



THE NEKAAL OBSERVER

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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.

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FROM THE PRESIDENT:

By Graham Bell

NEO Work: There is a problem with our SBIG CCD Camera. Gary sent it to the manufacturer for repair. We hope to have it back before the next new moon.

E/PO Building: John Raild, the engineer who volunteered his efforts, has completed the Kessler design. We have turned his plans over to Mark Borton.

September Meeting at FAR-POINT: Since it was unbearably hot during our July cookout, we have scheduled another for the cooler month of September. See page 2 for details. Note also that this is the September meeting..

Astronomical League Conference: As I understand it, only three NEKAAL members attended the conference; Steve Boydston, Janelle Burgardt and Bill Leifer. The rest of us apparently missed a great conference.



Those of you who get the *Observer* via snail mail will see a Technicolor version this month. Since I donate the cost of making copies, I have hesitated to pay the extra cost for color

(several dollars for each copy). I now have a new color laser printer, which may be cheap enough to allow me to use color in the future. This month will be a test case.

Survey: Please see page 6 for information about the important member survey. An article entitled Club Goings On indicates that few have filled out the survey.

Minutes: This month the minutes are on the YAHOO group site. Minutes are inserted in to the mailed copies of the *Observer*.

Nominations: Time to nominate officers for 2006. The form is on the YAHOO site; included for hard copy recipients.

Combined Observers: I did not publish last month's *Observer*. This issue combines August and September versions. This issue is larger than in the past. Don't expect the enhanced size to persist.

Insurance: Take a look at the financial statement to see how much we collect in dues each year. Then be aware that our insurance this year will be between \$1000 and \$1200. **We need donations (Form on page 9).**

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“OH, WE GOT TROUBLE... *RIGHT HERE IN RIVER CITY*” : BY Janelle Burgardt

A presentation at ALCON brought into sharp focus something that many of us may have suspected, that anyone involved in public outreach learns in short order: Americans are frighteningly uneducated in science.

Mike Bennett, Executive Director of the Astronomical Society of the Pacific, works on education and public outreach for ASP, NASA, several planetariums, and SOFIA, A 2.5 meter telescope built into a Boeing 747. He presented statistics both from national surveys and from an unnamed state respected for the quality of its educational system. (I heard it discussed off the record, and will tell you which one it was, if you ask.)

Here are some of the horrifying statistics:

- Only 15-20% of adult Americans are “science literate”.

- 47% of U.S. teens couldn’t convert “nine tenths” into a percentage.
- 20% of U.S. adults couldn’t correctly answer the question “Does Earth go around the Sun or vice-versa?”
- 63% of U.S. adults think that lasers work by focusing sound waves.
- Given the *multiple-choice* question “How long does it take for the Earth to go around the Sun?”, 30% of adults missed it.

-- This isn’t somebody else’s problem. It’s **everybody’s** problem.

The USA has gotten where we are in the world in large part because of technological advances and innovations developed by

people with curiosity about science. That eagerness to further scientific knowledge is in serious condition these days. Most of the advanced technological and scientific degrees are given to foreign students. This is NOT good for our future. So what can we do about it?

A growing number of programs have been created to try to address the cultural bias against science, but what’s needed is a spark. To quote Mike Bennett: “Ultimately, it’s about curiosity, wonder and passion.” It’s dawned on the professionals that amateur astronomers are in a unique position to share the one area of science that gets just about everyone’s attention. What child hasn’t looked at the stars and moon and wondered? Who can resist looking through a telescope, or looking at astrophotographs? Hubble images have even been

(Continued on page 4)



Farpoint Picnic & Star Party

Farpoint Observatory Grounds
September 24, 2005
6:30 PM - ???

This is the September general meeting. There will be no meeting at Washburn in September



Check the NEKAAL MEMBERS YAHOO group or 1-785-449-2102 for last minute status.

We’re cooking! Bring your family to the cookout at Farpoint. Bring a lawn chair and enjoy food and conversation with other sky-minded folks, then stick around for some observing. This shouldn’t be as hot as the July one! Bring your **binoculars** and **telescopes** or use the club’s.

