## *Highlights of the* March Sky. . .

**- - - 1st - - -**

**Dawn: Mars is less than ¾° to upper left of Mercury *very* low in SE. Binoculars are required. Look for them 7° to lower left of Jupiter.**

**- - - 3rd - - -**

**PM: The largest asteroid, Ceres, is ⅓° north of the double star 54 Leonis.**

**- - - 4th - - -**

**First Quarter Moon**

**- - - 8th - - -**

**Saturn is at opposition.**

**- - - 10th - - -**

**Full Moon**

**PM: Saturn is about 7° to upper left of Moon.**

**- - - 18th - - -**

**Last Quarter Moon**

**- - - 20th - - -**

**Vernal Equinox: Spring begins in the Northern Hemisphere at 7:44 am.**

**- - - 22nd - - -**

**Dawn: Waning Crescent Moon is about 4° to the upper right of Jupiter.**

**- - - 24th - - -**

**Dawn: Mars is about 3° to the lower right of a thin Waning Crescent Moon. Use binoculars.**

**- - - 26th - - -**

**New Moon**

**- - - 29th - - -**

**PM: The Waxing Crescent Moon is about 7° *below* the Pleiades.**

**- - - 30th - - -**

**PM: The Waxing Crescent Moon is about 7° *above* the Pleiades.**

# Prime Focus

A Publication of the Kalamazoo Astronomical Society

☆ ☆ ☆ March 2009 ☆ ☆ ☆

## This Months KAS Events

**General Meeting: Friday, March 6 @ 7:00 pm**

***Kalamazoo Area Math & Science Center - See Page 8 for Details***

**Board Meeting: Sunday, March 8 @ 5:00 pm**

***Sunnyside Church - 2800 Gull Road - All Members Welcome***

**Full Moon Theater: Saturday, March 14 @ 7:00 pm**

***WMU Main Campus, Rood Hall, Room 1110 - See Page 4 for Details***

**Messier Marathon: Saturday, March 28 @ 7:00 pm**

***Kiwanis Conservation Area - See Page 3 for Details***

## Inside the Newsletter. . .



# February Meeting Minutes

The general meeting of the Kalamazoo Astronomical Society was brought to order by President Jack Price on Friday, February 6, 2009 at 7:12 pm EST. Approximately 70 members and guests were in attendance at the Kalamazoo Area Math & Science Center (KAMSC). The healthy turn-out was due in part to a well-placed article in the *Kalamazoo Gazette*.

This month's featured speaker was our own Dr. Kirk Korista, Professor of Astronomy at WMU. Kirk called his latest talk *Misconceptions of the Big Bang*. He began by giving an overview of the rouge figures of the Big Bang Model. Some of these included Albert Einstein, Vesto Slipher, James Keeler, George Gamow, Fred Hoyle, Arno Penzias, and Robert Wilson. Kirk then gave an overview of the Big Bang theory itself.

Kirk next moved into the heart of talk - tackling common misconceptions of the Big Bang one by one. It would take a full blown article to adequately cover the immense amount of information Kirk presented in his talk (you really had to be there). To that end, we refer the reader to an article in the March 2005 issue of *Scientific American* magazine. Kirk offered to make copies available, but the article does appear (without illustrations) on *Scientific American's* web site.

The business meeting/informal discussion period was held after the snack break. No one had any observing stories to tell, but we did discuss Comet Lulin (C2007 N3). The comet was discovered by a team of Chinese and Taiwanese astronomers centered around Lulin Observatory in Taiwan. There have been naked eye reports of Lulin from dark sights. We also discussed the release of a Hubble Space Telescope image of the unusual looking barred spiral galaxy NGC 4921, which is located in Coma Berenices.

Dick Gillespie then gave a great mini-talk called *What We Learned About Puzzles*. Bob & Barb Havira completed a celestial sphere puzzle about four years ago and then donated it to the KAS Library. They took a picture of themselves with the completed puzzle and then challenged other members to do the same. Since that time other members such as Mike & Karen Sinclair and Frank Severance have accomplished this difficult goal. Dick & Jackie feared they lost a few sections of the puzzle after running out of pieces to place. So, they ordered what they thought was an identical puzzle, but apparently they're cut differently and it was missing pieces anyway. They ordered another and encountered the same problem and then finally a third, which had all the required pieces. They received a well deserved round of applause for their grand accomplishment. What Dick & Jackie didn't realize was that pieces were missing from the start! Bill Nigg agreed to be the next to take on the puzzle. The meeting concluded at 9:51 pm.

