There’s more evidence found for the existence of planet X. A British astronomer, Dr. John Murray, has examined the orbits of thirteen, long period, comets and has come to the conclusion that a very large planet, three or more times the mass of Jupiter has influenced the orbits of the comets. His calculations lead him to believe that the planet is about 30,000 AU from the Sun, in the direction of the constellation Delphinus, the dolphin. Delphinus is a small group of stars within the Summer triangle, dim, but easily visible from suburban skies. His calculations also revealed that the planet's revolution is retrograde, meaning the body moves in the opposite direction from all the Sun's known planets. This motion could indicate a captured planet that originated around some other star before beginning a new orbit around the Sun.

I Had a chance to meet a planetarium director from Roseville High School on October 19. That’s when Mr. Robert Toll gave a demo of the new Spitz planetarium,

I wanted to remind everyone that it is almost time once again for the W.A.S. Annual Winter Banquet. The invitation/reservation forms will be in the mail to all the members soon. The banquet is on Thursday, December 16th at the Stephenson Haus Banquet Center in Hazel Park. We have decided to try a different hall this year in hopes of bringing the ticket cost down. The cost this year will be $20 per person. The one draw back to this is the new hall requires that we pre pay for the event. This means that I need all the reservation forms and payment returned to me no later than December 4, 1999. Unfortunately we will not be able to sell tickets at the door. So please don't delay and return your reservation form as soon as possible. If you have never been to one of the banquets I highly recommend attending. There is usually good food and entertainment for all. Also if you or someone you know has something to donate for the raffle please have them contact LoriAnn or myself. Here's to making this banquet as enjoyable as the past ones. I hope to see you all there.

John Timpane states that knowledge is held by irrational convictions, and that this is necessarily so. He explains science with sociology of knowledge. I intend to show that these notions are erroneous, and put them into a pancritical rationalist perspective.

The first section discusses mistakes in content, and, where they are integrated with rhetorical problems, it deals with those, too. The second section discusses

Someone recently asked me if we had any Warren Astronomical T-shirts for sale. Well guess what happened on my way home the other day? I stopped at Creative Logos and ordered patches, T-shirts, dress shirts and coffee mugs! And just in time for the holiday sales season. The products will be offered for sale as follows:

3” round embroidered cloth patch with the WAS logo athletic gold stitching on navy blue background. $4.00

12 oz. travel coffee mug with closing, snap on lid. (plastic) royal pearl blue cup with gold color WAS logo front & back and "Stargate Observatory" along the seam. $5.00

"Stargate Observatory" pullover T-shirt. Navy blue with "Stargate Observatory - Macomb, Michigan" and stars silkscreened across the chest in gold color. 5.3 oz. heavyweight 50% cotton/ 50% polyester. No pocket. Sizes are youth 10-12, youth 14-16, adult M,L,XL,XXL. $12.00

WAS 3 button pullover shirt. Navy blue all cotton shirt with 3” WAS logo embroidered on right sleeve in ‘Athletic Gold’ and left chest pocket. Made of 6.8 oz., extra heavyweight 100% preshrunk cotton pique. Sizes are adult M,L,XL,XXL. $35.00
to the general public at Roseville High. The planetarium seats sixty people and is designed so that all seats face the southern sky. There’s something very soothing about an optical projector. The stars look more like real stars. The sky even feels more comfortable.

Another moon has been found orbiting another asteroid. The new moon, which still hasn’t been named, is orbiting Eugenia. The moon was discovered by one of the Hawaiian telescopes on Mauna Kea. Its mirror surface is adjustable, to compensate for the Earth’s blurring atmosphere. The ‘scope was able to resolve the eight mile wide moon, moving around the 134 mile primary. The only other asteroid with a known moon is Ida. Its moon, Dactyl, was discovered by the planetary probe Galileo, in 1993.

All three mirror makers in the telescope group have reached grit #1100. By the time you read this, they will probably be in the polishing phase. All are within 3/4 to 1 1/2 inches from their desired focal lengths. Only two more steps are required to finish a mirror surface; 1) generating a sphere and 2) changing the sphere to a parabola. These last two steps being the most difficult. A parabola is required to avoid a special problem called spherical aberration, a surface condition that all spherical surfaces, under f10, produce with light rays originating at infinity.