**Sloppy Joes, buns and paper plates donated by the board.
Bring a salad, chips, or a desert, or whatever.**

SKY HIGHLIGHTS: *by Janelle Burgardt*

Sky Highlights for September

NOTE: All times CDT

September 1	Uranus at opposition
September 3	New Moon.
September 11	First quarter moon
September 17	Full Moon. September's full moon is called the Fruit Moon. This year, it is also the Harvest Moon.
September 22	Vernal equinox.
September 25	Last quarter moon

Planets

Mercury— Barely visible one hour before sunrise on the first, Mercury sinks into morning twilight by the 5th

Venus— Magnitude -3. Only 1.2° south of Jupiter on Sept. 1.

Mars— Mars rises 3 hours after sunset on the first, and only 2 hours after sunset on the 30. Brightness changes from magnitude -1.0 to -1.7 throughout the month.

Jupiter— After its close approach with Venus on the 1st. Jupiter moves further away from Venus and lower in the west throughout the month.

Saturn— Saturn passes about one degree south on the Beehive cluster at midmonth.

Uranus— At opposition on the 1st. Magnitude -5.7 in Aquarius..

Neptune— At 7.8 magnitude in the constellation Capricornus.

Pluto— Visible in Ophiuchus at magnitude +13.9

NOTE: This is the month when Mars is really getting good. Although not as close as in 2003, it will be much higher in the sky in Aries, and will not have the atmospheric turbulence of 2003 to deal with.

CONFERENCES & STAR PARTIES: *by Graham Bell*

Ark-La-Tex Star Party

Red River Astronomy Club
<http://www.rrac.org/starparty/starparty.html>

Sept. 1-5, 2005
 13 mi. W. of Nashville, Ark

ICStars Star Party

(Vic and jen Winters do this one)
 Features many events for children, including hay rides and a fossil hunt.
 Sept 1-5
 Warrensburg, MO

Info at lcstars.com/index.html

Lowell Star Party

Mars viewing through the historic Clark Telescope. A new dark site on Observatory Mesa. Features talks by astronomers, research telescope tours, and an astronomy marketplace.

September 29-October 2
 Flagstaff, Arizona
kraken.lowell.edu/lsp3/index.html

And for those who have a lot of SPU's accumulated, and really love to travel:

Autumn Equinox Sky Camp

Skygazing and Lectures; Easily accessible from London and the Midlands.

September 29-October 2
 Kelling Heath Holliday Village, North Norfolk, England.
www.starparty.org

AFFILIATED ORGANIZATIONS:



International Dark-Sky Association
 IDA
<http://www.darksky.org>



Astronomical League
<http://www.astroleague.org>



Night Sky Network
 "Astronomy clubs bringing the wonders of the universe to the public"

22 Events + 0 Pending

NASA's Night Sky Network.
<http://nightsky.jpl.nasa.gov/>

HERE ARE SOME PRICES FROM THE NEKAAL STORE:

<u>Periodicals</u>		<u>Merchandise</u>		<u>Tote bags</u>	\$8.00
S&T	\$32.95	hats	\$8.00	marked down	Coffee Mugs
Astronomy	\$34.00 - Note the recent increase in price!	Tshirts	\$8.00	marked down	\$10.00
		Sweatshirt	\$10.00	marked down	Please contact Walter or Nancy Cole to acquire any of these items.
		Name tags	free		

OH, WE GOT TROUBLE (Continued)

(Continued from page 2)

converted into Braille. Astronomy has a wider "that's cool!" factor than even *computers!*

The one thing we can all do is to share our passion, in any way at all. It doesn't need a classroom presentation, or manning a star party, although those are important (and fun!). Whether it's explaining what "those pictures of Mars" are

about, or how cool Deep Impact was, or showing off some internet pictures from Hubble, or just telling why full moons have names, it contributes to the general understanding and interest in the science of astronomy. What we have is access, passion and knowledge. We can be the grass roots beginning of restoring America's prominence in

technology. And just by talking about what we love anyway!

