces. The program can handle off center optics, which is useful for checking the errors generated by a position error in one element. The program uses the traditional opticians method of describing an optical system which is series of curved surfaces each with the distances to the next surface and what material the light is traveling through.

The user inputs the data for the curvature and distances into the program through a spread sheet like interface. Tom loaded the cells with some demonstration files that came with the program. Then he showed how you could generate spot diagrams. The spot diagrams were generated very quickly and could also include an Ary circle to help judge the quality of the lens. The spot diagrams showed that the different colors of light had different distortion patterns at the focus. Then Tom demonstrated how the program can generate a 3-D graphical display of the optical system. Tom then rotated the system in real time to view the arrangement of surfaces and how the light travels through the system. This graphics capability is very useful for diagnosing your input data when the program gives you error message. The program will also generate ray fans, OPD charts, chromatic focal shift plots, field curvature and distortion plots, encircled energy plots, vignetting diagrams, and calculate Zernike coefficients, what ever they are. The program can trace rays at several angles and at several wavelengths.

The part of the program that impressed Tom the most was the optimization capability. The program can vary virtually any parameter and several at a time. All of the variables can be given a weighting factor to make the optimization reflect the relative difficulty of modifing each surface.

The program comes with a stock lens catalog and a stock glass catalog which give the refractive index vs. wavelength for commonly available glasses. The program will support CGA to 8514 video and has HP LJ III and Postscript output. The program costs $900 although you can get the demo version free which will do everything but save your results.

Gravity 4.0

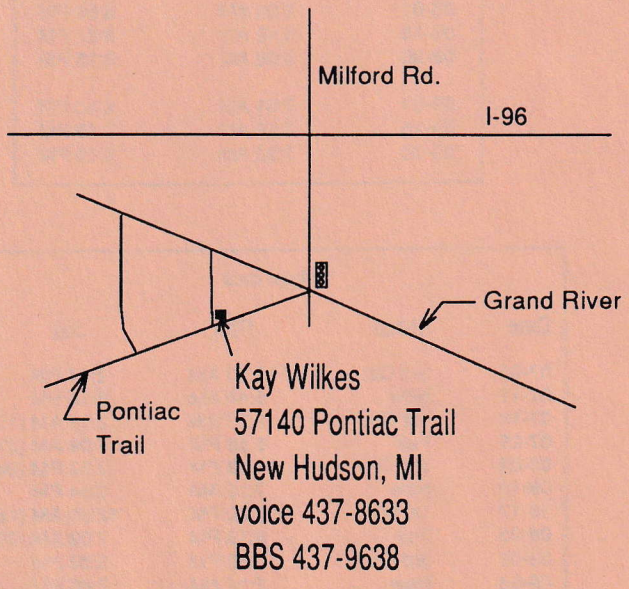
Paul Schebor set up his Mac Plus and demonstrated Gravity 4.0, which is a gravity simulator program. The program will allow the user to set up a universe with various planets and suns and moons. Each body would be given a starting velocity and direction by the user. When the user starts the simulation, the program calculates the gravitational force between each body and its effect on each bodies motion. Paul demonstrated several systems he created with 2,3,4, and more elements. He commented that it was very difficult to generate a stable system where the planets wouldn't collide. The program would conserve the momentum of two bodies during a collision.

