



FARPOINT OBSERVATORY

THE NEKAAL OBSERVER

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(785) 806-1177 www.nekaal.org

The official newsletter of Farpoint Observatory and the Northeast Kansas Amateur Astronomers' League

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Your articles and other contributions to this newsletter are welcome and encouraged. Please get them to the editor at least 6 days prior to the next scheduled meeting.

Editor : Graham Bell
 12229 Blazingstar Rd
 Maple Hill, KS 66507
 (785) 256-6281
gebell@mindspring.com



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FROM THE PREZ: By Jerry Majers

As I sit to write this note, China has just entered the Space race. They are to be congratulated on a beginning. Of hope will be those who also go to Planetariums and Observatories and possibly obtain telescopes to look beyond the near Space and consider the deep Space(Astronomy). Good luck to our Earth neighbors.

Speaking of near neighbors, our Moon will be involved with a total eclipse. on November 9th so that by 8:06 (EST) our celestial neighbor will be a copper-red. This, if the sky is beneficial, will be an easy target to observe. Of course, many may desire to rest a bit before catching views of Saturn and Jupiter... or just before dawn...Venus. Toward the middle of the month of Novem-

ber (that is the 17 and 18 of November) the Leonids meteor shower will peak with 20-30 meteors per hour after midnight. Hopefully, the periodic comet 2P/Encke will brighten enough for observations at FAR-POINT to catch views at it moves northeast to west. It is due to pass through the asterism Coathanger on Nov 22. Looking in binocular this "upside down" eye-catching pattern of a coat hanger in reality is just a group of unrelated stars. All in all, November nights offer good observing delights.

Hopefully, clear and dark skies

Jerry R. Majers

SHORT NOTE FROM THE EDITOR : By Graham Bell

Edwin Woerner and his wife Helen are currently residing in the United Arab Emirates (UAE), where they are teaching. They are NEKAAL members, but we see them only during June and July as the rest of their year is spent in the Middle- East. They try to publish a quarterly newsletter for distribution to local schools, the media and other interested parties.

Ed and Helen were kind enough to share the two articles with us. Both articles are from their current newsletter. The article on page 5 describes the November 9th

lunar eclipse from the perspective of a resident of the UAE. Of course, being written for a resident of the UAE, times and conditions described in their article are not appropriate for Kansas. See the table on page 5. In KS totality begins at 7:07 p.m.

Another contribution of theirs appears on page 6. This is an excellent description of what an eclipse really is. It is an article worth sharing with kids and others new to astronomy.

Thanks Helen and Ed!

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SKY HIGHLIGHTS FOR NOVEMBER: by Janelle Burgardt

November 1	First quarter moon
November 7	Mars is 3.6 degrees southeast of Uranus
November 8	Uranus ends retrograde motion.
November 9	Full moon November's full moon is the Frost Moon or Beaver Moon. <i>Total Lunar Eclipse (see below).</i>
November 17	Last quarter moon
November 17-19	Leonid meteor shower.
November 21-22	Club observing weekend
November 23	New Moon. Total solar eclipse in Antarctica.
November 28-29	Open house at FPO
November 30	First quarter moon

- * Total lunar eclipse. The Moon will rise shortly after entering the umbra. Totality extends from 7:07 to 7:30 PM CST. The Moon leaves the umbra at 9:05 PM. Moon leaves penumbra at 10:22 PM.
- * The Leonid meteor shower will peak in the early morning of November 18. It is expected to have far fewer meteors than it has in the last several years. Expected to show dual peaks, an earlier peak occurs over Europe and the Middle East on November 11-12.
- * Mars will dim from over the month from -1.2 to 0.4 magnitude, with the planet's disc only 11" by the end of the month, half its diameter in August.
- * Saturn rises in the late evening in Gemini. Its rings are angled at 25 degrees.
- * Jupiter is a bright morning star in Leo, rising around 2 AM and shining at -2 magnitude.

FASTTRACKS: by Gary Hug

This feature of the Observer has been absent the last couple of issues. My apologies. I've been quite busy with moving to the country and setting up (yet/still) another Observatory. Sandlot Observatory was so named to accent that fact it is indeed an amateur observatory. The name has nothing to do with the area soil features. The site already has a MPC code no. (H36). I have turned in about 40 observations from objects on Near-Earth Objects Confirmation Page. While the skies at Sandlot are not quite as good as Farpoint's, "it ain't bad". I've been able to reach 20th magnitude in ten-minute integrations and by stacking several 10-minute images together I've attained

21.5 V. This is true only in the southern half of my skies as Topeka is the dominating glow to the north.

In some recent asteroid news 1937 UB (Hermes) has been recovered. It was the last remaining named but lost asteroid. The folks at Lowell observatory are getting credit for the recovery although LINEAR picked it up earlier but assumed it to be a main belt object. Table Mountain and NEAT also contributed to the confirmation. Hermes is a NEO as well so its recovery is quite valuable.