# Board Meeting Minutes

The KAS officers and at-large board members assembled for a meeting at Sunnyside Church on Sunday, February 8, 2009. President Jack Price brought the meeting to order at 5:25 pm. Other board members present included Richard Bell, Jean DeMott, Dick Gillespie, Rich Mather, Mike Sinclair and Dave Woolf. Jack started off by thanking Dave for taking the member-at-large position that Dan Morgan was unable to accept for academic reasons.

Rich Mather then gave his monthly treasurer report. Rich said that two of our CD's were about to expire. He then described how he's handling online sales, including membership and SkyShop items. (Note: After a suggestion from Bill Nigg, exact dollar amounts and bank names will no longer be listed in the board minutes. This is to protect the KAS from possible identity theft. Contact the KAS President or Treasurer if you require financial information.)

We then covered preparation for upcoming events. These included the Great Observatories Image Unveiling at the Nature Center on February 21st, the February Freeze Out later that same day, and the second Full Moon Theater of the year on February 28th. The KAS will again have a presence at Science Night at Vicksburg Middle School on March 11th. We've also been invited to attend "Super Science Saturday" on March 28th, which focuses on astronomy. The *100 Hours of Astronomy* project was then discussed. The KAS will co-host activities at the Kalamazoo Valley Museum *and* Kingman Museum in Battle Creek on April 3rd and 4th from 8:00 - 10:00 pm.

We then had a lengthy discussion on Astronomy Day, which is scheduled for May 30th. Richard reported that we are too late to apply for a grant from the Kalamazoo Foundation and the Kellogg Foundation no longer funds one time events. Because of this and other financial reasons (mostly thanks to the poor economy), we won't be able to raise the appropriate amount of funds to pay for Timothy Ferris' lecture fee or rental of Miller Auditorium (or even a cheaper facility). Most of our activities will now be held at the Kalamazoo Valley Museum. They've waived any rental fees, so long as they're listed as a cosponsor. We still plan to have Michael Francis give his presentation as Galileo. Richard's next keynote speaker of choice is Dr. Phil Plait, author of popular books like *Bad Astronomy* and *Death from the Skies*. Dr. Plait's presentation will have to be held at another venue because the Stryker Theater in the museum is too small. Two grants are currently being written to help pay for their fees and travel expenses. We also discussed possible sources of funding for the Galileoscope, which is being designed by a subcommittee of the International Year of Astronomy. The meeting concluded at 7:15 pm. The next meeting will be held at the regular place and time on March 8th.

# Help Fund Astronomy Day 2009

The KAS will hold its next Astronomy Day celebration on May 30th. We had hoped to hold our event at a large venue like Miller Auditorium, but various factors (such as the poor state of the economy) have forced us to scale back a bit.

Most activities will be held at the Kalamazoo Valley Museum. We're currently working on grants for our two feature presentations.

The WMU Physics Department and the NASA Space Grant Consortium have agreed to contribute to the event. However, funding is still needed for the featured hands-on activity and material costs for our displays.

The big hands-on activity this year is called the "Galileoscope". This high-quality kit, developed by the IYA, will allow children to easily assemble their own telescope and recreate Galileo's historic telescopic observations.

Your tax deductible contribution can be made in one of two ways. Send a check made payable to the "KAS" and mail it to:

Kalamazoo Astronomical Society
c/o KAMSC
600 West Vine, Suite 400
Kalamazoo, MI 49008

Contributions can also be made online through the new donation page:

http://www.kasonline.org/donate.html

☆ ☆ ☆

# Messier Marathon on March 28th

The work of French comet-hunter and nebulae cataloger Charles Messier comes alive in March of each year as amateur astronomers participate in a one night search for all of the objects in his catalog of nebulae, star clusters and galaxies.

By a quirk of fate, we are fortunate that most of the objects Messier and Pierre Méchain took 24 years to discover can be observed in one night around the time of the vernal equinox. Members are encouraged to bring a good pair of binoculars or a telescope and participate in this one night race across the sky.

This year's marathon will be held at the Kiwanis Youth Conservation Area, located on 15th Ave., 3.6 miles north of Turkeyville in Calhoun County. Visit the Schedule of Events page for further directions.

