THE NEKAAL OBSERVER

November 2004 VOLUME 12, ISSUE 10

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

The *NEKAAL Observer* is the official publication of the Northeast Kansas Amateur Astronomers' League and Farpoint Observatory. NEKAAL, Inc. is an educational and scientific nonprofit corporation approved by the federal and state governments.

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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Member of the Astronomical League
www.astroleague.org

FROM THE PREZ: By Graham Bell

Tombaugh Project: Construction is underway. There are photos of some of the parts on page **3,** along with a drawing the the telescope design.

E/PO Grant: Janelle and I have been spending NASA's money rapidly. The projector and laptop should be delivered in the next few days. An 8" Meade LX200-GPS SMT with case has been ordered for traveling demonstrations and sky parties. A 14" Meade LX-200 GPS SMT has been ordered for the new observatory to be build at Farpoint. A rough draft of the new construction plans has been reviewed by the board. The MVHS Industrial Arts department has agreed to help build the new observatory.

For more on the E/PO activities, see Janelle's article on page **4**.

FASTTRACKS: By Gary Hug

Ash domes have been around for four decades and this last week I had an opportunity to see for myself just how good those domes really are. I was invited up to Holton, Kansas where Holton High Schools Elk Creek Observatory was undergoing a 'facelift'. Ash Domes Richard (owner) and John come to construct the dome in about 2 & 1/2 days. The process was not hurried and the materials & dome parts were laid out in advance, very well marked and organized. What really struck me was the simplicity (and fore-thought) that is used on every dome structure. Rich told me they have been steadily perfecting their domes for 40 years. It shows. The shutter and radial drives are very quiet and each use oversized geared motors with a large toothed drive gear which drives through hundreds of rectangular holes in a heavy strip for the entire length of the opening on the upper shutter and radially along the 360 degree track. The dome segments interlock (in a tongue an groove fashion) forming a very solid structure. Then several strength adding bars are put in place some of which support the drive motors and large electrical boxes. The operation of the dome can be done manually at the electrical box mounted on the wall or semi-remotely using garage door-like remote hand held controls. All-in-all the Ash dome has the look and feel of a professional facility. These are not cheap, but are definitely a good value. In this case you really get your moneys worth.

Check out their website at http://www.ashdome.com/

Here's a couple of images of Mike's (Holton High School's Elk Creek Observatory) Ash Dome installed this last week. (See next page).

In this issue...

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

November 4-5	Venus & Jupiter less than 1° apart in early morning sky
November 5	Last quarter moon
November 8	Saturn begins retrograde motion
	Peak of Taurid meteor shower
November 10	Venus-Moon-Spica-Mars span only 20° 1 h our before sunrise
November 12	New moon
November 17	Peak of Leonid meteor shower
November 19	First quarter moon
November 20	Mercury at greatest eastern elongation
November 16	Full Moon. Known as Beaver or Frosty Moon

The Planets This Month

Mercury -- Reaches greatest eastern elongation on the 20th

Venus -- Brightest object in the morning sky at -4.0 magnitude in Virgo. Over the month it will move past Jupiter and Spic and into Libra by end of month

Mars – Low in the ESE at dawn, Mars is shining at +1.7 in Virgo

Jupiter – Magnitude -1.7 in Virgo. Within 5° of Venus on t he 1st, closes to 0.5° on the morning of the 5th

Saturn – Starts the month rising around 10PM in Gemini, will rise at 8PM by the end of the month. The rings are tilted 21℁m their least of the year.

Uranus, Neptune Both planets reach eastern quadrature this month, Uranus in Aquarius and Neptune in Capricornus

Pluto -- Too close to the sun be seen.

FASTTRACKS: (continued)

Editor's Note: The image above, shows the crew installing the base ring upon which the dome rests. The image to the right show the completed dome. *Both images are courtesy of Gary Hug.*

LIBRARY ADDITION: by Janelle Burgardt

A copy of *Skywatch '05, Your Annual Guide to Telescopes & Stargazing*, has been donated to Farpoint Observatory. By *Sky & Telescope,* this magazine-type reference includes monthly sky map and highlights for September 2004 – December 2005, over 40 pages on telescopes, including comparisons, pricelists advice and manufacturer information, plus other articles on a wide range of astronomical topics. This reference guide will be located in the Farpoint library (the bookshelf by the front door). As a reference guide, it is not available for checkout.

