The illustration above shows the exterior of the W.A.S. STARGATE observatory, located on Camp Rotory property off North Ave. on 29 mile road. The building contains a 12½\" cassgrain telescope of 200\" focal length. The use of this observatory is the privilege of all members & guests of members. The equipment within the building will allow observational astronomy to be conducted at all times, weather permitting.
The W.A.S.P. is the official publication of the Warren Astronomical Society and is available free to all club members. Requests by other clubs to receive the W.A.S.P. and all other correspondence should be addressed to the editor at the above address. Articles should be submitted at least one week prior to the general meeting.

Warren Astronomical Society
P.O. Box 474
East Detroit, MI 48021

President: Doug Bock 533-0898
1st V.P.: Frank McCullough 759-5215
2nd V.P.: Alan Rothenberg 355-5844
Treasurer: John Wetzel 882-6816
Secretary: Nancy Tomczyk

The Warren Astronomical Society is a local, non-profit organization of amateur astronomers. The Society holds meetings on the first and third Thursdays of each month. The two meeting locations are listed below:

1st Thursday – Cranbrook Institute of Science
500 Lone Pine Road
Bloomfield Hills, MI

3rd Thursday – Macomb County Community College – South Campus
B Building (b209)
14500 Twelve Mile Rd.
Warren, MI

Membership is open to those interested in astronomy and its related fields. Dues are as follows and include a year’s subscription to Sky and Telescope.

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Stargate Observatory is owned and operated by the Warren Astronomical Society in conjunction with Rotary International. Located on the grounds of Camp Rotary, Stargate features a 12½” club-built Cassegrainian telescope under an aluminum dome. The observatory is open to all club members in accordance with the “Stargate Observatory Code of Conduct”.

Lectures are given at Stargate Observatory each weekend. The lecture will be either Friday or Saturday night, depending on the weather and the lecturer’s personal schedule. If you cannot lecture on your scheduled weekend, please call the Chairman as early as possible or contact an alternative lecturer. Those wishing to use Stargate must call by 7:00 p.m. on the evening of the observing session. The lecturers for the coming month are:

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<tr>
<th>Date</th>
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<tr>
<td>April 16/17</td>
<td>Dave Harrington</td>
<td>879-6765</td>
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<tr>
<td>April 23/24</td>
<td>Frank McCullough</td>
<td>254-1786</td>
</tr>
<tr>
<td>April 30/May 1</td>
<td>Ron Vogt</td>
<td>545-7309</td>
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<tr>
<td>May 7/8</td>
<td>Alan Rothenberg</td>
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<td>May 14/15</td>
<td>Doug Bock</td>
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<tr>
<td>May 21/22</td>
<td>Ray Bullock</td>
<td>879-9458</td>
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<tr>
<td>May 28/29</td>
<td>John Root</td>
<td>464-7908</td>
</tr>
<tr>
<td>June 4/5</td>
<td>Lou Faix</td>
<td>781-3338</td>
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MINUTES OF THE MARCH 18, 1982 MEETING OF
THE WARREN ASTRONOMICAL SOCIETY

The meeting was called to order at 8:05. There were 20 people present. Spring must be coming as our attendance is getting better.

OLD BUSINESS
The Great Lakes Regional is drawing closer (July 16 thru 18). If you would like to give a talk, please submit all papers to Dave Harrington.
Balance in our treasury as of March 18 stands at $210.53.
News on our sub-groups.
   COSMOLOGY-JOHN WETZEL
   3/17 meeting was at Doug’s, since it was St. Patty’s Day, no one attended.
   4/21 meeting at Lou Faix’s. He will give a talk on measurement and separation of binary stars.
   ASTROPHOTOGRAPHY- LARRY KALINOWSKI
   2/25 Larry showed some 3D lenscapes of Venus
   3/25 meeting again at Larry’s house
   OCCULTATION- DAVE HARRINGTON
   4/17 meeting at Dave’s house. There will be a rehearsal for the Star Bowl
   ATM-DOUG BOCK
   Only one person is building a telescope, so this sub-group is temporarily cancelled until more interest is showed.
   OBSERVING-DOUG BOCK
   3/27 meeting will be at Stargate