"Ultimately, it's about curiosity, wonder and passion."

Ours.

MARS (is not) SPECTACULAR IN AUGUST from the NEKAAL web site... by Jan Burgardt

There have been several emails circulating recently about Mars. They differ in form, but all contain some version of the following:

--- In August, Mars will be closer to Earth than it has been in (a very long time; details vary between versions)

--- Mars will appear as large as the full moon to the naked eye

--- NO ONE ALIVE WILL EVER SEE THIS AGAIN !!!

THE FACTS

In spite of all the reports about a fantastic view of Mars this year, it will be nice, but not spectacular!

Mars **was** particularly close to Earth

in August - **of 2003!** Because of the characteristics of the orbits of Mars and Earth, Mars' closest point to the sun (perihelion) coincided with Earth's farthest point from the sun (aphelion), bringing the planets especially close to each other.

Mars **will be** close to the earth in October of 2005. Because a year on Mars lasts about 26 Earth-months, Mars and Earth "line up" in their orbits about every two years. When this happens, Mars becomes a noticeably bright red "star" in the night sky. Since it is physically closer to the Earth at these times than when they are on opposite sides of the Sun, the planet will obviously look larger in a telescope. Depending on the type of telescope used, it may appear to be the size of the full moon through the eyepiece.

BUT - It can never be as bright as the full moon to the naked eye!

Think about it: Mars is only about twice the size of our moon. But at its **closest**, it is 35,000,000 (35 million) miles from us. The moon averages 250,000 (one-quarter million) miles away. With the naked eye, Mars can never look like anything but a bright star.

How often do these things occur? Mars and Earth line up every 26 months. The Sun, Earth and Mars align when Mars is at its closest point to the sun (perihelic opposition) every 13-17 years. Planets line up with the Earth and Sun at known intervals, which vary by planet. Some of these alignments (*oppositions*) are great for seeing the planets; others (*conjunction*) pretty well rule them out. Unless, of course, it's a transit - but that's a completely different planetary story!

POTENTIAL PROBLEM AT FARPOINT by Graham Bell

A dark observing site, as any astronomer knows, is essential for serious astronomical observing and research.

USD 330 has done an excellent job of installing shielded lights for the parking lot and providing means for NEKAAL to turn all lights off when they are not need by the district. Even without action on our part, the lights automatically turn off at midnight.

When we applied for and accepted the NASA grant to do near-earth asteroid research, it was with the understanding that we would be able to maintain a dark site for that research.

The dark site may become a thing of the past.

USD 330 is planning to put up a baseball/softball facility at the corner of Mission Valley Rd and Bodark Rd, W. of Bodark and N. of MV rd. Ball diamonds

in this part of the country are used well into the night, and on many nights throughout Spring, Summer, and Autumn.

Light pollution is the bane of astronomers. It may force us to abandon Farpoint as a dark site in the not too distant future!

FINANCES: by Walt and Nancy Cole

Nekaal-Bank,Cash,CC Accounts August 14,2005
 Cash Accounts As of 8/14/2005

.....Account	Balance
ASSETS	
Cash and Bank Accounts	
Money Market	825.01
Money Market 2-Telescope Fund	698.00
Money Mkt 3-Education Building	6,075.00
Nekaal-checking	409.65
TOTAL Cash and Bank Accounts	8,007.66
TOTAL ASSETS	8,007.66
LIABILITIES	0.00
OVERALL TOTAL	8,007.66

NEKAAL Cash Flow 1/1/05 Through 8/1405

Category Description	
INFLOWS	
Contributions	5,080.00
Dues 2005	620.00
Dues 2006	35.00
Int Inc-Interest Income	2.89
Memorial-Kessler-contributions	1,500.00
<u>NASA Grant-NASA Grant activity:</u>	
NASA - A Grant-Received	26,145.20
NASA - CCD Camera	-139.13
NASA - Site Preparation	-387.98
NASA - Scope Grant Disbursements	-25,747.22
TOTAL NASA Scope Grant activity	-139.13
NASA Grant -Education:	
Monies Rec'd	85.95
Ed-Telescopes	-85.95
TOTAL Grant -Education	0.00