A few more comets have been being discovered of late. The most recent is not named yet but appears to have been found by an old hand at comet hunting, Vello Tabur. You may remem-

ber back a few years to another Comet Tabur. The more recent comet is still a southern hemisphere object currently about 12th mag. More on this comet when the orbit is better established.

Comet LINEAR T4 is also showing early signs that it will be fairly bright in 2005. At this point it appears it won't break the un-aided eye barrier and will stay dimmer than 6th magnitude but this too is very preliminary.

Farpoint has another asteroid discovery of late. About 20+ days of orbit are now known for the designation 2003 SO106 which would seem to favor the designation to stay with us even if it then gets linked to an earlier rock. Farpoint now has 72 asteroids assigned permanent numbers.

CHANGE IN OPEN HOUSE SCHEDULE FOR 2004

The public Open Houses at Farpoint have been monitored this year to determine attendance patterns. The goal was to adequately serve the public of northeast Kansas, and best utilize limited staffing resources. The increased turnout for the Mars close approach reinforced what had been seen

throughout the year. Factored in with activities at the high school, the general schedule will be changed as follows:

January - August: the Friday nearest the first quarter moon
September - November: the Saturday nearest first quarter moon

Special sky events to be scheduled as appropriate

The full Open House schedule will be published on the website and in *The Observer* in December.

Janelle Burgardt
 Astronomy Program Director

BOARD MEETING SUMMARY, SEPTEMBER 14, 2003 : Janelle Burgardt

Present: Graham Bell, Jan Burgardt, Walt Cole, Gary Hug, Bill Leifer, Jerry Majers, Russell Valentine

Absent: Mike Ford, Marvin Kessler, Marshal Miller, Ken Peterson, David Ryan

1. Treasurer's Report

Account balances presented.

2. FPO Director Report

Water pressure—The problem was caused by the construction crew turning off the valve leading to FPO. They have been reminded of our presence, and the water is flowing again.

Wheel replacement—Gary replaced 5 of wheels for the roll off roof. Russ replaced the contact switch to control opening & closing.

Hooks for storage—Several hooks have been mounted within the observatory for storing extension cords, etc.

Walkway—One of the supports for the walkway has settled several inches, causes a depression.

Tasks remaining: exterminator visit

3. Old Business

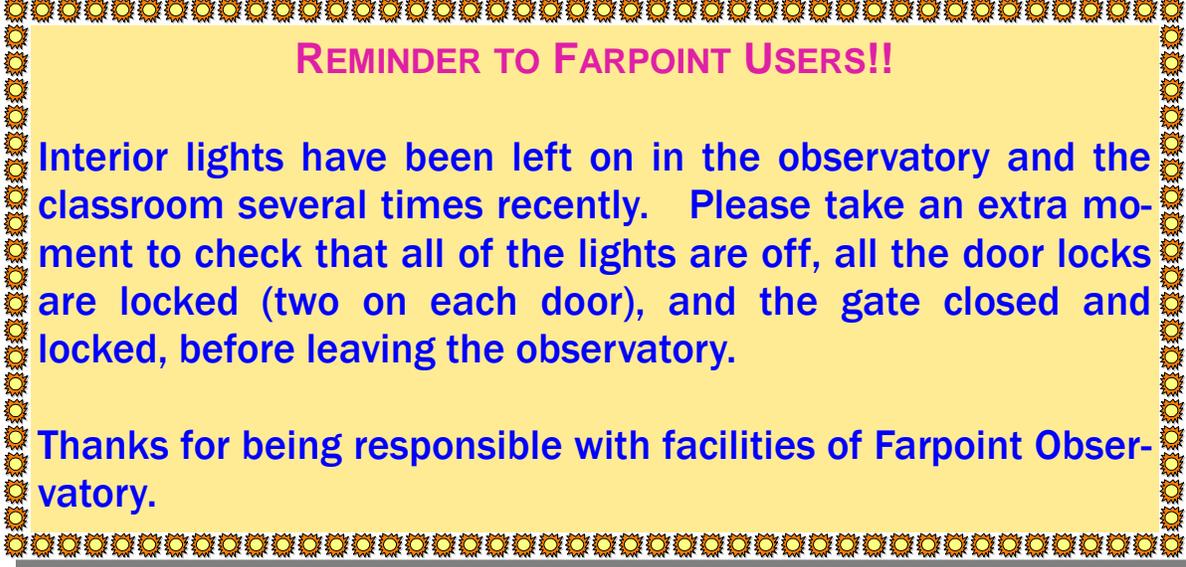
Internet access —Graham hasn't been able to find the type of relay required to complete the project. He'll keep looking.

