
March 2009

## Inside this Issue



S*T*A*R
P.O. Box 863
Red Bank, NJ 07701
On the web at:
http://www.starastronomy.org

Edited by: Ahmad & Hanna Jrad

## March's Meeting

The next meeting of S*T*A*R will be on Thursday, March 5. Our program will be ***"Solar Telescopes"*** with guest speaker Alan Traino of Lunt Solar Systems. All are welcome. The meeting will begin promptly at 8:00pm at the Monmouth Museum on the Brookdale Community College campus.

## Editor's Corner

Many thanks to Gavin Warnes, Dave Nelson, Steve Fedor, & Randy Walton for contributing to this month's Spectrogram.

Reminder to pay membership dues $25/individual, $35/family. Donations are appreciated. Make payments to our treasurer Rob Nunn at the March meeting or mail a check payable to S*T*A*R Astronomy Society Inc to:

**S*T*A*R Astronomy Society**
**P.O. Box 863**
**Red Bank, NJ 07701**

## April Issue

**Please submit articles and contributions for the next *Spectrogram* by March 25.** Please email to stargaze07@verizon.net.

M44 Beehive Cluster.
**Credit: Melvin Schick**

### Calendar

- Sep 4, 2008 – "***Past Saturn and 7 More Years to Pluto:***" New Horizons Mission, Michael Lewis, NASA Solar System Ambassador
- Oct 2, 2008 – ***"An Idea That Would Not Die"*** by Robert Zimmerman
- Nov 6, 2008 – ***"Tour of Monmouth Museum & Demonstration of Planetarium"*** by S*T*A*R's own Dennis O'Leary
- Dec 4, 2008 – ***"Why does the sun shine for billions of years?"*** by S*T*A*R's own Arturo Cisneros
- Jan 8, 2009 - ***"Celestial Navigation"*** by Justin Dimmell, Island School, Eleuthera, Bahamas
- Feb 5, 2009 - ***"ATM Night"*** S*T*A*R Members will bring and talk about their home made telescopes
- Mar 5, 2009 - ***"Solar Telescopes"*** by Alan Traino of Lunt Solar Systems
- Apr 2, 2009 – "***The Origin of Star Names***" S*T*A*R's own Ahmad Jrad will talk about how the stars got their names
- May 7, 2009 – ***"Mars Science Laboratory"*** by DJ Byrne of JPL
- Jun 4, 2009 – AGM

Perseus Double Cluster
**Credit: Roth Ritter**

# President's Corner

*By Gavin Warnes*

One of the great things about amateur astronomy is that nice surprises coming along. Many of these are due to comets. At the moment Comet Lulin is gracing our skies and is easy to spot with a pair of binoculars or a small telescope. If you visit the club website at www.starastronomy.org you'll find reports and photos from club members in Astrophotography and Observing Reports section of the discussion board. Lulin is now moving rapidly from Leo to Cancer and onwards to Gemini. It is dimming so don't delay. Finder charts can be found at http://www.skyandtelescope.com/observing/highlights/35992534.html.

Astronomy does not always have to be done on dark, chilly nights. If you become interested in solar observing you can do it in broad daylight. In the last few years the cost of dedicated H alpha telescopes that show prominences and details of the chromosphere has fallen (though they are still not cheap, but that's the price you pay for safety). At the next meeting Alan Traino of newly formed Lunt Solar Systems will talk about the company's solar telescope products and on starting an astronomy business. Please come along!

For those of you who missed our last meeting we had a great presentation on amateur telescope making (ATM). Thank you to everybody who participated! There are photos of the event posted in the photos section of the main S*T*A*R web page. If any of you have gotten the bug and want to make a telescope and/or mirror, please post on the amateur telescope making section of the discussion board. We have grinding stands to borrow and as always plenty of advice!

Mike Kozic and I have been finalizing the plans for the bus trip to the Hayden Planetarium/Rose Center in New York City. The good news is that we have enough people for the trip to go ahead on Saturday March 28th. There are a few seats left if anybody else would like to go. The cost of the bus is $32 and entrance to the museum including a space show is $22 for adults, $16.50 for seniors and $13 for children aged 2 to 12. Please email me at gavin.warnes@gmail.com if you would like to join us.

Keep looking up!

Gavin

# February Meeting Minutes

*By Dave Nelson for Steve Fedor*

The February 2009 meeting of S*T*A*R Astronomy Club began at 8:09 pm on 2/5. There were 36 members and non-members in attendance. President Gavin Warnes chaired the meeting and began by discussing the evening's agenda as well as the upcoming trip to the Hayden Planetarium on March 28th. As of the meeting date there were 25 people committed to go. The trip will leave from Parkway exit 105.