As some of you might recall, the KAS held a joint star party with the Kiwanis Club of Battle Creek last August. We enjoyed excellent dark sky conditions. Let's hope the skies are clear on March 28th, so we can enjoy another great night.

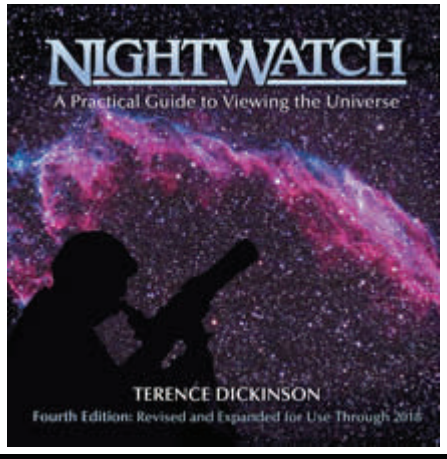
Many excellent Messier Marathon resources are available online and in print. One is Richard Bell's extensive step-by-step article on his personal web site. Be sure to also check out *The Observing Guide to the Messier Marathon* by Don Machholz. Finally, please write a report for *Prime Focus* if you are successful on March 28th.

# New Additions to KAS Library

There are some great new additions to the KAS Library. The first is a 20 minute DVD program called ***Cosmic Collisions***. This visually stunning program is narrated by Robert Redford and produced by the American Museum of Natural History.

Two fantastic books for the amateur astronomer have also been added to the collection. These include the fourth edition of ***NightWatch*** by Terence Dickinson and the third edition of ***The Backyard Astronomer's Guide*** by Alan Dyer and Terence Dickinson. *NightWatch* is the best selling stargazing book of all time and *The Backyard Astronomer's Guide* is perhaps the most comprehensive beginners book ever. (Incidentally, both of these fine books are for sale in the KAS SkyShop if you'd like to add them to your private collection.)

Check out the Library page on *KAS Online* for details on how to check out these any many other books, magazines, and DVDs.



# Price Check

by Jack Price

Hi Everyone,

As we look forward to warmer weather the KAS calendar is very busy for the International Year of Astronomy. There are many club events and some public events (at the club events, the more the merrier). Come out to share what you're doing and see what others are doing.

At the public events it's a chance to share our hobby and show the public some of the really cool things in the night sky. At the public events there's always a need for club volunteers to help. The work is easy and can be fun, from handing out literature to setting up a telescope to show people what there is to look at. Please join us at the public events, some at the Kalamazoo Nature Center, some out in the community. Some upcoming activities include: Vicksburg Middle School's Science Night (March 11th), Super Science Saturday at Kalamazoo Air Zoo (March 28th), Messier Marathon at Battle Creek Kiwanis Recreation Area (March 28th), 100 Hours of Astronomy at Kalamazoo Valley Museum and Kingman Museum (April 3rd & 4th), and the Kindleberger Festival in Parchment (July 11th).

In addition to the Messier Marathon the really BIG event is Astronomy Day 2009 on May 30th. There will be hands-on activities and a performance by Mike Francis called *Galileo: the Starry Messenger*. One of the hands-on activities is to make a simple telescope similar to what Galileo used. Astronomer and author Dr. Phil Plait will be signing his book *Bad Astronomy* during the day at the Kalamazoo Valley Museum. Then later Phil will give a talk about *Bad Astronomy* and other science. Many of us are looking forward to this. Capping off the day will be a Public Observing Session at the Kalamazoo Nature Center and Owl Observatory. Please join us and invite your friends to come also. It looks to be a great day. A GREAT BIG THANK YOU goes to Richard Bell for the many, many hours of planning he has put into making Astronomy Day 2009 happen.

One of the many fun and informative things to do is attend a star party. There are many scheduled every year. The February issue of *Prime Focus* listed several. There are many others. Some are close and some are a bit of a travel. Many of the KAS members attend some of them. It's always more fun in a group. Please join us.

## Join us for our next

# Full Moon Theater

## Saturday, March 14 @ 7:00 pm

***WMU Main Campus - Rood Hall - Room 1110***

Looking for a little astronomical entertainment? Then join us for the *final* Full Moon Theater of the year. The KAS will provide the popcorn and all the soft drinks. You just need to show up and have a great time!

*Our feature presentation...*


Panoramic visuals and engaging interviews position 400 Years of the Telescope as the must-see documentary of the International Year of Astronomy in 2009.