Net Sales:	
Cost of Mdse	-140.18
Sale of Mdse	95.00
Sales Taxes	-13.16
TOTAL Net Sales	-58.34
TOTAL INFLOWS	7,040.42
OUTFLOWS	
Annual Report	40.00
Dues	165.00
Equipment - Astronomy Equip	23.64
FPO Utilities	180.00
Insurance - Ins on Bldg & prop.	118.00
Postage	120.26
Repair & Maint	779.72
Subscriptions:	
Magazine Subs	94.90
Subs.payments recd	-94.90
TOTAL Subscriptions	0.00
Supplies-Supplies	153.34
Telephone-Telephone Expense	411.22
Telescope Dedication	194.69
TOTAL OUTFLOWS	2,185.87
OVERALL TOTAL	4,854.55

FACILITY REPORT: by Bill Leifer

There are no major problems to report with the facility. There has been one repair to the toilet handle made by Gary Hug.

A three-step stepladder was obtained for the observatory room.

An all-in-one laser printer, scanner, copier was obtained.

Additional memory was added to one of the computers in the control room.

Farpoint has become cluttered with obsolete electronic equipment, other old unused items, picnic items from the starbecue, etc. and a cleanout is needed. A "Junk Day" is being planned for this autumn for de-cluttering the observatory similar to the

spring fix-up day. This will be announced in the Observer in September.

A new video inventory of Farpoint contents for insurance purposes will be made to update for all of the new equipment obtained since the last inventory.

The final plans for the Kessler Building and been completed, and the exact site determined. There are a few code and other regulatory issues to clarify, and the materials are being studied by the builder to cost the structure accurately. Hopefully, construction of the building can be completed before winter.

Members interested in obtaining keys need to contact Bill Leifer, .Becoming a keyholder is a major responsibility and may be considered by any member who plans to use the Observatory fairly regularly. It requires an orientation and inservice with completion of a checklist. This orientation must be done at the Observatory, takes about an hour, and needs to be scheduled during the day, preferably on a weekend. Contact information is on the official roster which can be downloaded from the files section on the Yahoo Group.

IMPROBABLE BULLS-EYE : by Dr. Tony Phillips



Picture this: Eighty-eight million miles from Earth, a robot spacecraft plunges into a billowing cloud almost as wide as the planet Jupiter. It looks around. Somewhere in there, among jets of gas and dust, is an icy nugget invisible to telescopes on Earth—a 23,000 mph moving target.

The ship glides deeper into the cloud and jettisons its cargo, the “impactor.” Bulls-eye! A blinding flash, a perfect strike.

As incredible as it sounds, this really happened on the 4th of July, 2005. Gliding through the vast atmosphere of Comet Tempel 1, NASA’s Deep Impact spacecraft pinpointed the comet’s 3x7-mile wide nucleus and hit it with an 820-lb copper impactor. The resulting explosion gave scientists their first look beneath the crust of a comet.

That’s navigation.