Active ATM members gave a presentation and displayed many of fine examples of the fruits of their labors.
-Mike Lindner began by discussing the history of the STAR ATM group from its beginnings at Gordon Waite's home up to the present sessions at Andy Zangle's house.
-Mike then gave a demonstration of mirror grinding and discussed many of the techniques used in making a mirror as well as discussing testing procedures and supplies.
-Allen Malsbury displayed and discussed his 16 inch dob and his home brew digital setting circles.
-Dave Nelson displayed and discussed an equatorial table
-Marc Siblia also discussed equatorial tables and displayed a travel scope he built
-Gary Fuchs discussed and displayed an F/27 Sciefspiegler he built.

-Gavin Warnes Discussed and displayed the first scope he built which was for the Venus transit and his efforts in grinding the mirror.

After the ATM presentation coffee break began.

Meeting reconvened 10:07PM.
Nancy presented the Beginner Object of the Month of February, M77 (NGC1068), a 9th-magnitude galaxy in Cetus. She also spoke of Mira, the first known variable star.

Nancy's Challenge Object of the Month of February was, in recognition of Valentine's Day, the "Heart Nebula", IC1805, in Cassiopeia Nancy presented several stunning photographs of this large emission nebula with it's distinctive heart shape and red color. At magnitude 18.3 IC1805 is more of a photographic object than a visual object. Nancy also discussed open cluster NGC1027, near the "right ventricle" of the Heart Nebula, and finally also the nearby Soul Nebula, another dim nebula. Thus for February we have both a Valentine theme and a piano theme with the Heart and Soul Nebulae.

At 10:16 Gavin discussed the upcoming outreach events. Tuesday 10 February is the annual star party for the third grades of Holmdel's Village School, off McCampbell Road.

Participants should be set up and ready for visitor no later than 6:45PM.
Sunday 26 April STAR will have a presence at the Earth Day festivities at Bayonet Farm, near the former Bell Labs/Lucent headquarters off Middletown Road in Holmdel. We'll set up in the middle of the farm. Solar viewing planet walks are planned.

Rich Gaynor noted that the Asbury Park Press's paper-based newspaper does not seem to print notices of STAR's meetings Community Calendar section. However, they do appear in the online paper at app.com.

Al won the 50-50.

Meeting adjourned at 10:23PM.