27" Telescope Project--Discussion of how to proceed if the NASA grant is not approved in total. Options mentioned included returning the mirror to KU, getting a NEKAAL-owned 14" GPS scope to remain at FPO. No decisions pending grant response.

4. New Business

Presentations – Janelle reported two presentations, to a Scout group at Camp Hammond, and the children's presentation at TSCPL. The Camp Hammond nature director may contact NEKAAL for future projects.

Change in Open House Schedule – Janelle presented a suggested change to the Open House schedule. No objections were raised.



REMINDER TO FARPOINT USERS!!

Interior lights have been left on in the observatory and the classroom several times recently. Please take an extra moment to check that all of the lights are off, all the door locks are locked (two on each door), and the gate closed and locked, before leaving the observatory.

Thanks for being responsible with facilities of Farpoint Observatory.

HURRICANE TEAM WORK by Dr. Tony Phillips

On a gray breezy day last month thousands of people got in their cars and reluctantly left home. U.S. east coast highways were thick with traffic. Schools were closed. Businesses shut down.

Perfect!

When powerful Hurricane Isabel arrived some 38 hours later nearly everyone in the storm's path had fled to safety.

Days later Vice Admiral Lautenbacher, in a briefing to President Bush, praised the National Atmospheric and Oceanic Administration (NOAA): "Without NOAA's excellent track forecasts, hurricane Isabel's toll on lives and property would have been even more devastating. This is NOAA's first year of providing 5-day forecasts-and the 5-day forecast for Isabel was as good as our 2-day forecasts have been over the last decade."

Many people in NOAA played a role. A team of pilots, for instance, flew Gulfstream-IV High Altitude Surveillance jets right up to the approaching hurricane, logging 25,000 miles in the days before landfall. Their jets deployed devices called dropsondes-little weather stations that fall toward the sea, measuring pressure, humidity, temperature and wind velocity as they plummet. The data were radioed back to the aircraft and transmitted to forecasters on shore.

While two Gulfstream-IV crews flew night and day around the storm, a NOAA satellite named GOES-EAST monitored Isabel from above. (GOES is short for Geostationary Operational Environmental Satellite.)

From an orbit 22,300 miles above the Atlantic Ocean, GOES-EAST had a unique view. "It could see the entire hurricane at once," says Ron Gird of NOAA. "Scientists used infrared spectrometers onboard the satellite to estimate the height of the storm clouds, their temperature and water content. GOES can also measure the temperature of the ocean surface-the source of power for hurricanes."

Constant streams of data from GOES and the Gulfstream aircraft were fed to supercomputers at NOAA's Environmental Modeling Center in Maryland where sophisticated programs, developed over the years by meteorologists and programmers, calculated the storm's most likely path.

Supercomputers. Satellites. Jet airplanes. Scientists. Programmers. Pilots. It took a big team using a lot of

