THE UNIVERSITY LOWBROW ASTRONOMERS

NEWSLETTER

VOL. #11, MARCH '81

THE LOWBROW CORNER

Just as a reminder, May 9 is National Astronomy Day. There was a special meeting last week to discuss what activities might be developed for the celebration. Things that were discussed:

i) a scale model of the solar system, the sun being in the diag.

ii) a lecture at the exhibit museum.

iii) An exhibit at the public library.

iv) a lecture and demonstration of the telescopes at Angell Hall

v) a program at Peach Mountain, perhaps including the radio telescope.

The major focus of the meeting was the absolute necessity of total participation in the activities for Astronomy Day.

Start thinking about who you would like to see in office for the next year. Officer elections will take place next month in April. Make every effort to be there.

SOLAR CORONAL LOOPS

by: Don Luttermoser

Last term I worked on a research project, which dealt with making computer models of solar coronal loops. These loops were first discovered by observations in X-ray and the extreme ultraviolet wavelengths that were made on the sun by Skylab. These observations suggest that the coronal structure is determined by the coronal magnetic field. Where the field is open, plasma can escape into interplanetary space. These 'coronal holes' may be responsible for the solar wind. Where the field is closed, arch-like structures result. These 'coronal loops' are brightest and most striking over centers of activity, although most of the corona is organized into such loop structures.

My project concerned itself with quasi-static loops. That is, loops that appear to have lifetimes on the order of days. This model describes loops during a large part of their lifetime, when mass flow in or out of the loop is negligible. Also, because the observed lifetime of these loops is frequently greater than typical time scales for energy losses by radiation or conduction, a continuous input of energy must be assumed. Thus, the energy input is balanced by the radative loss flux and the conductive energy flux into (or out of) the loop.

The results of the study show that the stability of the loop is strongly dependent on the radiative loss at the top of the loop. Also, observations of these loops will not give much insight to what mechanism is the dominate heat source, since all models behave basically the same way.

"Activities?"

Well, varoius club members have been out to Peach Mountain since the last meeting. The night of the 6th of this month, I went out with a few other people and we saw Jupiter, Saturn, and two magnificent globular clusters--M3 in Canes Venatici and M13 in Hercules. The quality of the images we saw with the 24-inch improved dramatically after about midnight. By then the air overhead steadied considerably--that is, the "seeing" improved and the stars seemed to twinkle less. We also found that Jeff Zeihm's 40 mm eyepiece gave the best images.

Several people who hadn't seen the 24-inch McMath Memorial telescope before have made it out there since the last meeting. But I know there are others who haven't... When someone signs up on the "Peach Mountain" activity sheet, I will make a reasonable effort to call him or her if 1) it seems likely that it will be clear that night, 2) It's not close to the full moon, 3) it's a weekend or a date the person signed up for, and 4) there's a car available to take you/us there. If you see that it's going to be clear some night that you'd like to go out there, please feel free to call Doug Nelle or myself (preferably before 10:00 p.m. if it's a weekday) if no one calls you. If you sign up for Peach Mountain expeditions on "any clear night" or "any weekend" at a given meeting (for instance, the March meeting) you will be on the "calling list" until the next meeting (i.e. the April meeting in this case). If you can't make the following meeting but would still like to go on Peach Mountain expeditions, phone me and tell me to put your name back on the list, or call up when it looks like a convenient, clear, moonless night is approaching.

Another activity that I'd like to see happen every month is something I'll call Sky Trivia night. One the weekend closest to the full moon the door to Angell Hall will be unlocked if it's clear. If it's cloudy we'll head for the planetarium on the third floor. Club members who are familiar with the constellations, the names of the brighter stars, and who know where to look for interesting deep-space objects will show off their knowledge of such things for the benefit, education and amusement of those who don't. Would you like to know what Virgo looks like, where Jupiter and Saturn are these nights, or what the name of that bright star over in the west is? Come to trivia night and ask--or simply listen to those members doing the answering as they babble on about galaxies, planetary and diffuse nebulas, double star systems, supernova remnants, black holes, globular star clusters, and all that good stuff...

From time to time there are other activities, such as Astronomy Day (once a year) and meteor shower expeditions/star parties. There are about five meteor showers a year that are worth going out to Peach Mountain (with its lovely dark skies) to watch. When they approach, an activity sheet will be circulated at the last meeting beforehand. The next reliable good shower (possibly the best one this year, too) is the Eta Aquarids in early May with hourly rates ranging from 10 to 40.