NEW BUSINESS
April will be our last month here at Greenacres. We are returning to MCCC in May. Finally all our problems are settled at Macomb and we can meet there again. Our meetings, most likely, will be in a classroom and not the student union building. All members will be notified of where and when by mail. April 24 is the 6th annual Star Bowl. Last year we lost our crown. If anyone wants to attend please call Doug. Frank McCullough has taken care of our printing problems. If anyone has any articles to submit, please call Frank for information. A small group of members are going down for the Space Shuttle Launch. Best of luck to Frank McCullough, Dave Harrington, Alan Rothenberg and Rodger Tanner.
At our May meeting at Macomb, it is once again election time. By unanimous decision or did he volunteer? Brad Vincent is our nominating chairman.
Spring Campout will be Memorial Day Week-end, $5.00 for members and $6.00 for non-members. Our observatory chairman, Alan, reports that we have some small problems at the observatory. A broken wheel on the dome, lock on the west side is upside down, you must go in the east door and there are some declination problems on the telescope.

PROGRAM
John Wetzel gave a talk on the Jupiter Effect. What really happened.
We also viewed another filmstrip in the continuing series from National Geographic titled “Planets- Family of the Sun”.

Respectfully submitted

[Signature]
For Sale - 8 inch f/15 cassegrain telescope, equatorial mount with motor drive, slow Dec. control, ex 3.5mm right angle finder, 40 mm eyepiece. Best offer. Call Bob Shannon at 885-4283.

For Sale - Celestron 8, Exceptional condition. Complete system $1200.00 Call John Lippman at 884-4541.


For Sale - 60mm 9TE-5 Tasco refractor, 700mm focal length. 4, 6 and 12.5mm eyepieces, Barlow lens, star diagonal, solar wedge and sun screen. Make best offer. Used - good condition. Call Brian Klaus at 731-0011.

For Sale - 2.4 inch Unitron refractor, 4 eyepieces, tripod, new box, hardly used. 4.5 years old. Price $200.00. Call Henry Heatley at 885-5309.

For Sale - 8 inch f/6 with 8X50mm right angle finder, 2-inch rack and pinion focuser, pipe fit mount with pedestal. Price $350.00. Contact Doug Bock at 533-0898.

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**SCHEDULE OF EVENTS**

May 6  
Meeting at Cranbrook. Time 7:30

May 7  
Full Moon

May 16  
Last Quarter Moon

May 19  
Cosmology meeting - Call John Wetzel at 882-6816

May 20  
*****************************************************************************
GENERAL MEETING AT *** MACOMB COMMUNITY COLLEGE *****
*****************************************************************************

That's right folks; we are back at Macomb after a year and a half of waiting. RAH, RAH, RAH... Starts at 7:30 in room B209 ... That is in B building of course......
DONT FORGET THIS!!!!!!!!!!!! No more Green Acres.
*****************************************************************************

May 22  
New Moon. Star Party at Stargate observatory. At dusk.

May 27  
Astro-photography meeting at Larry Kalinowski's house. Call Larry at 776-9720.

May 28-31  
***** SPRING CAMPOUT AT STARGATE ***** HURRY TO SIGN UP.
SOME ASTRONOMICAL REFLECTIONS
PART IV

Some scientists are talking about changing the face of Mars by altering its climate. The first step would be to plant Lichen on the surface of Mars. Experiments have been conducted with "Mars Jars" from which the air is exhausted and Martian surface conditions generally duplicated. Lichen and ants were placed in the jars. The lichen thrived, the ants remained alive for weeks but became sterile. It is believed that lichen could start the process of terraforming the surface of Mars. This would be followed by other suitable vegetation and, with the spreading of such growth, the temperature would gradually change. Later, Man could survive under enclosed and controlled atmospheric conditions.

No mention was made as to the method of planting, the amount of planting or how many years or lifetimes would be needed to substantially affect the Planet's temperature!

After reading this article, I thought it would be interesting to subject the contemplated idea to some "down to earth" analysis. As residents of Planet Earth, we are in a beautiful position to undertake such an analysis since Earth has already had the experience of an evolving planet reaching the point where it is capable of supporting life and permissive to its perpetuation.