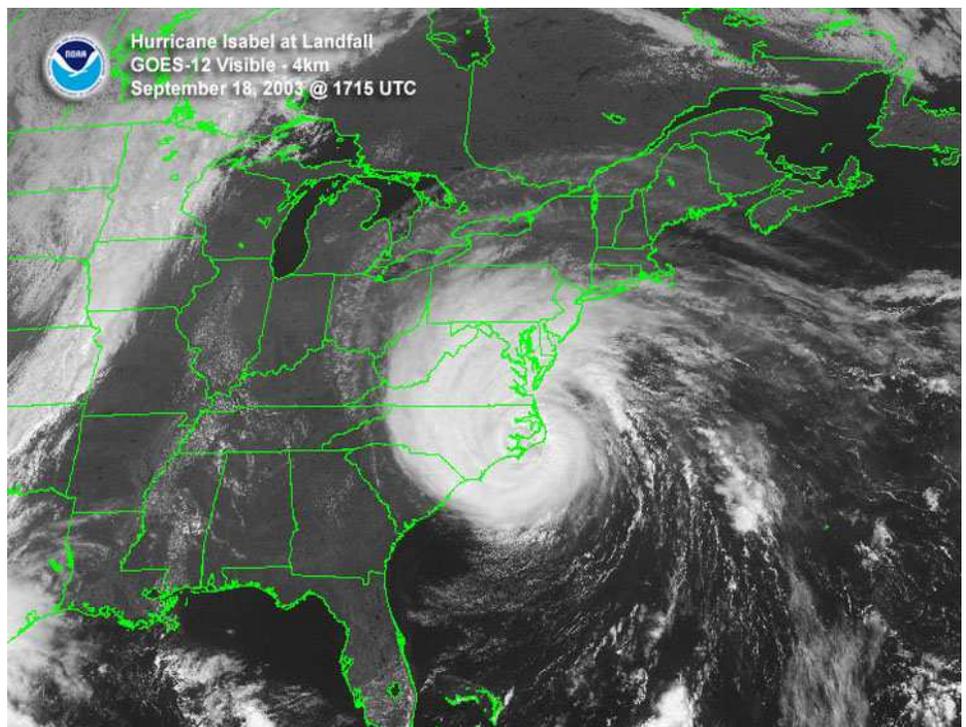
tools to predict where Isabel would go-accurately and with time to spare.

Says Vice Admiral Lautenbacher: "I hope everyone at NOAA shares the pride of being part of a team effort that so effectively warned the public of impending danger and enabled citizens to take action to protect themselves and their loved ones."

Well done, indeed.

To learn more about the GOES, see www.oso.noaa.gov/goes/. For kids, the SciJinks Weather Laboratory at sci-jinks.nasa.gov has lots of fun activities and fascinating facts about the wild world of weather.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



GOES-East satellite image of hurricane Isabel as it makes landfall on September 18, 2003 at 1715 UTC.

ECLIPSE OF THE MOON FROM UAE ON NOV. 9

by Helen and Edwin Woerner

Are you usually awake before sunrise? What would it take to get you up especially early? On Sunday, November 9 there will be a good reason to rise before the sun. On that morning there will be a *total eclipse of the moon*.

Eclipses of the moon, also called *lunar eclipses*, are rare. The last one visible from the Middle East was in January 2001, and the next will be May 2004. Lunar eclipses are easy and safe to enjoy, even without binoculars or telescopes – just look up!

The moon will be full when the eclipse begins. At around 2:15 a.m. the eastern edge of the moon's disk will enter the outermost part of the Earth's shadow. During the initial stage of the eclipse no changes in the moon's appearance will be readily apparent, although as the event progresses, the full moon's characteristic brightness will decrease somewhat.

Around 3:30 a.m. the moon will begin to enter the inner shadow. At this time we say that the moon is *partially eclipsed*. The eclipsed part of the

moon will appear much darker than the uneclipsed part, and it can look red. This coloration will start on the eastern part of the moon's disk and slowly spread towards the west.

If you look closely during the partial eclipse, you will see that the Earth's shadow is not a straight line, but rather is a circular arc. This is because the Earth is spherical in shape. The shape of the shadow of the Earth observed during eclipses of the moon provided ancient people with evidence that the Earth was a sphere.

About 5:05 a.m. the *total eclipse* begins. The moon will be entirely inside the innermost, darkest part of the Earth's shadow.

Totality does not last long. After 5:30 a.m. the eastern edge of the moon will start to appear noticeably brighter, and the moon will be only partially eclipsed again. Shortly after that time the moon will set in the west, still partially eclipsed.

And soon after that the sun will rise in the east, beginning a new day.

The moon appears different from

Eclipse schedule

Penumbral eclipse	
begins	2:15 a.m.
Partial eclipse	
begins	3:32 a.m.
Total eclipse	
begins	5:06 a.m.
Total eclipse	
ends	5:31 a.m.
*Partial eclipse	
ends	7:04 a.m.

*Moon has set, not visible from UAE.

All times for the UAE.



one eclipse to the next, and nobody can predict for certain how it will look on November 9. This is a good reason for everybody to get up early to see the event personally.