Jim Cypser (995-0204)

An Occultation by Aegina

by Jim Cypser

For about twelve seconds around five in the morning on Saturday, April fourth, a star in the constellation Libra will suddenly dim or even turn invisible. The asteroid 91 Aegina will pass between Earth and the star, and starlight that would otherwise shine on Earth will fall on the asteroid instead. The star is not very bright or remarkable, being only 8.6 magnitude. It goes by the name SAO 158864.

Date:	Saturday, April 4, 1981
Time:	10:03 - 10:10 a.m. UT (5:03 - 5:10 a.m. EST)
Diameter of Aegina:	106 kilometers?
Magnitude of " :	12.9
Right ascension of star:	14h 49.3'
Declination " "	-17° 37m

Below* is a map which shows the area from which the occultation should be visible. Aegina's path is the only one this year that crosses Michigan's Lower Penninsula. It's southern edge is very close to Ann Arbor. Whether or not the occultation will actually be visible from here is a good question, because in addition to the uncertainty obvious on the map, the calculations used to predict Aegina's path can't be made precisely. With good data from a number of different points spread out along a line perpendicular to the path of an asteroid's path (and intersecting it) it's possible to get some ideas about the shape and size of the thing. Using this method of observing minor planets, it's been discovered that they may not all be just dull chunks of rock (if there is such a thing as a dull chunk of rock, say the planetary geologists among us!). The one named 624 Hektor appears (from the way it dimmed the light of a star it occulted) to be two asteroids somehow stuck together! One theory has it that two asteroids collided at a speed great enough to partially melt and shatter them, but not great enough to totally turn them to gravel. Another, 18 Melpomene, showed dozens of small secondary occultations, something which some people take to mean that Melpomene has a number of small moons. These discoveries are only tentative because thus far very few occultations have been observed using photoelectric equipment--only the eyes and telescopes of the observers.

If you'd like to take part in an attempt to watch this occultation on April fourth, sign up on the Aegina activity sheet. At some point you will (presumably) be given a copy of a handout on how to observe occultations, as well as a map of the part of the sky where the star in question is located. In fact, there should be a pile of copies of the first handout on the table at the front of the room. Even if only a few people sign up, we'll plan an all-night star party for that night on Peach Mountain--remember, that's the night of the new moon--and check out the occultation when five a.m. rolls around. That way we'll know what we're doing the next time there's an occultation visible from Ann Arbor!

*Oops! The map is on the second page of What's Up. Sorry.

SOUTHERN CROSS-

WORD PUZZLE QUESTIONS*

ACROSS:

2) This large asteroid has an orbit which keeps it between the orbits of Saturn and Uranus most of the time. It was discovered just a few years ago by astronomer Charles Kowal, and it might be evidence of a whole new group or "belt" of asteroid-like or comet-like bodies between the orbits of those two planets. This minor planet's name is:
3) The moon is conspiring to wash out large parts of the Geminid and Perseid meteor showers this year. Because of this, the best meteor storm(worth going out of your way (say, to Peach Mountain) to see)occurs in early May--what a great time of the year! What's this meteor shower's name? (Hint: it's a greek letter plus the first two syllables of the name of a constellation plus "ids".)
5) Halley's comet is out beyond the orbit of Saturn right now, in roughly the same direction as this star found in the winter evening skies.
7) The sun and Sirius are the brightest stars normally seen in Earth's skies. After Sirius, the third brightest star is:
8) The minor planet 91 Aegina will occult an 8.6 magnitude star on April 4, 1981. This event will occur in the constellation:...Hint: the constellation is on the ecliptic.