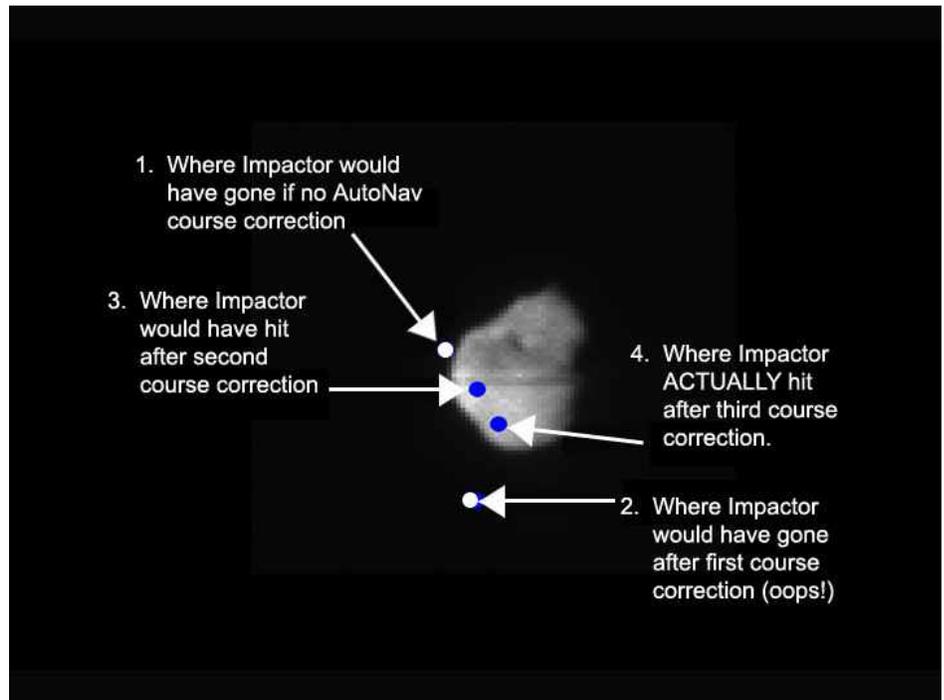
Credit the JPL navigation team.

By sending commands from Earth, they guided Deep Impact within sight of the comet’s core. But even greater precision would be needed to strike the comet’s spinning, oddly-shaped nucleus.

On July 3rd, a day before the strike, Deep Impact released the impactor. No dumb hunk of metal, the impactor was a spaceship in its own right, with its own camera, thrusters and computer brain. Most important of all, it had “AutoNav.”

AutoNav, short for *Autonomous Navigation*, is a computer program full of artificial intelligence. It uses a camera to see and thrusters to steer—no humans required. Keeping its “eye” on the target, AutoNav guided the impactor directly into the nucleus.

The system was developed and tested on another “Deep” spacecraft: Deep Space 1, which flew to asteroid Braille in 1999 and Comet Borrelly in 2001. The mission of Deep Space 1



Comet Tempel 1, as seen by the Deep Impact impactor’s camera. Three last-minute AutoNav-controlled impact correction maneuvers enabled the Impactor to hit the bulls-eye.

was to try out a dozen new technologies, among them an ion propulsion drive, advanced solar panels and AutoNav. AutoNav worked so well it was eventually installed on Deep Impact.

“Without AutoNav, the impactor would have completely missed the nucleus,” says JPL’s Ed Riedel, who led the development of AutoNav on Deep Space 1 and helped colleague Dan Kubitschek implement it on Deep Impact.

En route to the nucleus, AutoNav “executed three maneuvers to keep the impactor on course: 90, 35, and 12.5 minutes before impact,” says Riedel. The nearest human navigators were 14 light-minutes away (round trip) on Earth, too far and too slow to make those critical last-minute changes.

Having proved itself with comets, AutoNav is ready for new challenges: moons, planets, asteroids ... wherever NASA needs an improbable bulls-eye.

Dr. Marc Rayman, project manager for Deep Space 1, describes the validation performance of AutoNav in his mission log at <http://nmp.nasa.gov/ds1/arch/mrlog13.html> (also check [mrlog24.html](http://nmp.nasa.gov/ds1/arch/mrlog24.html) and the two following). Also, for junior astronomers, the Deep Impact mission is described at <http://spaceplace.nasa.gov/en/kids/deepimpact/deepimpact.shtml>

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

Member Survey:

In the July Observer, Bill Leifer had an article about the member survey. It is important that all members fill this out, as it is the only way we can determine our future in a manner which best suits the members.

Those with Internet access can fill it out online at http://nekaal.org/survey/index.php?survey_id=9000

If you receive your Observer in the mail (and are a member) the survey is inserted into the Observer.