# 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

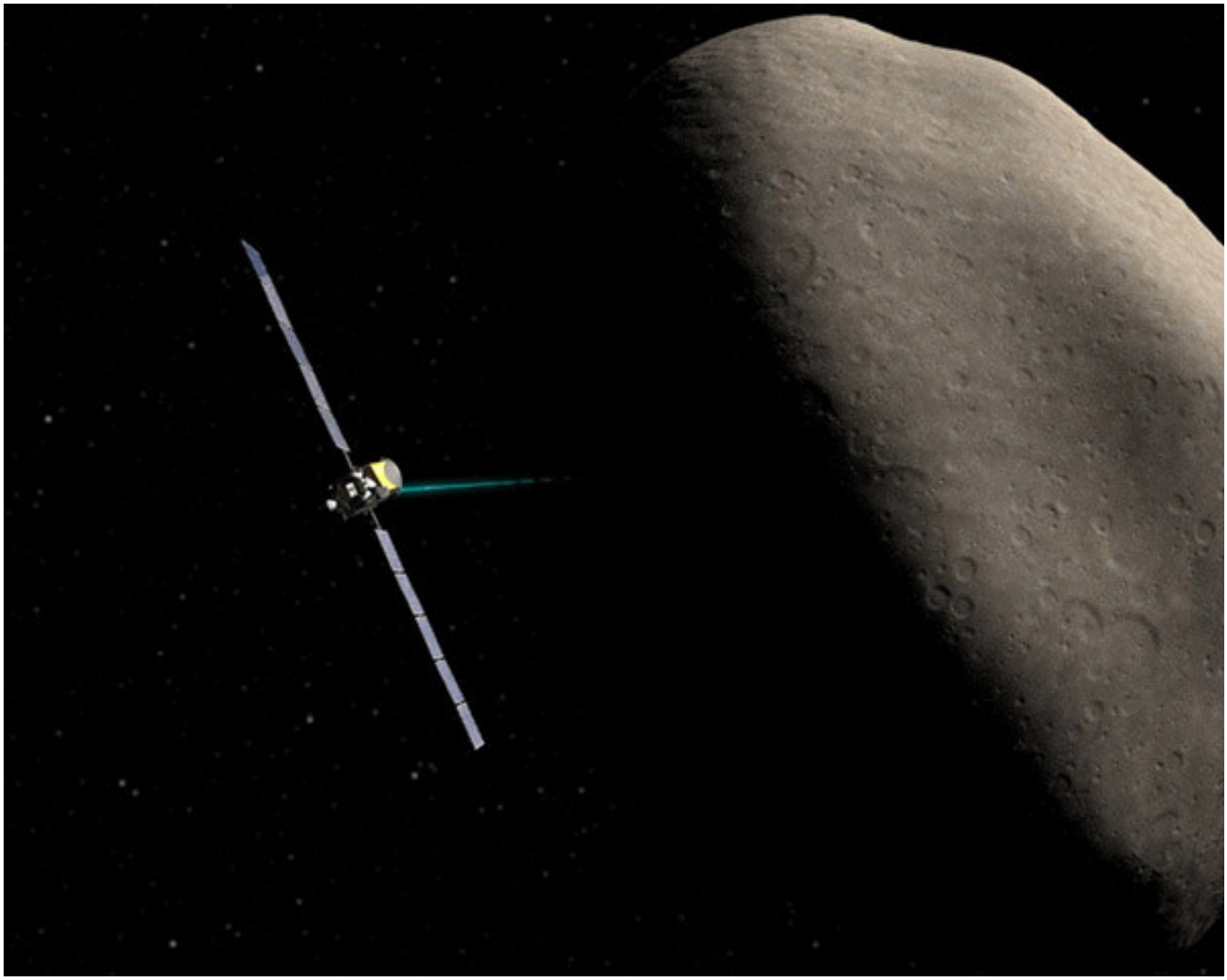


*Figure 1. Dawn will be the first spacecraft to establish orbits around two separate target bodies during its mission—thanks to ion propulsion validated by Deep Space 1.*

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.

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:

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 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.*

# Unintended Consequences

*Based on a story from AP*

**February 11, 2009** - Two big communications satellites collided in the first-ever crash of two intact spacecraft in orbit, shooting out a pair of massive debris clouds and posing a slight risk to the international space station.

NASA said it would take weeks to determine the full magnitude of the crash, which occurred nearly 500 miles over Siberia on Tuesday. "We knew this was going to happen eventually," said Mark Matney, an orbital debris scientist at Johnson Space Center in Houston.

NASA believes any risk to the space station and its three astronauts is low. It orbits about 270 miles below the collision course. There also should be no danger to the space shuttle set to launch with seven astronauts on Feb. 22, officials said, but that will be re-evaluated in the coming days. The collision involved an Iridium commercial satellite, which was launched in 1997, and a Russian satellite launched in 1993 and believed to be nonfunctioning. The Russian satellite was out of control, Matney said.
The Iridium craft weighed 1,235 pounds, and the Russian craft nearly a ton.

No one has any idea yet how many pieces were generated or how big they might be. "Right now, they're definitely counting dozens," Matney said. "I would suspect that they'll be counting hundreds when the counting is done." As for pieces the size of micrometers, the count will likely be in the thousands, he added.

There have been four other cases in which space objects have collided accidentally in orbit, NASA said. But those were considered minor and involved parts of spent rockets or small satellites.

Nicholas Johnson, an orbital debris expert at the Houston space center, said the risk of damage from Tuesday's collision is greater for the Hubble Space Telescope and Earth-observing satellites, which are in higher orbit and nearer the debris field.

At the beginning of this year there were roughly 17,000 pieces of manmade debris orbiting Earth, Johnson said. The items, at least 4 inches in size, are being tracked by the U.S. Space Surveillance Network, which is operated by the military. The network detected the two debris clouds created Tuesday.

Litter in orbit has increased in recent years, in part because of the deliberate breakups of old satellites. It's gotten so bad that orbital debris is now the biggest threat to a space shuttle in flight, surpassing the dangers of liftoff and return to Earth. "The collisions are going to be becoming more and more important in the coming decades," Matney said.

# Are you a S*T*A*R Member?

S*T*A*R is the proud owner of a monstrous 25" Dobsonian Obsession reflector – which members can gain access to!

Meetings are the first Thursday of each month, except July and August, at 8:00 PM at the Monmouth Museum on the Brookdale Community College campus. Meetings generally consist of lectures and discussions by members or guest speakers on a variety of interesting astronomical topics. S*T*A*R is a member of United Astronomy Clubs of New Jersey (UACNJ), the Astronomical League (AL), and the International Dark Sky Association (IDA).