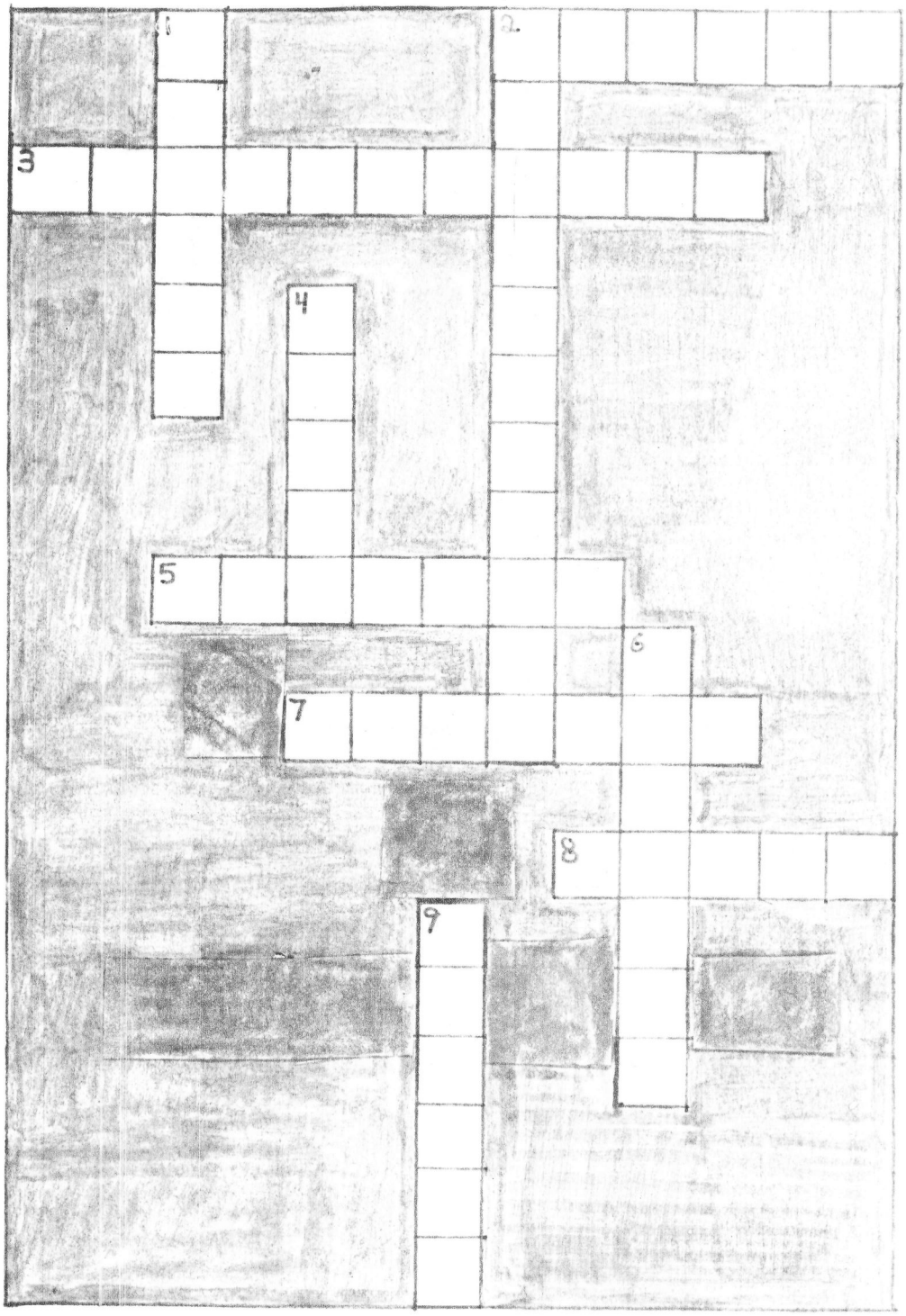
DOWN:

1) The name of Pluto's moon.
2) The name of the Inter-American Observatory in Chile, where the U-M has a telescope. We saw a film about this place at the last Lowbrow meeting, remember?
4) What constellation are Jupiter and Saturn putting on such a great show (conjunction) in about now?
6) What planet was most recently discovered to have rings?
9) What is the proper name of the 24-inch telescope on Peach Mountain, i.e. "The _____ 'scope"--that is, what's the last name of the person the telescope is named after?

For the answers, see the second page of What's Up, this issue.

If you have some astronomy or space trivia that you would like to share and see in the Southern Crossword Puzzle, tell it to me, Jim Cypser, in person or by calling 995-0204. We'll try to fit it in. For that matter, if you are interested in putting the puzzle together each month, tell me that, as well.

*Some answers normally written as two or more words, for example, "solar wind", are written without blank spaces ("solarwind") as in most other crossword puzzles.



OK, so the crossword puzzle looks lousy! Next time I'll [illegible]

WHAT'S UP

3/21/81 - 4/10/81

All times are E.S.T.

March 21, 22, 23, 24 — We'll have the door to the roof of Angell Hall open the evenings of Saturday, Sunday, Monday & Tuesday--if it's clear! Come on up and learn to recognize some constellations, the names of some stars, and deep-sky trivia in general. If it's cloudy on Saturday night, we'll take the show into the primitive planetarium on the third floor of Angell Hall. This same evening there should be a chance to teach those who are interested how to operate the telescopes on the fifth floor. If you're up on the roof Sunday, Monday, or Tuesday evening, watch for possible March Geminid meteors! Up to 40 per hour were seen in '73 and '75. There will probably be a couple of astronomy labs going on Monday and Tuesday evenings, but if we don't get in their way the students probably won't get in ours.

25 — Jupiter at opposition, 1:00 a.m. It may be possible to see Ganymede and Callisto (the outermost of Jupiter's four largest moons) with the unaided eye about now.