NEWEST WEATHER SENTRY TAKES UP WATCH : by Dr. Tony Phillips



Today, we've become accustomed to seeing images of the Earth's swirling atmosphere from space every night on the evening news. Before 1960, no one had ever seen such images. The first-ever weather satellite was launched that year, kicking off a long line of weather satellites that have kept a continuous watch on our planet's fickle atmosphere—45 years and counting! The high-quality, extended weather forecasts that these satellites make possible have become an indispensable part of our modern society, helping commercial aircraft, recreational boaters, and even military operations avoid unnecessary risk from hazardous weather. But satellites don't last forever. Parts wear out, radiation takes its toll, and atmospheric drag slowly pulls the satellite out of orbit. Many weather satellites have a design life of only 2 years, though often they can last 5 or 10 years, or more. A steady schedule of new satellite launches is needed to keep the weather report on the news each night.

In May 2005, NASA successfully launched the latest in this long line of weather satellites. Dubbed NOAA-N at launch and renamed NOAA-18 once it reached orbit, this satellite will take over for the older satellite NOAA-16, which was launched in September 2000. "NOAA always keeps at least two satellites in low-Earth orbit, circling the poles 14 times each day," explains Wilfred E. Mazur, Polar Satellite Acquisition Manager, NOAA/NESDIS. "As Earth rotates, these satellites end up covering Earth's entire surface each day. In fact, with two satellites in orbit, NOAA covers each spot on the Earth four times each day, twice during the day and twice at night," Mazur says. By orbiting close to Earth (NOAA-18 is only 870 km above the ground), these "low-Earth orbit" satellites provide a detailed view of the weather. The other type of weather satellite, "geosynchronous," orbits much farther out at 35,786 km. At that altitude, geosynchronous satellites can keep a constant watch on whole continents, but

without the kind of detail that NOAA-18 can provide. In particular, low-Earth orbiting satellites have the ability to use microwave radiometers to measure temperature and moisture in the atmosphere—two key measurements used for weather prediction that, for technical reasons, cannot be sensed by distant geosynchronous satellites. With NOAA-18 successfully placed in orbit, the 45-year legacy of high-tech weather forecasts that we're accustomed to will go on.

Find out more about NOAA-18 and the history of polar-orbiting weather satellites at <http://goespoes.gsfc.nasa.gov/poes>. For kids and anyone else curious about the concept, the difference between polar and geosynchronous orbits is explained at http://spaceplace.nasa.gov/en/kids/goes/goes_poes_orbits.shtml.

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



NOAA-18, the newest in a long line of weather and environmental satellites, launched May 20, 2005.

CLUB GOINGS ON: by Bill Leifer

The Starbecue was held on July 15th. There were about 20 people attending the picnic. It was VERY HOT in the late afternoon, which probably accounted for the subdued initial turnout, but it was great fun. The burgers and hot dogs and many side dishes of typical picnic fare were delicious and uniformly bad for all of us. Everyone ate inside in the mercifully air-conditioned meeting room. Bill was allowed to cook the meat, despite his questionable and checkered past as a surgical pathologist, and everybody seemed very reassured that the meat was completely cooked. His sautéed Vidalia onions were a big hit.

The picnic was really fun. There was lots of conversation around the table that spanned the course of human experience (not really). There were many laughs. It was great having Harriet Kessler at the picnic and visiting with her. She was, as usual, the life of the party and was able to catch up with all the new things going on. Harriett got to see the site of the new Kessler Building which is named in honor of her husband, the late and much loved long-term NEKAAL member Marvin Kessler

New member Ed Hamil raffled a telescope. The raffle raised \$205 for NEKAAL. Thanks, Ed. Ed was also very helpful during the observing session, providing a guided tour on one of his scopes. Before sundown, Dr. Ed Wornner made use of his solar telescope. It was great to see Ed who spends most of the year in Dubai, UAE. He was back in Topeka for a couple of weeks and got to see the Tombaugh Telescope and come to the July General Meeting. His solar scope was a treat. Small sunspots were plainly visi-

ble and had sharp detail. Gas filaments could be discerned extending from the sun's surface at the edge of the solar disc.