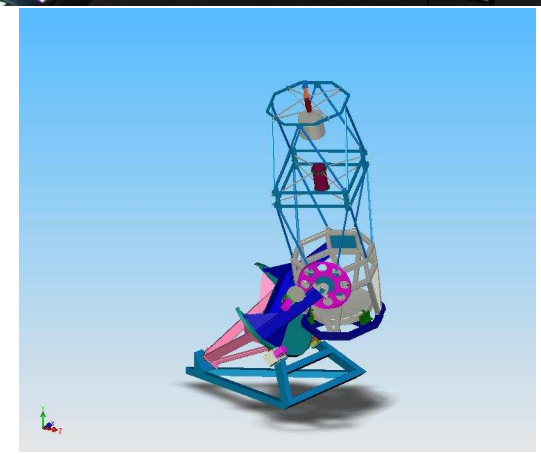
Elections are approaching. It is time to nominate officers for 2005. Get these to Bill Leifer by Nov 5. If you need a new copy of the nomination form, see Graham or Bill.

TRAVEL DANGERS NEAR FARPOINT: by *Janelle Burgardt - Astronomy Program Director*

REMINDER—This is the times of year when a deer's thoughts turn to love. During the annual rut, deer are especially distracted an likely to ignore your vehicle. There's plenty of these critters on the way to Farpoint, so be extra-cautious.

NEWS—The speed limit on Mission Valley road has been lowered to 35 miles an hour around the Mission Valley campus. Be forewarned! The signs should be up shortly.

PHOTOS OF TOMBAUGH TELESCOPE PARTS:



The first three images are of some of the parts which were delivered to ScopeCraft in early October. The image in the lower right is an image of the telescope design.

HERE ARE SOME PRICES FROM THE NEKAAL STORE:

Periodicals

S&T	$32.95
Astronomy	$29.00

Merchandise

hats	$8.00	marked down
Tshirts	$8.00	marked down
Sweatshirt	$10.00	marked down
Name tags	*free*	

Tote bags	$8.00
Coffee Mugs	$10.00

Please contact Walter or Nancy Cole to acquire any of these items.

EDUCATION / PUBLIC OUTREACH UPDATE: by Janelle Burgardt

Recent Activities

October 9 — **GROW Star Party, Manhattan, KS**

Twenty adults and middle-school girls learned constellations and viewed multiple objects through telescopes manned by 2 NEKAALers and 3 members of the North Central Kansas Astronomy Society. This was NEKAAL member Patsy Rush's first E/PO presentation. *Thanks, Patsy, and welcome aboard!*

October 19 – **Cub Scout pack 175**, First Nazarene Church, Topeka

A total of sixty-five scouts and adults heard a presentation on the nature of stars & galaxies, and received a November star chart and instructions in its use.

Upcoming Events

November 1 – **Salina South High School** freshman and junior English classes

TOPIC: "**The Link Between Astronomy and Mythology**"

November 6 (cloud date Nov. 13) – Farpoint Tour & Observing Session

Wabaunsee High School Earth Science classes

November 12 – Kindergarten – 3rd grade classes

Theodore Roosevelt Elementary School, Manhattan Kansas

TOPIC: to be determined

FINANCES: by Nancy and Walter Cole

Cash Flow Jan 1, – Oct 16, 2004

Inflows:		
Contributions		1,926.00
Contributions in kind		558.42
Dues 2004		845.00
Interest Income		2.32
Marvin Kessler Memorial contributions		325.00
NASA Grant Activity		
Grant Monies Received		29,898.00
CCD Camers		-8,040.00
Focal Reducer		-2,840.00
Telescope Construction		-21,518.00
Total Grant Activity		**-2,500.00**
Net Sales		
Cost of Merchandise		-416.66
Sale of Metchandise		136.00
Total Net Sales		**-285.66**
Net Inflow:		**871.08**
OutFlows		
Annual Report	40.00	
Computer Equip	500.00	
Internet Access	438.27	
Total Computer		**938.27**
Dues		250.00
Telescope		666.65
FPO Utilities		379.73
Insurance		838.00
Office Expenses		42.15
Repair & Maint		57.33
Subscriptions		
Magazine Subscr	164.75	
Subs Payment Rec'd	-193.75	
Total Subscriptions		**-29.00**
Supplies		333.26
Telephone		328.46
NET OUTFLOW		**3,844.84**
Overall Total		**-2,973.77**