It is now generally agreed that our planet had cooled sufficiently about 4,500,000,000 years ago to permit its surface to solidify and begin the formation of the crust and atmosphere on which we so totally depend. The following chart shows the progression of our Earth's development:

m.y. = million years ago

Pre-Cambrian Period began:
4,500 m.y. Earth's crust formed.
3,800 m.y. Oldest dated rock.
3,300 m.y. Oldest unaltered sedimentary rock.
3,000 m.y. Algae is well established.
2,000 m.y. Many-celled Algae is found. Land masses and seas were formed.

Cambrian Period began:
570 m.y. Early marine life proliferated. Trilobites were particularity common.

Ordovician Period began:
500 m.y. Continuing sedimentation and mountain building. Reef building algae. Corals sponges and mollusks developed.

Silurian Period began:
435 m.y. A dramatic development in our Earth's history, the evolution of Jawless Fish, the first Vertebrates, and first land Plants.

Devonian Period began:
395 m.y. Mountain building reached a peak. Land colonized by earliest seed plants. Fish grew in size and variety and the first land creatures (amphibians) evolved.

Carboniferous Period began:
345 m.y. Richly forested swamps and deltas were submerged to form large coal fields. Large Glaciers formed in southern hemisphere.
Insects thrived, the first reptiles appeared.

Permian Period began:
280 m.y. Reptiles spread widely, modern insects evolved, several marine creatures became extinct. But new land flora and conifers, cone bearing plants, developed.

Triassic Period began:
225 m.y. The first dinosaurs and giant marine reptiles appeared. Small primitive mammals evolved.

Jurassic Period began:
193 m.y. Considerable volcanic activity was associated with the opening of the Atlantic as a result of Continental drift. On land, the dinosaurs reigned supreme. The air was first conquered by flying reptiles and later by primitive birds. There are traces of some flowering plants.

Cretaceous Period began:
135 m.y. Seas reached their maximum extension. Dinosaurs remained dominant until near the end of this period. They and large reptiles then became extinct. True birds and early mammals became numerous.

Tertiary Period began:
65 m.y. Period heralded explosive growth of mammals Many large species evolved but some died out. Flowering plants increased rapidly, the climate moderated and grasslands appeared.

Quaternary Period began (and continues today):
2 m.y. Period marked by many climate changes. Four major ice ages alternated with warmer intervals. Mammals adapted to climate changes and increased in numbers. Then man appeared, to inherit the Earth.

At one of the viewing stations at the Grand Canyon, two years ago, I saw a six foot diameter clock device with one three foot long minute hand, with a small red light at its end. The clock dial was marked off in hundreds of millions of years. It took 120 seconds for the hand to make a complete revolution, thus indicating the passage of 4,500,000,000 years. The room was darkened and, as the hand moved, it caused lights on the clock's perimeter to light up progressively, showing the relative periods in our Earth's development and the dates when certain specific plant life and creatures developed.

We can make a similar comparison by dividing the dates of the various periods, shown above, by 4,500,000,000, reducing the Earth's total evolutionary period to one year. This will provide a vivid picture of the various time periods in our Earth's development. On this basis, man has had a very, very brief existence.

The first known living things appear, 240 days after the earth is formed. The first dinosaurs appear after 354 days and then disappear.
after 360 days. Early man appears some 5 hours before the end of the year and modern man appears only 5 minutes before midnight.

Returning to our planting of lichen on Mars, we can anticipate some problems. Mars does not have our atmosphere or our seas. As we have seen, geological research indicates that early marine life (Trilobites) did not proliferate on Earth until 2,430,000,000 years after algae was well established and the earliest seed plants did not appear until 175,000,000 years later. If we were to plant some lichen on Mars by space craft, the knowledge of the planting would long be lost in antiquity before any noticeable changes would begin to take place on the surface of Mars.

Also, let's not overlook the fact that Mars, at its nearest approach to Earth, is still 48,600,000 miles away and, if a straight line approach were possible, at 70,000 MPH, it would require 694 hours or 29 days to reach Mars. Actually, it would take somewhat longer than 29 days since a straight line approach to Mars is not possible.

While the distance to Mars presents no insurmountable problem for an unmanned space craft, it will present a problem later when we endeavor to transport pilgrims to Mars. Our trip to Mars could be compared to the sailing voyages across the Atlantic by Columbus except that Columbus did not have the fuel, food or life sustaining oxygen problems that our voyagers would have. Furthermore, upon arrival, Columbus was able to bask in the sunlight, breathe in the air, drink the water and live off the land, and off the Indians. Finally, he was able to provision his vessels to make the return trip home!