There were quite a few people who were able to come out later to the observing session including Donna Tranter, a math teacher at MVHS and John and Carol Raidl. John is the engineer who donated the engineering plans and schematics for the Kessler Building. He will be moving to Arizona soon, and NEKAAL will miss him. We all appreciate the work he provided for the new building. The skies were not so great after about 11 PM, but we got in a couple of hours of observing. We had some trouble with the 8"GPS scope setup, but Ed Hamil salvaged the situation with his scope demo and sky tour. We were able to image some nice sky objects on the Tombaugh Scope, and a number of people had a great time in the Control Room watching the operation of the New Scope and software and the imaging of various objects.

The Starbucues are a great way to meet everyone and get in some observing. The next one will be in a little cooler weather, with earlier sunset and longer observing time. Mars should be an excellent object then. The Board hopes that these Starbucues will become more popular and central to NEKAAL membership as time goes on.

The surveys of membership that were made available are beginning to trickle in. So far everyone in NEKAAL named Ed has completed and returned the survey and every member named Bharat and Graham has turned in their survey. None have been received from

any members going by any other first name, but we have high hopes. Perhaps even another Board member might return a completed survey. The survey is really important for deciding how best NEKAAL can serve its membership, and the answers can also give us an idea of who might be willing to provide an occasional helping hand on various activities that NEKAAL is involved in. There is no need to worry about the survey. We are not going to use it to lean on anyone or require involvement from anyone who does not have the time or inclination. But those who do want to be more involved or possibly serve a position on the Board at some point can use this to indicate their level of interest, whereas we otherwise may never become aware of it. Remember, this is YOUR club.

The survey can be downloaded from the Yahoo Group where it resides in the "files" section. It is in Word format and Adobe Acrobat, depending upon whether you wish to fill it out on your computer or just print it and mail it in. Those few of you who do not use computers will receive a printed survey enclosed with this issue of The Observer. But be aware that resistance is futile. You will be assimilated.

Editors Note 1: The survey can now also be completed by going online to a form set up by Russell Valentine. See the bottom of page 6.

THANKS RUSSELL!!!

Editors Note 2: I presume the list of names of those who have completed the survey has increased since August 16, when Bill wrote this article. If not... **Get with it!**

Quote of the day:

*When you can measure what you are speaking about,
and express it in numbers, you know something about it;
but when you cannot measure it, when you cannot express it in numbers,
your knowledge of it is of a meager and unsatisfactory kind:
it may be the beginning of knowledge, but you have scarcely,
in your thoughts, advanced to the stage of science.*

William Thomson (Lord Kelvin) (1824-1907)

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.

September General Meeting
Saturday, September 25, 2005, 6:30 pm
Sloppy Joes at FARPOINT

Who to contact:

<u>Meetings, Speakers:</u>	Graham Bell
<u>Farpoint Functions, Scheduling:</u>	Janelle Burgardt
<u>Farpoint Maintenance:</u>	Bill Leifer
<u>Special Presentations, Groups:</u>	Janelle Burgardt
<u>Dues, Donations, Merchandise:</u>	Walter or Nancy Cole
<u>FAST:</u>	Gary Hug or Graham Bell
<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
Kevin Dobbs		
Gary Hug	836-7828	frogstar@intergate.com
Bill Leifer	478-4249	williamleifer@usa.net
Jerry Majers	862-8869	jmajers@cox.net
Debbie Roberts		
Patsy Rush		
Dan Tibbets		Ddftp@aol.com
Russell Valentine	862-5046	russ@coldstonelabs.org

**These numbers and email addresses are not to be shared with others.
 They are to be used by members only!**

"The REAL MEETING" Gathering



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

Open House Dates for 2005

February 11	7:30	August 12	9:00
March 18	7:30	September 10	8:30
April 15	8:30	October 8	8:00
May 13	9:00	November 5	7:30
June 10	9:30		
July 15	9:30		

Club Observing Dates for 2005

January 7-8	August 5-6
February 4-5	September 2-3
March 11-12	<u>Picnic Sept 24</u>
April 8-9	Sept 30- Oct 1
May 6-7	October 28-29
June 3-4	December 2-3
July 8-9	

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

ADDRESS SERVICE REQUESTED