Memberships: ( )Individual....$25 ( ) Family...$35

Name_____

Address_____

City_____State___Zip_____

Phone_____

Email_____

Make checks payable to: S*T*A*R Astronomy Society, Inc. and mail to P.O. Box 863, Red Bank, NJ 07701

# 2009 March Celestial Events

*Supplied by J. Randolph Walton (Randy)*

| Day | Date | Time (EDT) | Event |
|---|---|---|---|
| Tue | 3 | 03:00 | Moon 0.8 Deg. N of Pleiades (M45) |
| Wed | 4 | 01:35 | Moon Set |
| | | 02:46 | **First Quarter Moon** |
| | | 18:00 | Lunar Straight Wall visible |
| Sat | 7 | 05:05 | Jupiter Rises |
| | | 05:35 | Mars Rises |
| | | 05:48 | Mercury Rises |
| | | 06:24 | Sunrise |
| | | 14:11 | Moon Rise |
| | | 17:53 | Saturn Rises |
| | | 17:59 | Sunset |
| | | 20:30 | Venus Sets |
| Sun | 8 | 02:00 | **Daylight Saving Time begins** |
| Tue | 10 | 18:53 | Moon Rise |
| | | 22:38 | **Full Moon** |
| Thu | 12 | 05:34 | Titan's shadow on Saturn |
| Fri | 13 | 20:10 | Zodiacal light in W for two weeks |
| Sat | 14 | 05:37 | Jupiter Rises |
| | | 06:25 | Mars Rises |
| | | 06:50 | Mercury Rises |
| | | 07:13 | Sunrise |
| | | 07:17 | Saturn Sets |
| | | 19:06 | Sunset |
| | | 19:55 | Venus Sets |
| | | 23:26 | Moon Rise |
| Wed | 18 | 11:21 | Moon Set |
| | | 13:47 | **Last Quarter Moon** |
| Fri | 20 | 07:44 | **Spring Equinox** |
| Sat | 21 | 05:20 | Jupiter Rises |
| | | 06:05 | Mars Rises |
| | | 06:50 | Mercury Rises |
| | | 06:51 | Saturn Sets |
| | | 07:02 | Sunrise |
| | | 14:18 | Moon Set |
| | | 19:13 | Sunset |
| | | 19:55 | Venus Sets |
| Thu | 26 | 12:06 | **New Moon** |
| | | 19:40 | Moon Set |
| Sat | 28 | 04:25 | Titan's shadow on Saturn |
| | | 04:55 | Jupiter Rises |
| | | 05:55 | Mars Rises |
| | | 06:20 | Saturn Sets |
| | | 06:50 | Sunrise |
| | | 19:20 | Sunset |
| | | 19:20 | Venus Sets |
| | | 22:02 | Moon Set |
| **Apr** | **2** | 10:34 | **First Quarter Moon** |
| | | 11:46 | Moon Rise |

# In the Eyepiece

Here is a list of objects for this month. This is reproduced from www.skyhound.com with the kind permission of its creator and author of SkyTools Greg Crinklaw.

| Object(s) | Class | Con | RA | Dec | Mag |
|---|---|---|---|---|---|
| M35 & NGC 2158 | Open Cluster | Gemini | 06h08m51.9s | +24°20'28" | 5.6 |
| M 38 | Open Cluster | Auriga | 05h28m39.4s | +35°50'24" | 6.8 |
| Sigma Ori | Multiple Star | Orion | 05h38m44.8s | -02°36'00" | 3.8 |
| M37 | Open Cluster | Auriga | 05h52m22.3s | +32°32'40" | 6.2 |
| The Trapezium | Multiple Star | Orion | 05h35m16.5s | -05°23'23" | 5.1 |
| NGC 2017/HR 1944 | Multiple Star | Lepus | 05h39m16.2s | -17°50'58" | 6.4 |
| Beta Mon | Multiple Star | Monoceros | 06h28m49.1s | -07°01'59" | 3.8 |
| NGC 2112 | Open Cluster | Orion | 05h53m52.2s | +00°23'32" | 9.1 |
| IC 418 | Planetary Nebula | Lepus | 05h27m28.2s | -12°41'50" | 10.7 |
| NGC 1931 | Open Cluster | Auriga | 05h31m24.8s | +34°15'12" | 10.1 |
| IC 2149 | Planetary Nebula | Auriga | 05h56m23.9s | +46°06'17" | 11.2 |
| NGC 1893 & IC 410 | Open Cluster in Nebula | Auriga | 05h22m41.1s | +33°23'49" | 7.8 |
| M 50 | Open Cluster | Monoceros | 07h03m12.3s | -08°19'28" | 7.2 |
| Crab | Diffuse Nebula | Taurus | 05h34m30.0s | +22°01'00" | 8.4 |
| NGC 2022 | Planetary Nebula | Orion | 05h42m06.2s | +09°05'10" | 12.4 |
| Hubble's Variable Nebula | Diffuse Nebula | Monoceros | 06h39m12.0s | +08°44'00" | -- |
| H 3-75 | Planetary Nebula | Orion | 05h40m44.8s | +12°21'16" | 13.9 |
| IC 421 | Galaxy | Orion | 05h32m14.8s | -07°55'01" | 12.3 |
| NGC 1999 | Diffuse Nebula | Orion | 05h36m24.0s | -06°43'00" | -- |
| Focus on The Horsehead | Diffuse/Dark Nebula | Orion | 05h41m00.0s | -02°27'00" | -- |
| Abell 12 | Planetary Nebula | Orion | 06h02m21.4s | +09°39'07" | 13.9 |
| IC 443 | Diffuse Nebula | Gemini | 06h17m48.0s | +22°49'00" | 12.0 |
| Focus on the Cone Nebula | Open Cluster | Monoceros | 06h41m03.2s | +09°53'07" | 4.1 |
| NGC 2242 | Planetary Nebula | Auriga | 06h34m07.4s | +44°46'37" | 15.2 |

