



FARPOINT OBSERVATORY

THE NEKAAL OBSERVER

February 2005 **VOLUME 13, ISSUE 2**

PO BOX 951, TOPEKA KS 66601

(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



Member of the
Astronomical League
www.astroleague.org

FROM THE PREZ: BY GRAHAM BELL

Tombaugh Project: After some serious pressure from Gary, it looks like ScopeCraft will deliver the telescope on March 15. See the photo on page 15.

Gary is leaving this weekend (Feb 26 or 26) to go to Utah to work with Jerry Foote of ScopeCraft as they do a final pre-delivery shakedown. To prepare for installation, the road into Farpoint has new gravel, and the entrance to FPO will have the same shortly.

E/PO Building: Not much has happened with this yet, except for funding. Harriet Kessler, as noted in the minutes, has donated \$1500. After the minutes and financial report were produced, Ruth Fink donated \$4000. These donations are greatly appreciated. They will help provide us the E/PO building we need instead of the one which would fall a little short of our needs.

Upcoming Programs: In March, Kevin Dobbs will be giving a presentation entitled *Mars in 3-D and other adventures with stereo visualizations*.

To prepare for a talk at the SAS Meeting in May, I have been researching the history the 27" telescope and the difficulties KU has had over the years in their struggle to obtain a research telescope. I'll also be giving the presentation for the AAL in Lawrence during March

Dedication Ceremony: The Tombaugh Telescope dedication is being planned for April 2, 2:00pm at Mission Valley Schools. A tour of FPO is scheduled for the afternoon, and observing is planned for the evening. There will be people coming from various parts of the country. Please help out if the committee calls on you to assist.

WE WON SOMETHING-AND IT IS HERE: by Janelle Burgardt

As noted in last month's *Observer*, NEKAAL won the quarterly drawing by The Night Sky Network. The Lunar Outreach Package has arrived, and I've had a chance to look through it. Most items will be available for check out from the FPO library. I've included the description of the items included in the announcement of the drawing, and added a few comments of my own.

MOONWATCH A Complete Starter Pack for the Lunar Observer

"Astronomical Society of the Pacific's Moonwatch Package: A Complete Starter Pack for the Lunar Observer. Moonwatch contains three useful items for observing the Moon: Peter Grego's Moon Observer's Guide book, a highly detailed map of the Moon's near side, and a photographic poster showing the lunar phases."

The Moon Map folds up like a road map, only easier. Unfolded it measures 39" x

(Continued on page 2)

In this issue...

From the Prez:	1
We Won Something	1
Sky Highlights for March	2
Important Reminder	2
Note on Clyde Tombaugh	3
E/PO Update	3
Finances	3

From the NEKAAL Store	3
A Different Angle on Climate Change	4
Common Questions	4
Board Minutes	5
Tombaugh Scope Photo	6
Facility Report	6
Meeting and Observing Schedules	8
Who to contact	8

SKY HIGHLIGHTS FOR MARCH: *by Janelle Burgardt - Astronomy Program Director*

March 3	Last quarter moon
March 10	New Moon
March 12	Mercury at greatest eastern elongation
March 17	First quarter moon
March 21	Saturn ends retrograde motion
March 25	Full Moon March's full moon is called the Crow, Sap, or Worm Moon
March 31	Venus at superior conjunction

Planets

Mercury--Visible as an evening star from the 5th to 15th. It reaches its brightest magnitude of 0 on the 12th. This is probably the best appearance of Mercury this year.

Mars— Rising at first magnitude just before dawn, Mars moves from Sagittarius to Capricorn this month.

Jupiter—At magnitude -2.5, Jupiter is the brightest object in the night. It rises around 8:30 PM at the beginning of the month, and rises in evening twilight by the 31st. Still in retrograde motion, Jupiter can be found in the constellation Virgo.

Saturn— Saturn's rings are tilted 24 ° and closing. This is as good as they will appear for many years to come. It shines at magnitude for most of the night in Gemini.

Venus, Uranus, Neptune, Pluto—invisible throughout the month.

WE WON SOMETHING: (continued)

(Continued from page 1)

27", and contains, in addition to the labels you'd expect, the landing sites of lunar missions, both American and Soviet. Nice reference. The has background information on the moon and observing it. The best part to me was the commentary on what to observe day-by-day through the moon's 28 day cycle. The Moon poster is two-sided, showing 28 days of lunar phases from both the northern and southern hemispheres. This is going to be reserved for mounting, probably in the new Kessler building.