ABBREVIATED FINANCIAL STATEMENT FOR OCTOBER, 2003

Nekaal-Bank,Cash,CC Accounts 10/12/03	
Cash Accounts	
As of 10/12/03	
<u>Acct</u>	<u>Balance</u>
ASSETS	
Cash and Bank Accounts	
Money Market	568.48
Money Market 2-Telescope Fund	3,298.00
Nekaal-checking	555.41
TOTAL Cash and Bank Accounts	4,421.89
TOTAL ASSETS	4,421.89
LIABILITIES	0.00
OVERALL TOTAL	4,421.89

NEKAAL Cash Flow Report		1/1/03 Through 10/12/03
Category Description		
INFLOWS		
Contributions		1,767.00
Contributions-in-kind		1,482.33
Dues 2003		790.00
Interest Income		5.09
Net Sales:		50.28
TOTAL INFLOWS		4,094.70
OUTFLOWS		
Annual Report		40.00
Computer: Internet	120.00	
Computer Software	2,022.33	
Total Computer		2,142.33
Dues		125.50
FPO Utilities		376.13
<u>Insurance on Bldg & Property</u>		<u>793.00</u>
Maintenance Bldg. Construction		322.81
Repair & Maint		827.89
Subscriptions:		
Magazine Subs	59.90	
Subs.payments recd	-88.90	
TOTAL Subscriptions		29.00
Telephone-Telephone Expense		319.00
TOTAL OUTFLOWS		4,917.66
OVERALL TOTAL		—822.96

Help: Insurance costs keep rising! We just paid \$793.00 for our building insurance. This is \$3.00 more than our total dues income so far the year.

DONATIONS WOULD BE APPRECIATED.

WHAT CAUSES AN ECLIPSE OF THE MOON

by Helen & Edwin Woerner

An eclipse of the moon happens when the Earth, the moon, and the sun all line up. The Earth travels around the sun, taking *one year* to make a complete trip on its path or *orbit*. In the same way the moon goes around the Earth in an orbit, taking about 30 days (about one *month*, which is where we get the word).

The sun is a star, shining brightly because of the light it produces. The moon and the Earth do not generate their own light, but receive and reflect light from the sun. When we look at the moon, we actually see reflected sunlight.

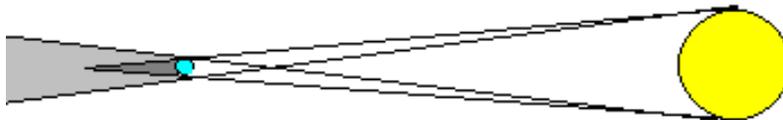
Sunlight causes the Earth and moon to cast long shadows.

Just as a person in the shadow cast by a building cannot see the sun because the building blocks the view, so the sun cannot be seen by anyone inside the shadow of the Earth. At night we are in the shadow of the Earth and so we cannot see the sun.

The orbits of the Earth and of the moon do not lie in the same plane. The plane of the Earth's orbit in the sky is called the *ecliptic*, and the ecliptic passes through the constellations known as the *zodiac*. Usually the moon is either above (north) or below (south) of the Earth's orbit or ecliptic. However, when the moon crosses from north of the ecliptic to south or from south to north, it does pass through the plane of the Earth's orbit. If this happens when the moon is directly opposite the sun, that is, if the moon is full when this occurs, then the moon can enter the shadow of the Earth. Then we say that the moon is *eclipsed*, or an *eclipse of the moon* is occurring.

And this is exactly the case early on November 9.

The outer shadow is called the *penumbra*. For an observer in the Earth's penumbra, the sun is still partly visible. Twice per day, during the few minutes



The sun (right) shines on the Earth (left) and produces a dark, inner shadow, called the umbra, and a less dark, outer shadow, called the penumbra. The picture is not drawn to scale.

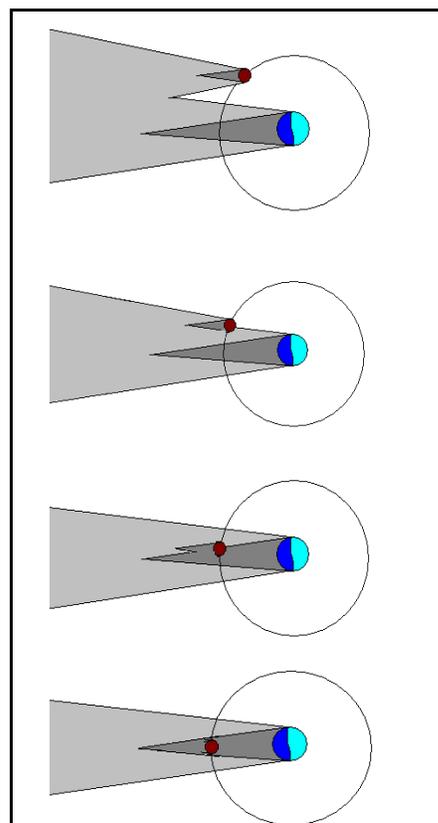
when the sun is in the process of rising or setting and is partly above and partly below the horizon, we are in the penumbra of the Earth's shadow.