Here’s another reminder about the Leonid meteor shower. The club is having a public open house at Stargate Observatory for the shower. Publicity will be handled by the Metroplex system. We’re expecting quite a crowd and we’ll need volunteers to help manage the visitors. So if you’re available that night (Nov. 17), come on out for the fun and socializing. Don’t forget to bring your telescope and or binoculars. There’ll be special parking, food and souvenirs of this event will be on sale. Don’t miss it! This could be the shower of the century.

The thing that makes the Warren Astronomical Society a great are its members. We are very happy to announce the following new members who joined during October of 1999. Please extend them a warm welcome.

Catherine Connelly, Beverly Hills
Elaine D. Fischhoff, West Bloomfield
James Rengert, Troy
Jeff Charles, St. Clair Shores
Mark Femminineo, Waterford
Tony Sivalelli, Jr & Sr, Roseville

WASP Anniversaries for December
11 Years Thomas Grimm, Plymouth
7 Years Marilyn Kroth-Baca, Clinton Twp
4 Years Lou Faix, Washington
1 Year Paul & Lisa Zook & Family, Shelby Twp
Sandy & John Robbins, Taylor
Scott & Theresa Bennett, Royal Oak

(Corrections should be submitted to Joe Van Poucher)
PRESIDENT STEVE GREENE opened the meeting at 7:35pm with 24 members and 5 guests in attendance. Steve announced that elections will be held at the October 21, 1999 Macomb meeting. He took one new nomination for Marty Kunz to be 1st Vice President. Marty accepted the nomination.

DOUG BOCK announced that his Wilderness Star Party in Boon, MI near Cadillac, MI will be October 6-10. He has about a dozen people coming so far.

FRANK SPISAK announced that on October 16 The Store of Knowledge will be at Stargate. The Somerset store's manager will be lecturing and will have 3 telescopes out on display.

MICHAEL O’DOWD has Astronomy League certificates and information.

JEFF BONDONO has decided to retire from his position as editor of the WASP. He has asked for volunteers to take over his position as soon as possible. Jeff has done a wonderful job of editing the WASP for our club. Anyone interested in becoming the new editor please notify any officer.

BLAINE AND STEVE are planning to talk with the supervisor of Stoney Creek and Wolcott Mill about future plans for Stargate. They plan to review the things we do at Rotary Park and that our attendance at the observatory has increased greatly this last year with 300-400 visitors and 125-150 members on record. They wish to discuss an agreement of what can be done to begin having public star parties at Rotary Park, Wolcott Mill and Stoney Creek. The possibilities for investments on the park's behalf towards some new facilities at Stargate will be another topic of discussion.

DOUG BOCK brought up some ways to raise money in order to begin a project like at Fox Park. He noted that it only took that club one year to fund and build their new high tech facilities. Grants and business donations were taken and we should look into the same ways of raising money to add on to our current facilities.

STEVE GREENE mentioned we may want to have a star party for the Leonid meteor shower in November. The Metropark people will publicize it and we can take a count of attendees from some type of raffle ticket.

DOUG BOCK added that one way we could get the public involved by using a simple map of the sky and having them draw on it where they see the meteors shower down.

GARY GATHEN informed the club of a story he saw on CNN about an unknown object visible in the Northern Hemisphere that has been described as pure white with no spectral lines and no signs of red shift. It has been stated to be staying in the same place in the sky.

STEVE GREENE agreed to get some volunteers together to make a presentation to Wilkenson Middle School in Royal Oak in November. One of our visitors this week asked us to do this for her. Steve will be in contact with her to set this up.

KIM DYER reminded everyone that there will be open houses at Michigan State University on the weekends of the first quarter moon in both October and November.

The mirror grinding group announced that they are diligently working every week in hopes of finishing up all 3 mirrors by Christmas.

STEVE GREENE announced the break at 8:35pm for 20 minutes. After the break Chris Mehling gave a presentation on observing sites. After Chris' presentation Steve closed the meeting at 10:00pm.

Macomb Meeting
October 21, 1999

PRESIDENT STEVE GREENE opened the meeting at 7:35pm with 36 members and 1 guest in attendance. He then called for officer reports.

2ND VP RICK GOSSETT announced that there will be an open house at Stargate on Nov. 6, 1999 with general observing as the program. November 17, 1999 will be a public star party at Stargate in coordination with the Metroparks for the Leonid Meteor shower.