Lunar Globe

"The 4-inch Wonder Globe of the Moon is a great reference for visualizing the

geology of our nearest celestial neighbor. handy slipcase." Matched with a flashlight or your own standard globe, it makes it easy to explain eclipses, tides and moon phases."

It's kinda cute, and rotates on 2 axes (not sure why). Might come in handy to show some of the basics, like whether the moon rotates. We'll find someplace to display the little guy at Farpoint.

Lunar Reference Set

"Antonin Rukl's Atlas of the Moon is regarded by Moon watchers of all skill levels as the definitive reference guide.

The Modern Moon: A Personal View takes the next step and explains the significance of the features you'll find in the eyepiece. The pair comes together in a

There's been a copy of The Atlas of the Moon at Farpoint for as long as I can remember, this is the revised version. However, it seems like most of the times I've wanted to use it, all I could find was the paper slipcover! The new copy is in a slip case with the second book, so one of them should be available now!. The second book takes the moon day-by-day and describes what's good to view then. It's a bit lengthy, but the bits I read were well-written.

I saw the Lunar Reference Set advertised for \$89.50. Adding that in with the other items, NEKAAL got a pretty nice little bonus here!

Important Reminder:
Time to pay dues. See page 8 for annual fees. Dues must be paid by February 28. Get them to Walt ASAP

Clyde Tombaugh discovered Pluto 75 years ago February 18 shortly after his 24th birthday. He was born February 4, 1906. In the late 1930s he lived in Lawrence, in the house at right. While there he obtained his masters degree basing his theses on work with the 27" telescope... precursor of the one being installed at Farpoint in March.



EDUCATION/PUBLIC OUTREACH UPDATE: by *Janelle Burgardt - Astronomy Program Director*

Upcoming Activities

- | | | | |
|-------------|--|-----------|--|
| February 23 | Stars and Galaxies presentation
Stout Elementary School 5th Grade
By: Janelle Burgardt | March 11 | A New Life for the 27" Pitt
Astronomical Associates of Lawrence
By: Graham Bell |
| February 25 | NSN Black Holes Test Presentation
Mission Valley 5th Grade
By: Janelle Burgardt | Mid-March | Farpoint FAST-NEO presentation
Mission Valley High School Science
Students
By: Gary Hug |
| March 8 | PTA Star Party | | |

Nekaal-Bank, Cash, CC Accounts 2/13/2005 Cash Accounts As of 2/13/05 Acct Balance ASSETS Cash and Bank Accounts Money Market 2,322.24 Money Market 2-Telescope Fund 698.00 Nekaal-checking 1,678.15 TOTAL Cash and Bank Accounts 4,698.39 TOTAL ASSETS 4,698.39 LIABILITIES 0.00 OVERALL TOTAL 4,698.39		NASA Grant -Education: Ed-Telescopes -85.95 TOTAL NASA Grant -Education -85.95 Net Sales: Cost of Mdse -52.50 Sale of Mdse 24.00 Sales Taxes -13.16 TOTAL Net Sales -41.66 TOTAL INFLOWS 1,742.51 OUTFLOWS Annual Report 40.00 Postage 120.26 Subscriptions: Magazine Subs 65.90 Subs.payments recd -65.90 TOTAL Subscriptions 0.00 Telephone-Telephone Expense 36.97 TOTAL OUTFLOWS 197.23 OVERALL TOTAL 1,545.28	
Nekaal-Bank,Cash,CC Accounts 2/12/05 NEKAAL Cash Flow Report 1/1/05 Through 2/13/05 Category Description INFLOWS Contributions 15.00 Dues 2005 355.00 Int Inc-Interest Income 0.12 Memorial-Marvin Kessler-contributions 1,500.00			

AFFILIATED ORGANIZATIONS:



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



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

15 Events Logged

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

HERE ARE SOME PRICES FROM THE NEKAAL STORE:

Periodicals		Merchandise		Tote bags \$8.00
S&T \$32.95		hats \$8.00	marked down	Coffee Mugs \$10.00
Astronomy \$29.00		Tshirts \$8.00	marked down	Please contact Walter or Nancy Cole
		Sweatshirt \$10.00	marked down	to acquire any of these items.
		Name tags <i>free</i>		

A DIFFERENT ANGLE ON CLIMATE CHANGE :

by Patrick L. Barry



Look toward the horizon in almost any major city, and you'll clearly see the gray-brown layer of smog and air pollution. Yet when you look straight up, the sky can appear perfectly blue; you might think there's no smog at all!