Beautifully photographed in 4K digital cinematography, this film is a visually stunning chronicle of the history of the telescope from the time of Galileo, its profound impact upon the science of astronomy, and how both shape the way we view ourselves in the midst of an infinite universe.

The Interstellar Studios production team traveled across five continents to interview leading astrophysicists and cosmologists from the world's renowned universities and observatories, who explain concepts ranging from Galileo's act of revealing the cosmos with a simple telescope, to the latest discoveries in space, including startling new ideas about life on other planets and dark energy - a mysterious vacuum energy that is accelerating the expansion of the universe.

Narrated by Neil deGrasse Tyson. Original Score Performed by the London Symphony Orchestra.

**Directions to Rood Hall**

Head north up the Howard Street hill from the intersection of Howard and Stadium Drive. Turn right onto W. Michigan Ave. and then go left at the round-a-bout. Turn right into the parking lot. Parking is perfectly safe and free after 6:00 pm on Fridays. Rood Hall is located just past Everett Tower. For further directions please visit KAS Online.

# Where Did All These Gadgets Come From?!

Ion propulsion. Artificial intelligence. Hyper-spectral imagers. It sounds like science fiction, but all these technologies are now flying around the solar system on real-life NASA missions.

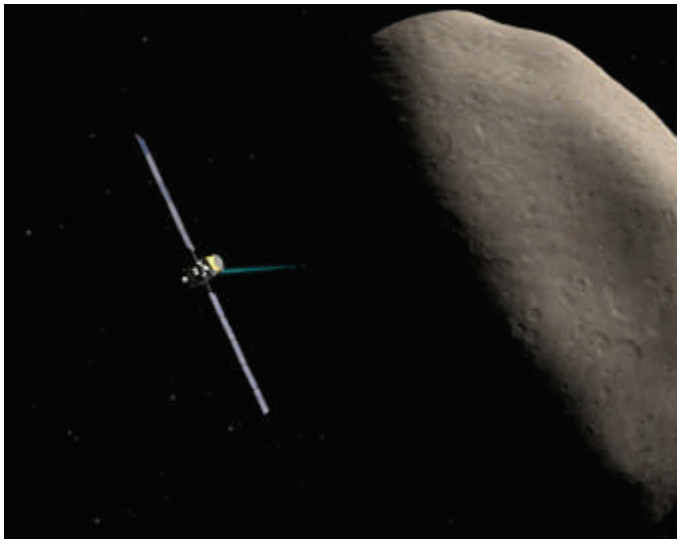
How did they get there? Answer: the New Millennium Program (NMP). NMP is a special NASA program that flight tests wild and far-out technologies. And if they pass the test, they can be used on real space missions.

The list of probes that have benefited from technologies incubated by NMP reads like the Who's Who of cutting-edge space exploration: Spirit and Opportunity (the phenomenally successful rovers exploring Mars), the Spitzer Space Telescope, the New Horizons mission to Pluto, the Dawn asteroid-exploration mission, the comet-smashing probe Deep Impact, and others. Some missions were merely enhanced by NMP technologies; others would have been impossible without them.

"In order to assess the impact of NMP technologies, NASA has developed a scorecard to keep track of all the places our technologies are being used," says New Millennium Program manager Christopher Stevens of the Jet Propulsion Laboratory.

For example, ion propulsion technology flight-tested on the NMP mission Deep Space 1, launched in October 1998, is now flying aboard the Dawn mission. Dawn will be the first probe to orbit an asteroid (Vesta) and then travel to and orbit a dwarf planet (Ceres). The highly efficient ion engine is vital to the success of the 3 billion mile, 8 year journey. The mission could not have been flown using conventional chemical propulsion; launching the enormous amount of fuel required would have broken the project's budget. "Ion propulsion was the only practical way," says Stevens.


In total, 10 technologies tested by Deep Space 1 have been adopted by more than 20 robotic probes. One, the Small Deep Space Transponder, has become the standard system for Earth communications for all deep-space missions.



**Dawn will be the first spacecraft to establish orbits around two separate target bodies during its mission—thanks to ion propulsion validated by Deep Space 1.**

And Deep Space 1 is just one of NMP's missions. About a half-dozen others have flown or will fly, and their advanced technologies are only beginning to be adopted. That's because it takes years to design probes that use these technologies, but Stevens says experience shows that "if you validate experimental technologies in space, and reduce the risk of using them, missions will pick them up."