26 — Saturn at opposition, 12:00 midnight.

27 — U-M Astronomy Department's Visitors' Night, "What's Out There Between the Stars" by William P. Blair plus a movie, New View of Space. 8:30 p.m., aud. B Angell Hall.

28 — Tonight (Saturday night) the moon will rise about midnight. Its last quarter phase is reached at 2:34 p.m. If you'd like to go out to Peach Mountain and see/look through/use the 24-inch McMath telescope, sign up on the appropriate Activity sheet and you will presumably get a call that day letting you know if, when, and how people are going out there. A few club members will probably bring their own telescopes along, and there's always a chance of meteors, aurorae and novas.
Delta Draconid meteors, 1 per hour now through about April 17.

29

30 — Relatively small comet strikes Earth, coming down somewhere in Wisconson wilderness. U.S. Senator William Proxmire is the sole victim.

31

April 1 — Kappa Serpentid meteors, 1 per hour now through April 7.

2 — Mars moves into morning sky--but don't bother looking for it for awhile yet!

3 — Visitors' Night, "Galaxies: the Tip of the Iceberg" by Douglas O. Richstone plus a movie, Magnetism in Space. 8:30 p.m. aud. B Angell Hall.
The moon is almost new. If it's clear, this weekend will be the best time to head out to Peach Mountain.

4 — The moon is new tonight.
The asteroid Aegina momentarily blots out a star, an event that might be visible from this area. See the article in this newsletter for more data.

MORE WHAT'S UP

April 5
6
7 Venus moves into morning sky
8
9
10 Monthly meeting of University Lowbrow Astronomers. Visitors' Night with Freeman D. Miller on "Cosmic Catastrophes and the Death of the Dinosaurs" plus a movie, Radio Astronomy Explorer.
Note: We don't like having to compete with the astronomy department's visitors' night. However, the Friday after the 10th is Jim Loudon's Astrofest, and the Friday after that is the first day of finals at the U-M! This is why we had to schedule the April meeting on the 10th.

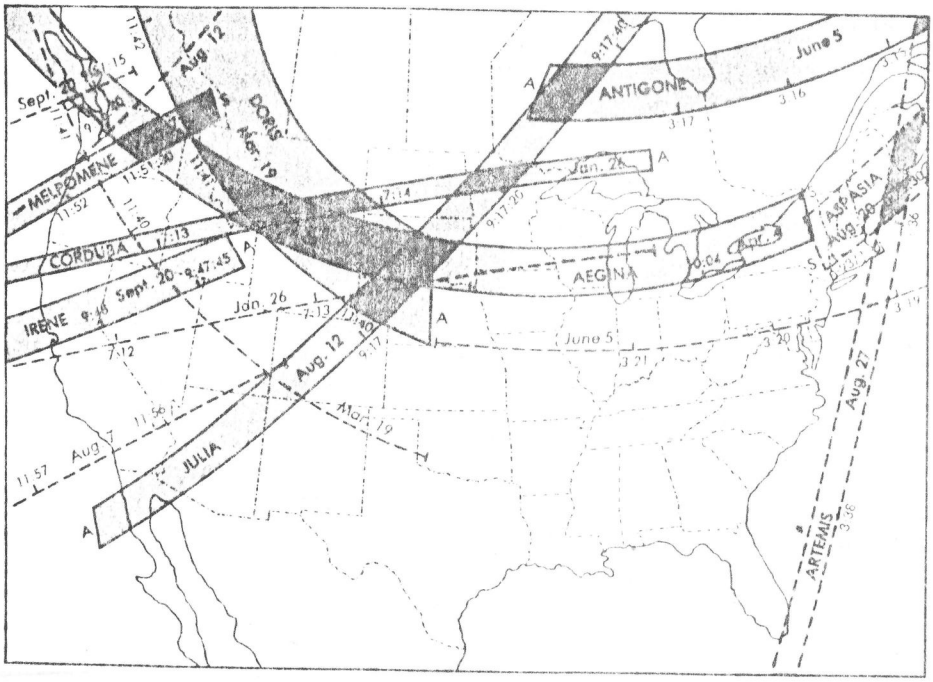
ANSWERS TO SOUTHERN CROSSWORD PUZZLE

ACROSS:

2) Chiron
3) Eta Aquarids
5) Procyon
7) Canopus
8) Libra

DOWN:

1) Charon
2) Cerro Tololo
4) Virgo
6) Jupiter
9) McMath



Map showing occultations for North America in 1981

UNIVERSITY LOWBROW ASTRONOMERS

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