The smog is overhead as well, but it's much harder to see. Why is there such a difference?

It comes down to viewing angles: A vertical line straight up through the atmosphere crosses much less air than a line angled toward the horizon. Less air means less smog, so the sky overhead looks blue. On the other hand, when you look toward the horizon, you're looking through a lot more air. The smog is easier to see.

A one-of-a-kind sensor aboard NASA's Terra satellite capitalizes on this angle effect to get a better view of how clouds and air pollutants scatter and absorb sunlight. By doing so, this sensor—called the Multi-angle Imaging SpectroRadiometer (MISR for short)—is helping scientists fill in a major piece of the climate change puzzle.

Most satellite instruments look only straight down at the Earth. Layers of airborne particles (called aerosols) and smog are harder to see with this vertical view, and clouds often appear only as two-dimensional sheets of white. Clouds and aerosols both can reflect incoming sunlight back out to

space, thus cooling the planet. But they can also absorb sunlight and trap heat rising from below, thus helping warm the planet.

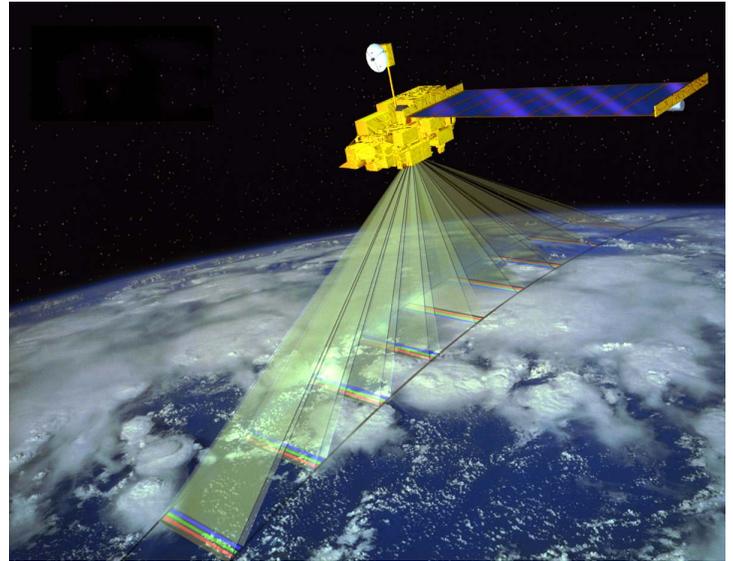
What is the net effect? MISR helps scientists figure this out by looking at the atmosphere at several angles—nine to be exact. Its nine cameras fan out across a range of angles from steeply looking forward (70.5 degrees from vertical), to straight down, to the same steep angle backwards. As the Terra satellite passes over a region, the cameras successively view the region at nine different angles.

From these data, scientists can construct a three-dimensional picture of the cloud cover, revealing much more about cloud dynamics than a flat image alone. They can also see light bouncing off aerosol pollution from nine different directions, thus getting a fuller picture of how aerosols scatter

sunlight. And they can even spot thin layers of heat-trapping air pollutants that might go unnoticed by other satellites.

All this information comes just from looking at the atmosphere from a different angle.

For more information, see <http://www-misr.jpl.nasa.gov>. Kids can learn about MISR, see MISR images, and do an online MISR crossword at http://spaceplace.nasa.gov/en/kids/misr_xword/misr_xword2.shtml.



COMMON QUESTIONS IN ASTRONOMY—PART 1 :

by Bill Leifer

What is meant by “magnitude” in astronomy?

“Apparent” magnitude is the brightness of an object as it “appears” to us. We measure apparent magnitude with numbers that are logarithmic out of necessity, because of the huge range of brightness of stars. It was found to be most useful for the logarithmic value to be 2.5 to describe the range of brightness. A star that is magnitude 1 is 2.5 times brighter than a star that is magnitude 2. A star that is magnitude 2 is 2.5 times brighter than a magnitude 3 star. So the magnitude 1 star is (2.5×2.5) or 6.25 times brighter than a magnitude 3 star. Therefore $n = 2.5$.