TREASURER JOE VAN POUCKER stated that invites for the banquet will go out this weekend. He reminded people that the banquet this year needs to be prepaid and that we may not be able to buy tickets at the door. The cost is $20 per person. This includes the meal and an open bar. He in encouraging everyone to get their reservations sent in as soon as possible to guarantee your place at the annual banquet.

Joe then gave us his monthly treasurer's report for September:

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WASP
Year to date report:
Opening balance Jan. 1, 1999 $5163.03
Ending balance October 21, 1999 $5691.81

STEVE GREENE then informed the club of our upcoming public star party for the Leonid Meteor Shower. The agenda is as follows:
Place: Stargate Observatory at Camp Rotary
Date: November 17, 1999
Time: 6pm until Midnight
Schedule of Events:
6pm- midnight: general observing with scopes and naked eye observing for meteors
6pm-7pm: Observatory tour
7pm-8pm: Constellation walk by Larry Kalinowski

There will be refreshments either provided through the park vendor who has the first right of refusal, or through the club itself. The activity center will be open to us and the metroparks will provide help as interpreters and parking control. The cost for the star party is free! There will be t-shirts, thermal travel mugs and club patches for sale to raise money for our club.

CLAY KESSLER reminded everyone that the Lowbrows had a similar event during the week last year and had a turnout of 250 people so we should be prepared for any size crowd.

MARTY KUNZ suggested we put donation cans on our scopes in order to raise money for our club.

STEVE GREENE also made the announcement that Jeff Bondono is retiring as editor of the WASP and we need to find someone to volunteer to take this position over or possibly share the job. Steve also led a discussion and vote on the type of collared shirt that the club wants made up with our logo on it for sale to members in order to raise money for the club.

DOUG BOCK announced that he had his Boon Star Party on Oct 6-10 and that he had over 20 people there for 3 out of 4 clear nights. Clay took many pictures and has them at the meeting to share. The next NCO party will be on Nov 6 at Doug's house. He also added that there will be a Mercury transit on Nov 15 but it will be best viewed from SW of here such as Illinois.

RICK GOSSETT announced that any members with keys for Stargate should hand them in at the November Macomb meeting and officers should do so at the January Cranbrook meeting.

STEVE GREENE then held elections with the results following:
President: Blaine McCullough and Mike Simonsen
Blaine McCullough new President
2nd V.P. : Frank Spisak, Fred Judd and Mike Simonsen
—Mike Simonsen new 2nd V.P.

Secretary: John Herrgott unopposed

Treasurer: Joe Van Poucker unopposed

After elections Steve congratulated the new board and stated that this is a great team to run the WAS in the next 1-2 years. These next 2 years will be big ones for our club considering that Stargate's 30th Anniversary is next year and The WAS will be 40 years old in 2001.

STEVE GREENE closed the meeting at 10:00pm.

The Swap Shop

This is a new column for those who are interested in buying, trading or selling items. Call 810-776-9720 if you want to put an item for sale or trade in this section of the WASP. The ad will run for six months. The month and year the ad will be removed, is also shown.

FOR SALE. Hewlett Packard, 660 SE, inkjet printer, with color and black ink cartridges. $50. 810-573-8699. (6-00).

FOR SALE. Sound Blaster, AWE 64 value, sixteen bit, sound card, with 512K memory and 1MB ROM on board, CD and instruction booklet. Upgradeable to 24 MB. $50, postpaid. 810-776-9720. (6-00).

FOR SALE. Exposure guide for the Sun, Moon, Planets, solar and lunar eclipses and more. Extinction tables. Calculating prime focus, afocal, negative and positive projection F ratios. ISO's from 4 to 3200. Seventy-eight pages. $5.00, postpaid. 810-776-9720. (6-00).

FOR SALE. Flint optical glass. 7 x 6.25 x 1.375 inches. $25. 810-757-4741. (3-00).

FOR SALE. Plexiglass, 9 x 7.75 x 2 inches. $10. 810-757-4741. (3-00).

FOR SALE. Folded, six inch, F15 refractor, Jaegers objective, with or without mount. 734-462-3255. (2-00).

FOR SALE. Diamond Stealth II, G460, 2X AGP video card. Landmark DOS data transfer rate is 17,000,000 bits/sec. Eight megabytes of video memory, with CD installation disk. $45. 810-776-9720. (2-00).