CASH ACCOUNTS 10/16/04

ASSETS	
Money Market	821.75
Money Market 2—Scope Fund	689.00
NEKAAL Checking	818.90 *
Total Cash and Bank Accounts	**2,338.65**
Liabilities	**0.00**
OVERALL TOTAL	**2,338.65**

AFFILIATED ORGANIZATIONS:

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

Astronomical League http://www.astroleague.org

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

6 Events Logged

OUR GLOBULAR CLUSTER SURVEY: by Edwin Woerner

Shortly after coming to the Middle East to work and acquiring a small telescope, Helen and I made a good decision. We decided to return to basics by observing the Messier Catalog objects again. We started by enjoying winter's open clusters, followed by spring's galaxies, then the globulars of summer, and ending the Messier year with fall's galaxies.

Then we thought about what to observe next. Different observers make this choice in different ways, but we had been especially pleased with how our small, inexpensive reflector showed globular clusters so well.

The Messier Catalog includes 29 globulars, and several are among the most spectacular objects in the entire list. They are large, bright, and easily resolved. Others are interesting for different reasons, either astronomical or personal. For example, M55 is easy to see with small binoculars, even from city skies, and our 6-inch Newtonian resolves it well. It is our candidate for *Most Underrated Messier Object*! M54 is not a Milky Way Galaxy globular at all, but rather belongs to the Sagittarius Dwarf Galaxy, even as this galaxy is cannibalized by our Milky Way. Finally, a while ago we were trying to find M75 with a 60-mm, refractor and not doing so well. The sky chart showed four bright stars about a degree away, but we saw five, making us think we were in the wrong area. Although we ultimately found it, the next day, looking through the current *Sky and Telescope*, we learned that the extra star had actually been the asteroid Vesta. Before there was FAST, NEAR, or LINEAR, maybe 19th century asteroid discoveries were made this way.

We frequently use the reference *Sky Catalogue 2000.0* by Alan Hirshfeld and Roger Sinnott, which lists 150 globular clusters. Over half are both 10th magnitude or brighter and visible from latitude 25° north, taking declination –60° as our most southern horizon. Many are summer objects, but there are at least a few visible during each season. While observing the Messier objects, we'd seen many globulars that are not included in Messier's catalog. So we decided to observe as many globular clusters as possible.

With fall well underway, we'd like to recommend several quality seasonal globular clusters.

NGC 253 and 288 comprise autumn's best two-objects-for-the-price-of-one combination. NGC 253 is the famous Sculptor Galaxy (see *S&T*, pages 28-29, November, 2004). Big, bright, appearing elliptical in 7x50 binoculars, this galaxy begins to show structure in apertures as small as 6-inches. The globular NGC 288, about 3° distant in the sky, (not physically associated with the galaxy) shines at magnitude 8.1, with a very bright central concentration that fades gradually into the dark-sky background. The 6-inch shows no hint of resolution.

NGC 1851 in Columba appears brighter at magnitude 7.3. It also does not show any resolution in our small scope, but it does appear a bit grainy, as a globular sometimes does when on the verge of resolution. It shows a prominent central core and fainter outer regions. At declination –40°, this cluster should be easy from Farpoint.

Look for NGC 2419 in Lynx for a different reason. Astronomers used to think that this was the most distant of all Milky Way globulars. In fact, older sources say that this cluster is not associated with the Milky Way at all, but is traveling through intergalactic space on its own. We now know that this is untrue. At magnitude 10.4, this one would be tough to track down in a small telescope, except that it is very near a bright star. Ease in positive identification more than offsets any problems caused by glare from this star.