But, for this value to be really useful as an intrinsic measure of the nature of a star, one has to account for the dimming caused by distance. Other factors that change the apparent magnitude include the spectral qualities or wavelength of the light, because our eyes see different colors at different levels of sensitivity. But distance is the most important factor. For this reason, astronomers created the term “absolute mag-

nitude” which attempts to eliminate the effect of distance by adjusting the apparent magnitude for the distance of the star from us. Arbitrarily, the “absolute magnitude” was picked to be the magnitude that a star would appear if it were located exactly 10 parsecs from us, which is a distance of 32.6 light-years from Earth. So, when you look at an extremely bright star like Sirius, which is only 8.3 light-years away, its absolute magnitude calculates considerably lower than its apparent or observed magnitude. In contrast, a more distant star, like Betelgeuse, which is 500 light-years away, has an absolute magnitude that is much greater than the apparent magnitude, which tells us a lot about the star. Although Sirius is very bright and is 40 times more luminous than our sun, Betelgeuse, which is somewhat dimmer in apparent magnitude, is actually 100,000 times more luminous than our sun.

What is a Parsec?

Since I used the term “parsec,” let's go ahead and define how that distance was determined. Parsec is just a shortened

version of “parallax second”. “Parallax” is the angular change observed in an object while you are moving at an angle to that object. “Second” is the fraction of an arc (one 60th of an arc minute and one 3600th of an arc degree). One parsec is the distance a star would be from you if you moved exactly one astronomical unit (the distance of the Earth to the Sun) at a right angle to that star and noticed that the star had moved one second of an arc in the opposite direction from your motion. In other words, if the Sun were directly in front of you and you looked exactly 90 degrees to your right and saw a star, then you moved to the sun without burning up and looked again to your right, the star would have moved one arc second farther to your right and would now be 90 degrees and one arc second to your right. In that case, the star would be exactly one parsec distance or 3.26 light years away.

Editor's Note: *Let's encourage Bill to keep this going as a regular feature of The Observer.*

NEKAAL Board Minutes--February 13, 2005

Members present: Patsy Rush, Kevin Dobbs, Walt Cole, Bill Leifer, Janelle Burgardt, Gary Hug, Graham Bell, Dan Tibbetts, Debbie Roberts, Russ Valentine, Jerry Majers. Members Absent: None

The meeting was called to order by the Chairman, Jerry Majers, at 3:36PM on February 13, 2005.

Previous Minutes - The minutes of the previous meeting were accepted.

STANDARD REPORTS**FINANCIAL REPORT – Walter Cole:**

Walt distributed the financial statement. The ending cash balance is \$4698.39. Harriet Kessler has contributed \$1500 from the Kessler estate to the building fund. Graham Bell, as President, will write her an official thank you letter. Walt asked whether the prices for NEKAAL T-shirts, mugs, and sweat shirts should remain the same this year. The board agreed by consensus to maintain current prices. Provision of a mileage allowance for Gary Hug's trip to Utah to work with Jerry Foote on the Tombaugh Telescope was approved and will be allocated from the grant money. Walt reported that Jerry Foote will want a certified check, and this was approved.

FPO Facilities Report – Bill Leifer:

January Preventive maintenance was not performed due to weather and other considerations, and all routing work will be caught up this month. Gary tightened the roof cable and also reported that there were no problems with the rollers. He will be building casings out of 1X 2's and 1 X 6's to protect the roof mechanism from ice storm damage in the future. The 16" scope will be removed and returned to Mike Ford, along with the Pier.

IDA Report – Janelle Burgardt:

Nothing to report.

Night Sky Network and E/PO Report - Janelle Burgardt:

Nothing to report. Everyone was reminded that all equipment, including for presentations will be out of the building by March 5 to ready the area for the arrival and installation of the Tombaugh Telescope.

FAST/NEO Report - Gary Hug:

Training and work will be shutting down until the Tombaugh is installed and running, since we are cleaning out all scopes and equipment from the observatory.

OTHER OLD BUSINESS/PREVIOUS ASSIGNMENTS**Internet – Russ Valentine:**

The school is having some network problems, but Russ reported that he will be able to test some things at our end despite that.

Tombaugh Telescope – Graham Bell and Gary Hug:

Arrival of the telescope on March 15th remains on schedule, as does the dedication ceremony on April 2. A separate committee is meeting to plan the dedication. The cleanout of the observatory was scheduled for this coming weekend, February 19-20. Saturday at noon will be the main event, with Sunday reserved in case of weather problems.

It has been learned that we will not be able to use ACP software or Maxim DL, because they are not compatible with the ScopeCraft software. Instead, we will need to use "MPO Connections", which retains some of the scripting capabilities desire.

Janelle would like to replace one of our older computers with a newer used free computer from the State of Kansas offices. Graham agreed to write the official request letter to the State after Janelle provides him with the details.