FOR SALE. Eighty millimeter Apochromatic refractor, F 6.25, 500 mm focal length, with 35mm Praktica camera body, adaptor, solar filter and carrying case for all items. $450. 734-462-3255. (2-00).

FOR SALE. PCI card that supports 2 IDE hard drives and two floppy drives, with hard and floppy drive cables. $10. 810-776-9720. (2-00).

WANTED. Newtonian elliptical diagonal, 2.8 inches minor axis, or larger, with or without holder and spider. 810-776-9720. (2-00).
The WASP 25 Years Ago
by LoriAnn Skonieczny
This is an excerpt from the December 1974 issue of the WASP.

WARREN ASTRONOMICAL SOCIETY (WAS)
Activities for December, 1974

December 19th - General meeting at South Campus, MCCC:
Slide presentation and NASA narration of Pioneer 11 trip to Jupiter
Movie- part II "The Violent Universe"
Amateur astronomer, Louis Faix, Lecture on "Ways of Observing and Photographing
Christmas slide show presentation with music

December 20, 1974 - Annual Christmas Banquet To be held at the Paradiso Villa at Long Lake Road and Livernois Road. Dinner and special slide presentation by Frank McCullough called "The Winter Astronomers."
For information call 791-8752. Frank McCullough is President of the WAS and he and his wife, Diane, were two of the members who sailed aboard the Canberra to the coast of Africa to view through their telescopes and to photograph the longest Solar Eclipse of the Century in 1973. Others who will be attending the banquet and who also sailed aboard the Canberra are: Ginny McCullough, Jerry Persha, Dave Harrington, Pete Kwentus, Gary Morin, Marik Christensen, Bill Whitney and his wife, Sandy and Tim Skonieczny, Dr. David Harrington transported his 14 inch Newtonian telescope aboard the Canberra to view and photograph the eclipse. Many slides and movie shots were made of the scene aboard the deck of the Canberra showing the many telescopes set up to record the eclipse. Diane McCullough did some outstanding photography of the eclipse obtaining a record seven diamond rings; an exceptional performance! The comet Kohoutec was photographed by many who are attending the Banquet from October 1973 to February 1974.

MIKE from page 1

solely the rhetorically manipulative techniques that Timpane employs, which may bias the reader toward his desired end without actually taxing the author's mind during the writing process nor the reader's in perusal.

Section 1

John Timpane introduces his exposition with a quote from Wittgenstein's On Certainty. "At the end of reasons comes persuasion." Wittgenstein rightly ascertained that arguments cannot ultimately be justified- any reason for an idea is always founded upon a prior assumption, merely moving the justification back one step in an infinite regression—but he mistakenly ascribed importance to this idea. He assumed that justification was the basis for rationality, and so he believed that the impossibility of ultimate justification made rationality itself impossible, as well. However, criticism, not justification, is the basis for rationality. The reason behind the formation of any given idea does not need to be justified. Whether it came from careful scientific research or from a Ouija board is just historical trivia, valuable only for its insight into how ideas are conceived. What is important is not the justification for an idea's origins, but its ability to survive criticism. Isomorphically, in Lamarck's theory of evolution through the inheritance of acquired characteristics, an organism's physiology had to be fully justified prior to the organism's birth, while in Darwinian evolutionary theory, an organism's physiology is only relevant due to its ability (or inability) to survive to reproduction within whatever environment it enters. (Unlike Lamarckism, which does not occur, people do develop and maintain ideas justifi
cationistically. I am not suggesting that it doesn't happen, just that it is not rational, necessary, nor benefi
cial.)

Timpane's writing begins, "At the end of every successful argument, no matter how weighty the evidence or powerful the reasoning, the beholder performs a nonrational act: the leap to acceptance." Timpane, following Wittgenstein, assumes that, since no idea can ultimately be justified, the choice comes down to either accepting any given idea on a nonrational basis, or denying the idea on a nonrational basis. Either way, according to Wittgensteinian reasoning, one's ideas would ultimately be nonrational, founded on faith. By speaking in absolutes ("...every ...no matter how...always ..."), he tries to convince the reader that there are no choices except total acceptance or outright rejection. But there is a third choice, and it doesn't resort to the irrational. Without accepting that an idea is definitively correct or definitively incorrect, reserving prejudice, one can still credit whether an idea best fits with available knowledge compared to any known alternative hypoth
thesis.