Finally, if you really need a challenge, look for the Fornax Dwarf Galaxy. An internet search turned up observers who report seeing this faint fuzzy in scopes as small as 80-mm. refractors, and others who did not see it in 24-inch Dobsonians. Taking up more sky than a full moon, this object is a real ghost. So why look for a ghost? Because this ghost is accompanied by companions that are visible in a 6-inch telescope under dark skies. Globular cluster NGC 1049 lies halfway between two 8th magnitude stars superimposed on the galaxy's face. This 12.6 magnitude globular is associated with the galaxy. Near to the more southern of these two stars find Fornax 4 at 13.4 magnitude, also one of the Dwarf's clusters. The galaxy is a member of our local group of galaxies, and its brightest stars are in the magnitude 17-19 range.

So shouldn't these be visible in a 24-inch Dobsonian?

MARVIN KESSLER

Marvin Kessler, a longtime friend and colleague of NEKAAL passed away on October 7. Marvin was born June 1, 1918, in Sac City Iowa. He married Harriet A. Samways on October 14, 1946. He is also survived by three sons and a daughter.

Marvin graduated from Sac City High School in 1936, and got his degree in electrical engineering from Iowa State University in 1940. He was an IBM employee for 42 years.

Marvin has been a member of NEKAAL for many years, always there to help out with construction issues, donating to projects and serving on the NEKAAL board. Every effort of his seemed to be geared toward serving the NEKAAL membership in general.

We will all miss one of the nicest, kindest, most thoughtful members we have ever had. Our thoughts are now with Harriet. May she have peace in remembering that she spent 56 years married to a true gentleman.

HUNTING GRAVITATIONAL WAVES: SPACE TECHNOLOGY 7: by Patrick L. Barry and Dr. Tony Phillips

Among the mind-blowing implications of Einstein's general theory of relativity, direct verification is still missing for at least one: gravitational waves. When massive objects like black holes move, they ought to create distortions in space-time, and these distortions should spread and propagate as waves--waves in the fabric of space-time itself.

If these waves do exist, they would offer astronomers a penetrating view of events such as the birth of the Universe and the spiraling collisions of giant black holes. The trick is building a gravitational wave detector, and that's not easy.

Ironically, the gravitational waves spawned by these exceedingly violent events are vanishingly feeble. Gravitational waves exert a varying tug on objects, but this tug is so weak that detecting it requires a device of extraordinary sensitivity and a way to shield that device from all other disturbances.

Enter Space Technology 7 (ST-7). This mission, a partnership between NASA's New Millennium Program and the European Space Agency (ESA), will place a satellite into a special orbit around the Sun where the pull of the Earth's and Sun's gravities balance. But even the minute outside forces that remain -- such as pressure from sunlight -- could interfere with a search for gravitational waves.

To make the satellite virtually disturbance-free, ST-7 will test an experimental technology that counteracts outside forces. This system, called the Disturbance Reduction System (DRS), is so exquisitely sensitive that it can maintain the satellite's path within about a nanometer (millionth of a millimeter) of an undisturbed elliptical orbit.

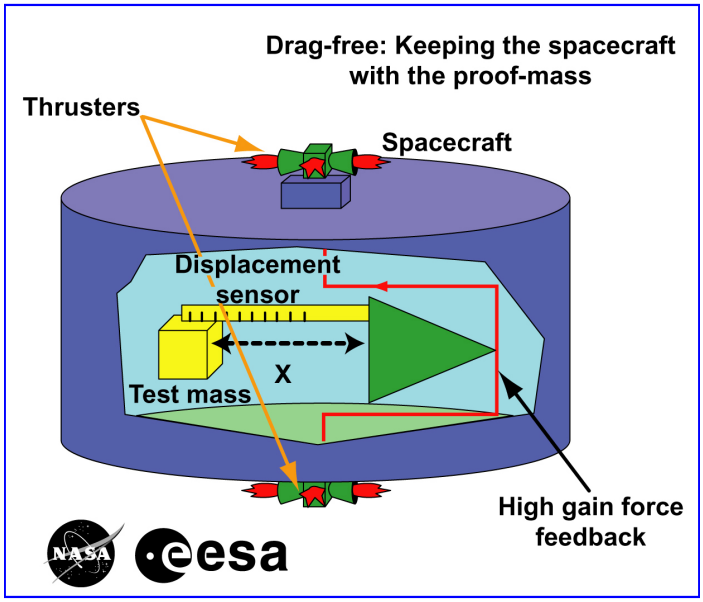
DRS works by letting two small (4 cm) cubes float freely in the belly of the satellite. The satellite itself shields the cubes from outside forces, so the cubes will naturally follow an undisturbed orbit. The satellite can then adjust its own flight path to match that of the cubes using high-precision ion thrusters. Making the masses cube-shaped lets DRS sense deviations in all 6 directions (3 linear, 3 angular).