No! We are not ready to purchase a one way ticket at this time and we don't anticipate that guaranteed return trip tickets will be immediately available.

John J Wetzel
VARIABLE STAR OBSERVING

by Chuck Fausel

The following charts will give you some practice with some different types of variables. (See April’s WASP for specifics on estimating variables and how to use AAVSO charts.)

The first star this month is RY Leonis. RY Leonis is a fairly rapidly varying long-period variable. In the upper right-hand corner of the (b) chart, you will find αLeo or Regulus. Using the star-hopping technique you can locate RY shown on the center of the chart. Note that north is “down” on these charts as it would be in an inverting telescope.

The second star, R Leonis, which lies about 20 minutes west of Regulus, is a typical bright long-period variable with a total bright-to-dim-to-bright period of 313 days. To find R Leonis, set your telescope on Regulus with a low-power eyepiece. Put Regulus at the lower (north) edge of the field. Move the telescope west, watching for the two bright stars, 18 and 19 Leo, of magnitudes 5.8 and 6.4, respectively. You may also find these stars using your finder. R Leonis is just south of 19 Leo.

R Leonis is red with a spectral class of M8e. Red stars are hard to compare to “blue” stars because of differences in the eye’s sensitivity. Make comparisons using a “quick glance” instead of a “long stare” to minimize this effect.

Finally, if you have a 6-inch or larger telescope, you may want to look for X Leonis, which lies near 21 Leo. X Leonis is a U Geminorum star, named for the prototype star, U Geminorum. These stars are called dwarf novae because they remain faint for most of their period, then suddenly they will brighten by several magnitudes. After a brief period at maximum, they fade back to their original faint state. The mechanism that causes this kind of variability is being closely studied by astrophysicists. Sightings of a U Gem star on the rise are very valuable. AAVSO members monitor these stars closely and notify AAVSO headquarters of any such sightings. HQ in turn alerts the professional community so that spectrographs can be taken, etc. In this way, amateur astronomers with modest equipment do make valuable contributions to the study of astronomy.

If you would like to know more about the programs of the AAVSO, including Nova Search and Sunspot Counting, or if you would like to try a variable star observing session, please call me or see me at a Cranbrook meeting.

Chuck Fausel
1-623-1668
094512 (d) X Leonis

1900 09h 45m 39s +12° 20'.6
2000 09h 51m 02s +11° 52'.8

Sp. Pec Per. UG (22.7) Magn. 11.5–15.5

Scale: 20" = 1 mm

A.A.V.S.O. Chart (d)
New seq. by CES 3/71

Traced by D.F.B. Rev 3/71
From H.C.O. Chart
Approved H.C.O. 1940
RY Leonis

(1950) 10h 1m 6s (+0° 54') + 14° 14' (-2° 88')

Period 155 days  Magnitude 8.7 - 11.5

A.A.V.S.O. Chart (b)  
Coordinates for epoch 1900  

Traced by D. F. B. 
From Walton Chart  
Approved H.C.O. 1942
RY Leonis

(1950) 10h 1m 6s (10:56:41) +14° 14' (-2:88)

Color
Period 155 d.
Magn. 8.7 - 11.5

A.A.V.S.O. Chart (d)

Traced by D.F.B.
From H.C.O. Chart
Approved H.C.O. 1939.
“It’s 4:20 in the morning, on a workday in January; I must be out of my mind! This is no time to get up, even for an occultation of Venus.” Have you ever had a conversation with yourself that sounded like this? Of course you have! For this is what I have found to be the most critical time in observing an astronomical event, and it has a profound influence on whether or not the event is seen. It is called “getting out of bed in the middle of the night”. Have all of us not failed at one time or another to make it through this critical period?