Due to this third, rational alternative, the entire footing upon which Timpane rests his arguments is a misstep. Still, it is worth exposing the major flaws in his arguments and refuting them. His apparent reasoning (he doesn't actually give many reasons, mostly just hints as to what the underlying reasons between his statements are) goes like this: since ideas cannot be justified, they are nonrational, and since they are nonrational, they must progress by matters other than rationality (persuasiveness). Thus he asks, "What makes an argument persuasive?" In heading to this, he has followed Thomas S. Kuhn in placing the progress of science within sociology.

Before answering, he gives you a preliminary postulate: "Granted, there is no one nation called 'science' but a
panoply of tribes and their respective handicrafts." This qualification seems critical to the argument he's building, for him to place it immediately after his question, without yet answering, and then finish the paragraph by backing up his qualification instead of answering—particularly when you notice that it appears to be a complete non-sequitur, not in any obvious way imperatively for elaborating properties of persuasiveness, and further that he placed it at a pivotal point of his discussion. Before granting him this postulate, we must know what it means; but the sentence is so vague that, taken out of context, any concrete meaning would be indeterminable. However, the whole essay provides the context: 1) he founds his discussion upon the thought of Wittgenstein and Kuhn; 2) he agrees with the observations of deconstructionists (even if he disagrees with their attitude); 3) he employs a patently relativistic quote to persuade through the "Argument by Authority" method; 4) he specifically states that ideas are held nonrationally; 5) he then tries to place their success in a sociological perspective of persuasion. From all these clues, a reasonable guess could be ventured as to just what it is he is postulating that he wants the reader to take for granted.

Unfortunately, his preliminary postulate, and the direction he takes the essay, comes far into a long chain of reasoning which is founded on erroneous assumptions. Please bear with me while I outline this, to put his essay into a rational perspective.

Wittgenstein also focused on a separate facet of the problem of nonjustifiability than the aforementioned infinitely regressing justification, the problem of induction: (in the words of Max Born) "... no observation or experiment, however extended, can give more than a finite number of repetitions"; therefore, "the statement of a law-B depends on A—always transcends experience." In this sense, there is no possibility of a method of positive inference which will logically lead from limited observations of similar phenomena under similar circumstances to the formation of a law. Statements of law are of stronger content than the evidentiary statements used in defending them. "Yet," Bom says, "this kind of statement is made everywhere and all the time, and sometimes from scanty material." This problem, stumping great philosophers since Sextus Empiricus recorded it in 200 A.D., was of great concern because it was widely believed that, if there was no solution to the problem of induction, then, "...there is no intellectual difference between insanity and sanity. The lunatic who believes he is a poached egg is to be condemned solely on the ground that he is in the minority ..." (Bertrand Russell).

Stuck, many philosophers tried harder to get around the problem than to solve it. Some, such as P.F. Strawson, argued that the problem of induction was misconceived, that there was no need to justify inductive inference. They asserted that the relationship between evidence and conclusion isn't illogical, but merely nonlogical. They believed there were two fundamentally different kinds of inference: deductive, defining logic; and inductive, defining natural sciences. They viewed inductive inference as inductively valid, just as deductive inference is deductively valid. The problem was "dissolved" by learning not to apply the standards of deductive logic to inductive inference.

Wittgenstein assumed induction exists and is being employed, and assumed that the problem of induction was insoluble. Then, attacking the logical positivists' view of scientific unity, he not only accepted their own argument that inductive inference is inductively valid, he greatly extended the application of that strategy of thought. Wittgenstein decided that, since the standards of logic couldn't be permitted to judge science, neither the standards of logic nor the standards of science could be permitted to judge other disciplines. Wittgenstein's followers extended this into the idea that no discipline could be judged by application of the rules of any other discipline. Wittgenstein declared that such cross-disciplinary judgments were errors, which he called "category mistakes." He called people who made category mistakes "bad pupils." He then switched from the concept of disciplines of knowledge to "language games" and "forms of life", each self-validated by their own rules and beholden to none else; and he left as the only function of philosophy to merely subdivide categories into unreconstructible fragments and describe each new one's "first principles" or "grammar of logic." Each area of knowledge was viewed as a closed system, with its own rules and logic, irreducible to and incompatible with any other area of knowledge.