ST-7 is scheduled to fly in 2008, but it's a test mission; it won't search for gravitational waves. That final goal will be achieved by the NASA/ESA LISA mission (Laser Interferometer Space Antenna), which is expected to launch in 2011. LISA will use the DRS technology tested by ST-7 to create the ultra-stable satellite platforms it needs to successfully detect gravitational waves.

If ST-7 and LISA succeed, they'll confirm Einstein (again) and delight astronomers with a new tool for exploring the Universe.

Read more about ST-7 at http://nmp.jpl.nasa.gov/st7 . For kids in a classroom setting, check out the "Dampen that Drift!" article at http://spaceplace.nasa.gov/en/educators/teachers_page2.shtml

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



Space Technology 7 will test a technology to be used in detecting gravitational waves in space

OPEN HOUSE SATURDAY, NOVEMBER 20, 2004

Please assist with the Open House on Saturday, November 20, 2004. It begins at 7:30, so it would help to get there around 7:00 to help set up and make coffee. Junk food is considered essential.

And don't forget member viewing on November 12-13.

November 2004

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5 Last Qtr 	6
7 Board Meeting	8	9	10	11	12 New	13
14	15	16 Leonid Meteors	17 Leonid Meteors	18 NEKAAL Meeting Leonid Meteors	19 1st Qtr 	20
21	22	23	24	25	26 Full 	27
28	29	30				

2004 NEKAAL MEMBERSHIP FORM

Please check appropriate membership type:

☐ Individual $30 ☐ Family $35
☐ Student $10 for first year, $15 each succeeding yr

Name:

Address:

City State: Zip:

Phone Numbers:

E-mail:

Mail form and check to NEKAAL
PO BOX 951, TOPEKA, KS 66601

FARPOINT CONTRIBUTERS

Help us improve and maintain Farpoint Observatory. A $50 donation (membership dues not included) gets your name on a plaque on Farpoint's *Wall of Fame.*

☐ I am including an extra $10 for a one year subscription to the Observer

Contributer Name:

Address:

City: State: Zip:

Name on Plaque:

Donation is for ☐ Farpoint operating fund
☐ General fund ☐ Telescope fund
☐ Education/Outreach fund

Mail form and check to NEKAAL
PO BOX 951, TOPEKA, KS 66601

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.

November General Meeting
Thursday, November 18, 2004, 7:30 pm
Stoffer Science Hall, Room 103
Janelle Burgardt: Mythology and Astronomy

Who to contact:

Meetings, Speakers:	Graham Bell
Farpoint Functions, Scheduling:	Janelle Burgardt
Farpoint Maintenance:	Bill Leifer
Special Presentations, Groups:	Janelle Burgardt
Dues, Donations, Merchandise:	Walter Cole
FAST:	Gary Hug, Graham Bell
Web Content	Janelle Burgardt
Observer Articles	Graham Bell
Other Web Issues:	Russell Valentine
General Questions:	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
David Costales	256-2327	dcostales@bigfoot.com
Julee Fisher	234-2826	
Gary Hug	836-7828	frogstar@intergate.com
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Jerry Majers	862-8869	jmajers@cox.net
Dan Tibbets		Ddtfp@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 Wanamaker. Some members refer to this as "the real meeting" which follows our general meeting each month.

Open House Dates for 2004

February 13	7:30	July 23	9:30
March 12	7:30	August 20	9:00
March 26	7:30	September 18	8:30
April 30	9:00	October 23	8:00
May 28	9:00	**November 20**	**7:30**
June 25	9:30		

Club Observing Dates for 2004

January 23-24	July 16-17
February 20-21	August 13-14
March 19-20	September 10-11
April 16-17	October 15-16
May 21-22	**November 12-13**
June 18-19	December 20-21

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

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