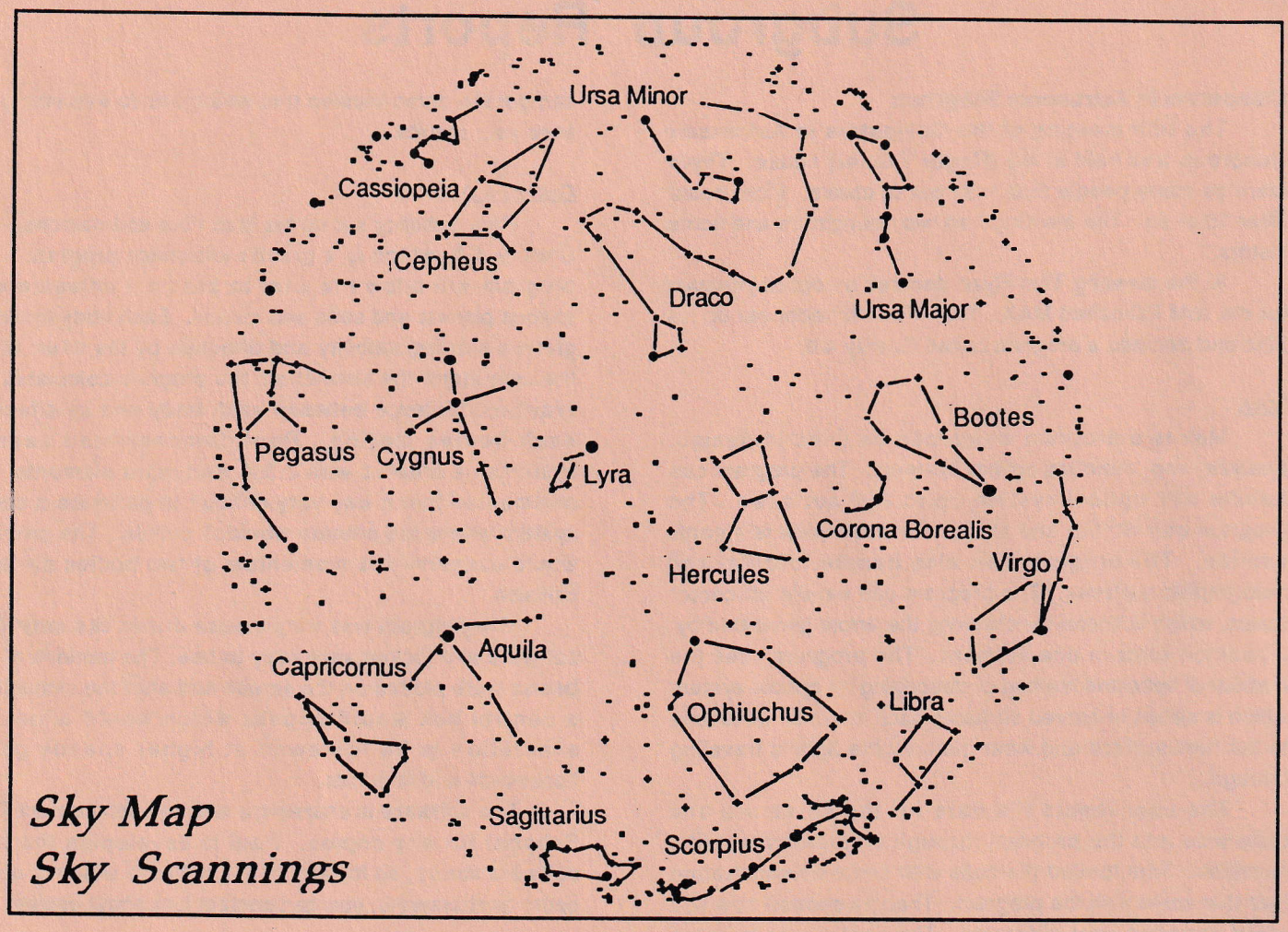
The program was very mouse driven like most Mac software and looked very easy to use. The motions of the bodies were plotted on the screen and after the simulation, a control box would appear which would allow the simulation to be reviewed at higher speeds going backwards and forwards.

The software is shareware and you can contact Paul Schebor for any copies. Paul is developing the club software library, so for any of the software which is a free demo or shareware, you can contact him about copies.