The moon is in the penumbra of the Earth's shadow for considerably longer – over an hour on November 9.

The inner part of the Earth's shadow is called the *umbra*. When part of the moon is inside the umbra, we say that the moon is *partially eclipsed*. When the moon is entirely inside the umbra the moon is *totally eclipsed*. The moon can remain in the umbra for over two hours, although on November 9 it will stay there for less than 30 minutes.

We can still see an object in the shadow of a building despite the fact that no direct sunlight falls on it, because other nearby objects scatter sunlight. So the moon does not become invisible in the Earth's umbra. Sunlight falling on the Earth's daylight side is bent or *refracted* by the Earth's atmosphere. Red light is refracted the most, which is why the sky appears red at dawn and dusk, and why the moon appears dark red during a total lunar eclipse.

Observing an eclipse like the one on November 9 is even more enjoyable when we understand what is going on. Don't miss this rare event.



The sun (not shown, to the right) casts shadows of the Earth and moon. As the moon moves on its orbit we have, from top: No eclipse, penumbral eclipse, partial eclipse, total eclipse. The entire process takes a few hours' time. The pictures are not to scale.

NOMINATIONS: If you have been nominated for an office in 2004, you will be getting a note from Janelle. Unless you are willing to serve, and can devote the time, we ask that you decline the nomination by notifying Janelle.

Meeting Schedule

NEKAAL meets monthly on the fourth Thursday, January through October, at Washburn's Stoffer Hall. The meetings are at 7:30 pm.

Guests are always welcome to join us for the General Meetings and/or observing at Farpoint.

October General Meeting

Thursday, October 23, 2003, 7:30 pm
Stoffer Science Hall, Room 103

Graham Bell: New Insights from Globular Clusters

Whom do you contact:

<u>Meetings, Speakers:</u>	Jerry Majers
<u>Farpoint Functions:</u>	Janelle Burgardt
<u>Farpoint Maintenance:</u>	Bill Leifer
<u>Special Presentations, Groups:</u>	Janelle Burgardt
<u>Dues, Donations, Merchandise:</u>	Walter Cole
<u>FAST:</u>	Gary Hug
<u>Web Content</u>	Janelle Burgardt
<u>Observer Articles</u>	Graham Bell
<u>Other Web Issues:</u>	Russell Valentine
<u>General Questions:</u>	Any board member

Graham Bell	256-6281	gebell@mindspring.com
Janelle Burgardt	266-5624	sky_liebe@yahoo.com
Walter Cole	266-4911	w.i.cole@worldnet.att.net
Mike Ford	364-2641	mford@holtonks.net
Gary Hug	836-7828	frogstar@intergate.com
Marvin Kessler	233-7649	mhkess@networksplus.net
Bill Leifer	478-4249	williamleifer@usa.net
Jerry Majers	862-8869	jmajers@cox.net
Marshall Miller	862-6059	marshallmiller@cox.net
David Ryan	272-0177	dryan@cox.net
Russell Valentine	862-5046	russ@coldstonelabs.org

"The REAL MEETING" Gathering



Please join us for post-meeting eats at Perkins Restaurant, 1720 SW Wanamaker. Some members refer to this as "the real meeting" which follows our general meeting each month.

Open House Dates for 2003

Feb 7-8	7:00	July 11-12	9:30
Mar 7-8	7:30	Aug 1-2, 8-9	9:30
Apr 11-12	9:00	Sept 5-6	9:00
May 9-10	9:00	Oct 3-4	8:00
Jun 6-7	10:00	Nov 28-29	7:00

Club Observing Dates for 2003

January 3-4	June 27-28
Jan 31-Feb 1	July 25-26
Feb 28-Mar 1	Aug 29-30
March 28-29	Sept 26-27
April 4-5	Oct 24-25
May 2-3	Nov 21-22
May 30-31	Dec 19-20

Farpoint Observatory

W. Long. 96°00'08.6" Elevation = 406 m
N. Lat. 38°53'24.9" = 1320 Ft.



The NEKAAL OBSERVER

NEKAAL

PO BOX 951

TOPEKA, KS 66601

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