Thomas S. Kuhn's sociology-of-knowledge builds upon these Wittgensteinian notions. Whereas Wittgenstein viewed fields of knowledge as incomparable spatially not in contact with each other to apply the standards of one to another regardless of apparent closeness, due to an absence of an universal, logical underlying framework to gird them to each other; Kuhn added that fields of knowledge were also incomparable temporally—without the same framework, necessary for applying the standards of any period's state of knowledge in any discipline to its predecessor or successor. Kuhn asserts that "paradigms"—his phrase for systems of thought on a given subject—are incommensurable. They can't be compared with each other, and so, one cannot be used to judge another. Paradigms are, in his perception, relative: none inherently better or worse than another. The shift from one paradigm to another—say, from Aristotelian mechanics to Newtonian mechanics, or from Newtonian mechanics to Einsteinian relativity and quantum mechanics—are supposed to be nonrational, and not at all indicative of progress towards truth ....

... to be continued in a future issue of the WASP

or see
http://www.primenet.com/~spinak/TimpaneReb1A.html
Get the latest-breaking events information at the club’s home page. Follow the Upcoming Events link from http://www.eaglequest.com/~bondono/WAS/ and be sure to check the link at the bottom of that page to Doug Bock’s NCO Schedule of Events.

Nov  
Wed 17  6:00 pm  Leonid Meteor Shower and Telescope Observing Session at Stargate Observatory  
  Thu 18  7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209

Dec  
Sat 4  4:00 pm  NCO Club meeting with Star Party to follow at Doug Bock’s Northern Cross Observatory  
  Mon 6  7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science  
  Thu 16  7:30 pm  Annual Awards Banquet

Jan  
Sat 8  4:00 pm  NCO Club meeting with Star Party to follow at Doug Bock’s Northern Cross Observatory  
  Mon 10  7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science  
  Thu 20  7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209

Feb  
Sat 4  4:00 pm  NCO Club meeting with Star Party to follow at Doug Bock’s Northern Cross Observatory  
  Mon 6  7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science  
  Thu 17  7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209

Mar  
Sat 4  4:00 pm  NCO Club meeting with Star Party to follow at Doug Bock’s Northern Cross Observatory  
  Mon 6  7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science  
  Tue 16  7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209  
  Fri 31—Mon 3  Boon Hill Spring Star Party at Doug Bock’s Boon site, west of Cadillac. BYO Everything.

Apr  
Mon 3  7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science  
  Thu 20  7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209  
  Sat 29  4:00 pm  NCO Club meeting with Star Party to follow at Doug Bock’s Northern Cross Observatory

May  
Mon 1  7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science  
  Fri 5—Mon 8  Boon Hill Star Party at Doug Bock’s Boon site, west of Cadillac. BYO Everything.  
  Thu 18  7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209  
  Sat 27  4:00 pm  NCO Club meeting with Star Party to follow at Doug Bock’s Northern Cross Observatory

Jun  
Fri 2—Mon 5  Boon Hill Star Party at Doug Bock’s Boon site, west of Cadillac. BYO Everything.  
  Mon 5  7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science  
  Thu 15  7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209  
  Fri 23—Sat 24  NCO Solstice Star Party at Doug Bock’s Northern Cross Observatory  
  Fri 30—Wed 5  Boon Hill Star Party at Doug Bock’s Boon site, west of Cadillac. BYO Everything.

Jul  
Mon 10  7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science  
  Thu 20  7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209  
  Sat 22  4:00 pm  NCO Club meeting with Star Party to follow at Doug Bock’s Northern Cross Observatory

Aug  
Mon 7  7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science  
  Thu 17  7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209

Sep  
Mon 11  7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science  
  Thu 21  7:30 pm  Meeting: Macomb Community College South Campus, Bldg. B, Room 209  
  Sat 23—Sun 1  Boon Hill Fall Star Party at Doug Bock’s Boon site, west of Cadillac. BYO Everything.  
  ???  8th Annual Island Lake Star Party

Oct  
Mon 2  7:30 pm  Meeting: Downstairs at Cranbrook Institute of Science
### 1999 December 1999

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<td>12:10</td>
<td>1:12</td>
<td>2:13</td>
</tr>
</tbody>
</table>

**Detroit, MI**

**Key to times:**
- SunRise
- MoonRise
- SunSet
- MoonSet

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**WASP**
Warren Astronomical Society, Inc.
P.O. Box 1505
Warren, MI 48090-1505

**December Solstice 22, 2:44**