Stevens knew many of these technologies when they were just a glimmer in an engineer's eye. Now they're "all grown up" and flying around the solar system. It's enough to make a program manager proud!

The results of all NMP's technology validations are online and the list is impressive:

http://nmp.nasa.gov/TECHNOLOGY/scorecard/scorecard_results.cfm

For kids, the rhyming storybook, "Professor Starr's Dream Trip: Or, How a Little Technology Goes a Long Way" at...

http://spaceplace.nasa.gov/en/kids/nmp/starr/

...gives a scientist's perspective on the technology that makes possible the Dawn mission.

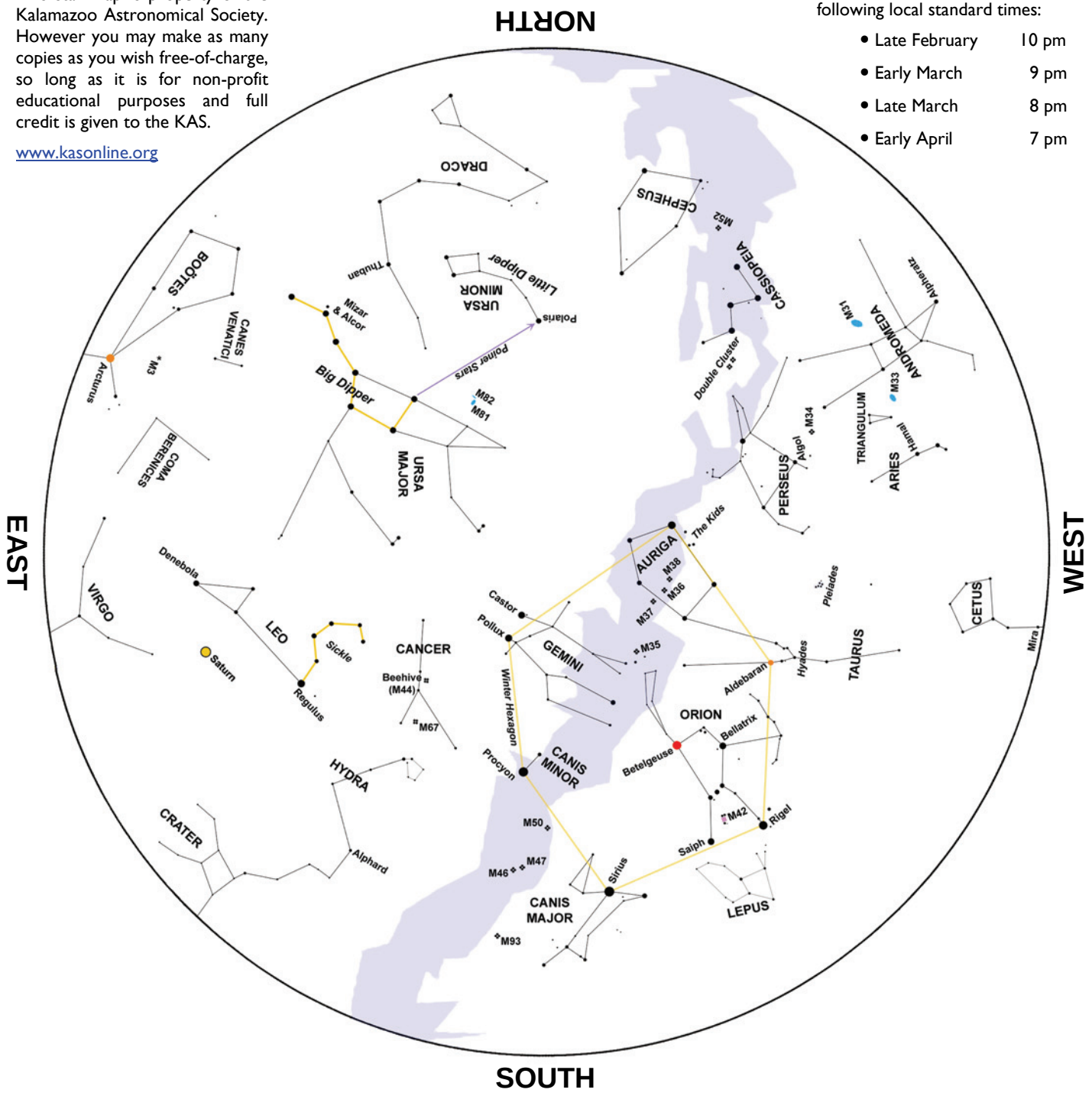
*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*

# March Night Sky.....



This map represents the sky at the following local standard times:

- Late February 10 pm
- Early March 9 pm
- Late March 8 pm
- Early April 7 pm




Ceres, the largest asteroid, will come within ⅓° of the double star 54 Leonis on March 3rd. Both star and asteroid are bright and easy to spot with a telescope. Sketch the field around 54 Leonis and return to the same spot a couple hours later. Compare your earlier sketch with the current view. Ceres will be the only thing in the field-of-view to change position.