Next Meeting

The location of the next meeting is **Kay Wilkes house** in **Brighton** at **7:30 on August 1,** which is a **Thursday**. The map below should help explain how to find Kays house. - R. Tanner (981-0134)





Sky Map
Sky Scannings

Sunrise and Sunset data

Date	Sunrise	Sunset
07-01	6:02 AM	9:17 PM
07-15	6:12 AM	9:11 PM
07-30	6:26 AM	8:58 PM
08-01	6:28 AM	8:56 PM
08-15	6:42 AM	8:37 PM
08-30	6:58 AM	8:13 PM
09-01	7:01 AM	8:10 PM
09-15	7:16 AM	7:46 PM
09-30	7:32 AM	9:19 PM

Map is accurate for:
Midnight on July 15
10:00 p.m. on August 15
8:00 p.m. on September 15

Moon data

Date	Phase	Rise	Set
07-05	3rd Qtr.	12:50 AM	2:42 PM
07-11	New	5:46 AM	9:18 PM
07-18	1st Qtr.	2:23 PM	12:11 AM (19)
07-26	Full	8:58 PM	6:09 AM (27)
08-03	3rd Qtr.	11:18 PM	2:52 PM (04)
08-10	New	7:15 AM	8:54 PM
08-17	1st Qtr.	3:22 PM	12:00 AM (18)
08-25	Full	8:15 PM	7:09 AM (26)
09-01	3rd Qtr.	10:52 PM	3:02 PM
09-08	New	7:24 AM	7:45 PM
09-15	1st Qtr.	3:02 PM	11:54 PM
09-23	Full	7:04 PM	7:09 AM (24)

Visible planet rise and set data
for mid-month, July, August, and September, 1991

Date	Planet	Rise	Set
07-15	Mercury	8:20 AM	10:29 PM
"	Venus	9:42 AM	10:57 PM
"	Mars	9:24 AM	11:02 PM
"	Jupiter	8:20 AM	10:28 PM
"	Saturn	9:42 PM	7:19 AM (16)
08-15	Mercury	7:51 AM	8:39 PM
"	Venus	7:58 AM	8:26 PM
"	Mars	9:03 AM	9:44 PM
"	Jupiter	6:52 AM	8:44 PM
"	Saturn	7:33 PM	5:05 AM (16)
09-15	Mercury	5:56 AM	7:19 PM
"	Venus	4:52 AM	5:58 PM
"	Mars	8:44 AM	8:24 PM
"	Jupiter	5:25 AM	6:59 PM
"	Saturn	5:26 PM	2:55 AM (16)

☞ Places:

The *Detroit Observatory* is at the corner of Observatory and Ann Streets in Ann Arbor, across from the old U of M Main Hospital. The Detroit Observatory is an Historic Building which houses a 19th century 12-inch refractor and a 6-inch transit instrument.

The *Peach Mountain Observatory* is the home of the U of M radio telescope and the 24-inch McMath telescope used by the Lowbrows. This observatory is located northwest of Dexter, off North Territoral Road, West of Dexter-Pinckney Road. The entrance is just west of Sportsman's party store and is marked by a small maize and blue university sign. Go through the gate and follow the gravel road. Once parked at the observatory parking lot, follow the path away from the radio telescope and around the fenced in compound to the telescope.

☞ Times:

The monthly meetings are held on the 3rd Friday of each month at 7:30 pm. Meetings are either at the "Detroit Observatory" in Ann Arbor or at the Peach Mountain Observatory. Meetings held at Peach Mountain are cancelled if the sky is not clear at sunset.

Public Star parties (Open Houses) are held on the Saturdays before and after the new moon at the Peach Mountain Observatory. Star parties are cancelled if the sky is not clear at sunset. Many members will bring their own telescopes. Your scope is welcome. Wear warm clothes for the season and bring insect repellent. The next scheduled Open Houses are listed on the first page.

☞ Dues:

Membership in the Lowbrow Astronomy Club is $20 per year for individuals or families ,and 12 per year for students. Among other things. this entitles you to use the club telescope after some training.