On these occasions, with eyelids heavy, and mouth dry, it is as if we have a split personality, with a devil on one shoulder, and an angel on the other. I have noticed that whether the event is a conjunction of Mars and Saturn, Comet West, an occultation of Venus, or any of a dozen other astronomical occurrences that require the overcoming of human inertia on a cold winter’s night, the conversation is always basically the same between the devil and angel. The devil invariably speaks first, usually within a few seconds after the alarm goes off; “This is utterly ridiculous, Dave; only a fool would get up and tromp outside in the middle of the night. My god, it’s five below zero out there with twelve miles per hour winds! I’d get back under the warm covers if I were you.” Then, just as I start to pull the warm covers back over myself, the angel makes a comment: “Come on, Dave, this is the last time this event occurs until 1983. You’ll regret it if you don’t get up.”

“Don’t go for that baloney,” replies the devil, “you’re probably the only idiot in the entire club who is even thinking about getting up. If you’ve seen one occultation, you’ve seen them all. It’s probably cloudy anyway!”

“Ignore him,” says the angel. “Get up and get dressed. You’re wasting valuable time.”

“It will all be for nothing,” says the devil with a knowing sneer. “It’s bitter cold outside and you know that it’s always cloudy this time of year. Besides, you’ve got time for at least another half hour of sleep; why not reset the alarm?”

“Don’t let him talk you into that!” says the angel, sensing that the devil is winning. “You’ve only got 40 minutes as it is, and you have to set up your telescope.”

“Listen Dave,” says the devil, grabbing my earlobe, “this isn’t exactly the big-bang event or a supernovae. It’s only a measly occultation. Why not observe with just binoculars for a change? Why bother with all that equipment; you’ll just have to tear it all down again when you’re done!”

“You should get photographs through the scope ....” says the angel logically, “...something to send in to the astronomy magazines.”

“Now that’s a laugh,” says the devil, grinning and poking me in the neck for emphasis. “They’ll never publish anything that you send in anyway. You would be much better off going back to sleep.”

“Remember 1970,” says the angel, “When you didn’t get up to see Comet Bennett. Don’t forget how you have regretted that.”

“Oh, there’s always another comet and another occultation,” says the devil, refusing to give up. “I’m sure there will be 3 or 4 more this year, at least. Besides, you can always tell everyone that you saw it anyway. They’ll never know that you slept in!”
Well, in this particular instance I finally took the angel’s advice and got out of bed. I saw a nice disappearance of Venus behind the moon before the clouds rolled in, but did not observe through the scope. On that I took the devil’s advice and merely observed with binoculars. Thus, this event would have to be rated as a 60/40 success at best.

With the above transcript of a typical event now made public for the first time, what, if anything, can be done to reject the devil’s influence during these critical periods? I believe that number one on the list is ... “preparation before going to bed”. Find your camera, load your film, spoon out your instant coffee, put water in the teapot, etc. In other words, do everything that can be done ahead of time. The reason for doing this is because you will not be the same person when the alarm goes off. It is the angel of good intentions that sets the alarm, but it is the devil of misguided procrastination that shuts it off and starts to work on you. The more things that have to be done, the more chances for the devil to talk you out of the whole thing. With the devil talking a blue streak to you, it is no wonder that the probability of finding your cable release at 4:00 a.m. is less than 10%.

Another recommendation in fighting the devil is that of group cooperation. Have someone phone you to get you up or, better yet, have them stop by your house. The devil works best when you and he are alone, thus another person on the phone is a great advantage. Just remember that it is the devil who will most likely answer the phone, not you! He has no qualms about saying that you are up and dressed when in fact you are not. Therefore, the person that calls you should know you well enough to be able to tell the difference between you and the devil; otherwise the wake-up call may be wasted.

The final recommendation is to minimize interactions with the devil by choosing your events carefully, taking your particular time schedule and the significance of the event into account. For example, don’t get up at 3:02 in the morning to see Pluto cross the orbit of Neptune to become the 8th planet from the sun. And don’t roar outside at 2:15 a.m. to watch the moon become full or to observe Saturn’s rings at the instant when they are edge-on to Earth. As in the above examples, many of the events listed in astronomy magazines will appear virtually the same hours earlier or later than the listed times. In other words, some events are spectacular, but others provide nothing to observe at the particular times listed. Therefore, in choosing events to observe, one must learn to differentiate among events carefully.

Only you, the reader, know whether you got through the critical period for the occultation of Venus, but there will be many more such critical periods in the future. I wish you good luck in getting through them successfully.
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51 MEMBERS IN GOOD STANDING AS OF 4/14/82. J. WETZEL