Gary reported that we will need to get rid of the South half of the current pier anchor structure to accommodate the Tombaugh. A cover will need to be built to protect the remaining portion, and lead anchors will need to be placed to hold the base of the Tombaugh. Gary has made multiple measurements and is confident that there will be sufficient room for the Tombaugh, though it will be very close. With regard to removal of Walt's big telescope, two potential buyers were lost, leaving us with a problem. Gary has room for the 14" or Walt's scope, but not both. Bill can store the 14", but cannot store Walt's scope. Bill agreed to store the 14" after it is removed this weekend, and Gary will put Walt's scope in his workshop area.

Campus Extension – Janelle Burgardt:

A separate meeting of the Kessler Building committee met before the regular board meeting, which is documented in separate minutes.

Tombaugh Dedication:

The committee needs to meet. However, at the regular board meeting, it was decided that we should not send private invitations, only public reminders. The event will be put on the website by Janelle. It was also determined that the ceremony will be held in a special room at MVHS, which Debbie Roberts will arrange. This will avoid weather contingency plans. Also, NEKAAL members will be asked to provide a large pot luck dinner and food table for attendees. Some items regarding obtaining gravel to prepare the area at the observatory for parking were also discussed. Graham and Bill will coordinate this. Bill will contact AmeriSuites to see if they will provide a few rooms for guests and be a sponsor in this regard.

NEW BUSINESS**NEKAAL memberships:**

Bill requested clarification of membership actions in case of non-payment of dues. There are still 15 memberships which have not been renewed. Also, Bill requested that Harriett Kessler be changed to complimentary status on membership, and this was approved unanimously. It was decided that as of March 1, delinquent members would be dropped from the printed roster, and their subscription to the Astronomical League newsletter, Reflector, would be dropped. As of April 1, the members will be dropped from the Yahoo Group and mailing list, ending access to The Observer. Bill agreed to send postcard reminders of these decisions to the members currently in arrears. A few phone calls may also be made, which was suggested by Kevin Dobbs.

Board Photo:

New photos were taken of the board members for use on the NKL_Board Yahoo Group.

There being no further business, the meeting was adjourned at 4:47 PM.

Respectfully submitted:

Bill Leifer, Secretary
2/20/05

ANOTHER PHOTO OF THE TOMBAUGH NEARING COMPLETION:

photo by Jerry Foote, ScopeCraft



Facility Report—February 2005

by Bill Leifer

The facility was the site of major activity on Feb. 19. David Costales, Dale Lee, Kevin Dobbs, Gary Hug, Graham Bell, Walt Cole, and Bill Leifer cleared out the telescope room and cleaned the observatory. All scopes were dismantled, crated, and transported to other locations for storage. The 16" was taken down for return to Mike Ford along with the pier. All boxes and extraneous material was removed. The floors were swept, vacuumed, and cleaned. Lights were cleaned out, surfaces were dusted and washed. Even the dry erase board was cleaned of data from discovered asteroids and the comet. All of this general housecleaning was in preparation for the

arrival and installation of the Tombaugh Telescope on March 15 and the dedication ceremony on April 2. The old pier structure will be partially removed, and new anchors for the base of the Tombaugh Telescope will be installed by Gary. Additional preparation and cleaning will be done in coming days. The observatory will be closed for observing activity and group demonstrations until about mid April.

Major planning is now under way for the new Kessler building, for members use in observing and for education and public outreach. It will be built adjacent to the current building but closer to the road on the West side. Funds will be from the E/PO grant and from donation from Harriett Kessler and other philanthropic donations. Completion is anticipated for Autumn. It will be 12 X 14 as a minimum, with a retractable roof similar

to that on the current building, and an additional storage area for members scopes may be added. There will be permanent piers, for the NEKAAL 14" scope, the E/PO 8" scope, and another for member general use. The structure will be designed to be compliant with guidelines of the Americans with Disabilities Act. Eventually, a new length of deck and possibly additional outdoor piers will be build for members' observing.

Gary will be building some protective covers for the roof rail mechanism in hopes of avoiding future problems with ice storms.

Gary has re-tightened the roof cable.

The county is bringing in new gravel past the observatory to help with the mud problem. Additional gravel will be brought inside the fence up to the cement pad.

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.

March General Meeting

Thursday, March 24, 2005, 7:30 pm

Speaker: **Kevin Dobbs:**

Mars in 3-D and other adventures with stereo visualizations

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	July 8-9
February 4-5	August 5-6
March 11-12	September 2-3
April 8-9	Sept 30- Oct 1
May 6-7	October 28-29
June 3-4	December 2-3

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