☞ Magazines:

The Lowbrow Astronomy Club offers discount subscriptions to popular astronomy magazines:

Sky and Telescope : $18/yr.
Astronomy : $14/yr., 12 issues.
Deep Sky : $8/yr., 4 issues.
Odyssey : $10/yr., 12 issues.
Telescope Making : $8/yr., 4 issues.

All except Sky and Telescope require 5 club members to subscribe for the discounts. Contact Dick Sider (663-3968) for more info.

❒ Sky Scannings:

The *Sky Scannings* and *Sky Map* section in the issues of the *REFLECTIONS* are produced by Matt Linke of the U of M Exhibit Museum.

☞ Newsletter Contributions:

Please send any information, short articles, or drawings to the address below. The closing date is 10 days before the meeting. Currently there are not many people contributing and we could use some fresh observations from the members.

University Lowbrow Astronomers Reflections
1770 Walnut Ridge Circle
Canton, Mich. 48187

☎ Important Numbers:

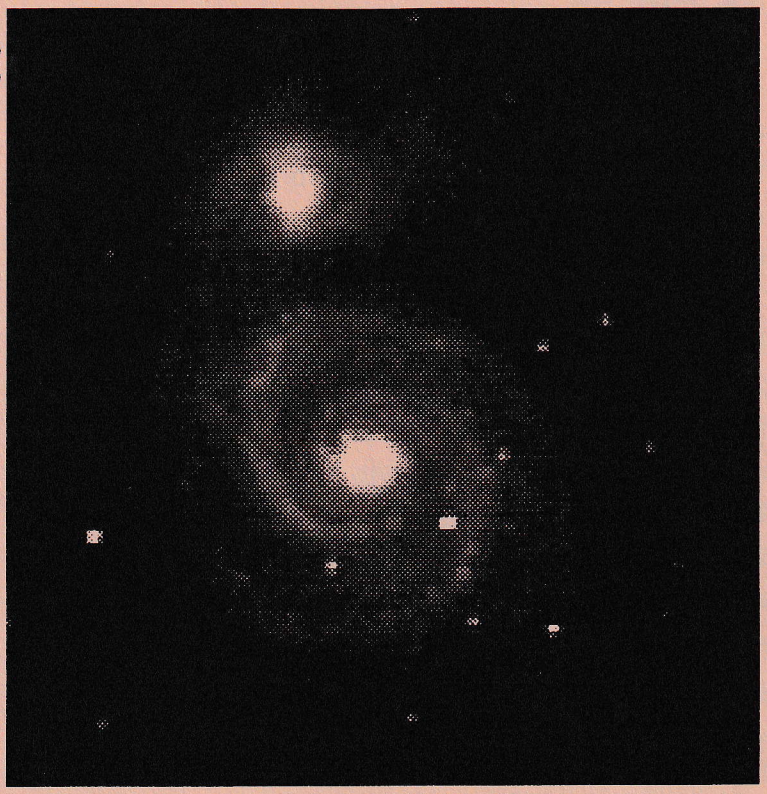
President: Fred Schebor 426-2363
VicePres: Stuart Cohen 665-0131
Doug Nelle 996-8784
Paul Etzler 426-2244
Treasurer: Richard Sider 663-3968
Observatory: D.C. Moons 373-1452
Newsletter:Roger Tanner 981-0134
Membership: Ron Avers 426-0375

Peach Mountain Keyholders:
Tom Ryan 662-4188
Fred Schebor 426-2363
Doug Nelle 996-8784

Monthly Meeting:

1991 Texas Star Party and Riverside Telescope Makers Conference

At the
Detroit Observatory
in Ann Arbor



CCD image of the Whirlpool galaxy (M51) by Bert Patterson using the Patterson SS700 camera. The is a 120 second exposure on a C-8 telescope taken at the 1990 Riverside Telescope Makers Conference.

University Lowbrow Astronomers
9287 Chestnut Circle
Dexter, MI 48130