Mars will be within a few degrees of a thin Waning Crescent Moon on March 24th. You'll need a pair of binoculars and an unobstructed view of the eastern horizon to spot the Red Planet.

The Waxing Crescent Moon will be 7° below the Pleiades (M45) on March 29th. The Moon switches places relative to M45 the next night.

## KAS OFFICERS

**PRESIDENT**
**Jack Price**
343-3193
ka8aob@hotmail.com

**VICE PRESIDENT**
**Mike Sinclair**
373-7003
msinclair@kamsc.k12.mi.us

**TREASURER**
**Rich Mather**
629-5312
rlm512@yahoo.com

**SECRETARY/ALCOR**
**Roger Williams**
375-4867
ngcphile@sbcglobal.net

**MEMBERS-AT-LARGE**
**Richard S. Bell**
373-8942
richard.s.bell@gmail.com

**Jean DeMott**
381-1406
jeamott@hotmail.com

**Dick Gillespie**
966-9653
rwgillespie@comcast.net

**Dave Woolf**
762-8268
medalguy@netzero.net

# Volunteers Needed
# Science Night

**The KAS has been asked to participate in the fifth annual Science Night at Vicksburg Middle School. Members are needed to help setup and take down classroom displays, hand out KAS literature, and answer questions from students and parents. Members are also needed to setup telescopes outside. Sunset isn't until 7:44 pm, but we may be able to give them a peak at Saturn and the Moon. Contact Richard Bell if you'd like to lend a helping hand.**

**Vicksburg Middle School**
**Wednesday, March 11, 6 pm - 8 pm**

# Kalamazoo Valley Museum
## *Planetarium Show Schedule*

***In My Backyard***
**Saturdays, 11:00 am; Sundays, 1:30 pm**

***Orion Nights***
**Wednesdays 3:00 pm; Saturdays, 2:00 pm**

***Hubble Vision***
**Saturdays & Sundays, 3:00 pm**

*Planetarium admission is $3.00 per person. The Kalamazoo Valley Museum is located at 230 North Rose Street in downtown Kalamazoo. For more information please call (269) 373-7990 or visit us on the web at www.kalamazoomuseum.org*

# More Volunteers Needed
# Super Science Saturday

**The subject of the March "Super Science Saturday" at the Air Zoo is "Astronomy for All Ages". Full details are not yet available, but the Air Zoo will hold 30 minute presentations throughout the day. The KAS has been invited to setup some tables with literature, giveaways, and educational displays. There's also the possibility of solar observing. Contact Richard Bell if you'd like to volunteer. Seems like a great way to get into the Air Zoo for free!**

**Air Zoo**
**Saturday, March 28, Hours TBA**

# General Meeting Preview

## An Unwanted Idea

### The Short but Provocative History of Black Holes

*Presented by* **Mike Sinclair**

From the first exploration of Newton's law of universal gravitation to the overwhelming success of Einstein's theory of general relativity, the concept of the black hole has been one which has struggled to be understood, recognized, and explained. KAS past president (and current vice president) Mike Sinclair will examine the convoluted journey of the theory of black holes, from "dark stars" to "collapsed massive stellar cores" to the modern view of black holes. Along the way, he will introduce us to the scientists who explored these exotic creatures; from John Michell and Simon LaPlace to Karl Schwartzschild, J. Robert Oppenheimer, John Archibald Wheeler, Kip Thorne, and Stephen Hawking.

**Friday, March 6 @ 7:00 pm**

*Kalamazoo Area Math & Science Center*
*600 West Vine, Suite 400 • Use Dutton St. Entrance*
***- Dutton Entrance Locked by 7:15 pm -***

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Kalamazoo Astronomical Society
c/o KAMSC
600 West Vine, Suite 400
Kalamazoo, MI 49008

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