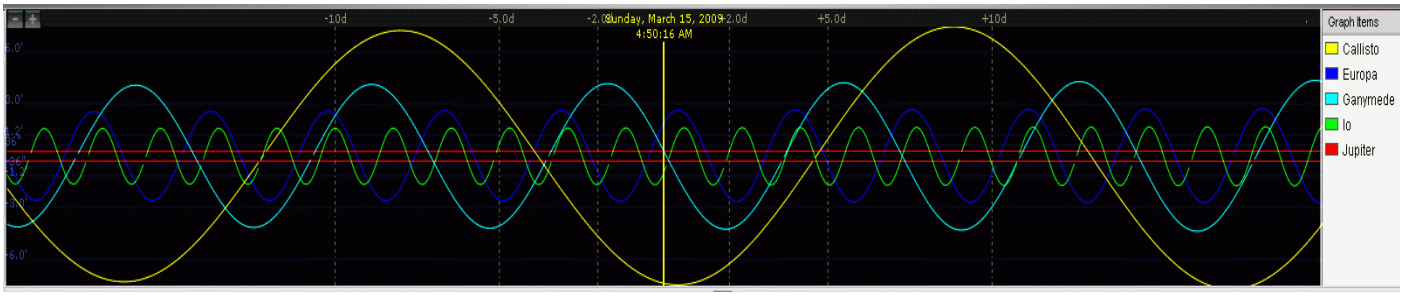
## Moon Phases


## AstroPuzzle Solution for February 2009

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 C | 2 R | 3 A | 4 G | ■ | 5 S | 6 O | 7 B | ■ | 8 C | 9 S | 10 T | ■ | 11 C | 12 A | 13 F | 14 E |
| 15 R | O | V | E | ■ | 16 C | W | O | ■ | 17 O | L | E | ■ | 18 A | G | O | G |
| 19 A | D | E | N | ■ | 20 O | L | D | ■ | 21 C | I | A | ■ | 22 R | I | N | G |
| 23 B | E | R | E | F | T | ■ | 25 E | 26 C | O | N | ■ | 27 F | E | N | D | S |
| ■ | ■ | ■ | ■ | 28 M | T | 29 V | ■ | 30 E | A | G | 31 L | E | ■ | ■ | ■ | ■ |
| 32 S | 33 P | 34 R | 35 I | G | ■ | 36 E | 37 A | T | ■ | 38 S | E | R | 39 P | E | N | S |
| 43 T | O | U | R | ■ | 44 A | N | N | U | L | ■ | 46 O | R | A | T | E | S |
| 47 M | E | T | E | ■ | 48 S | E | E | S | A | 49 W | ■ | 50 E | L | A | T | E |
| ■ | ■ | ■ | ■ | 51 T | H | E | M | ■ | 52 G | O | U | T | ■ | ■ | ■ | ■ |
| 54 N | 55 A | 56 D | 57 I | R | ■ | 58 R | I | 59 G | O | R | S | ■ | 60 C | 61 R | 62 A | 63 N |
| 64 A | C | A | C | I | 65 A | ■ | 66 A | R | O | M | A | ■ | 67 P | E | R | O |
| 68 B | E | N | E | F | I | 69 T | ■ | 70 E | N | E | ■ | 71 P | A | V | E | R |
| ■ | ■ | ■ | ■ | 72 I | M | A | 73 G | E | ■ | 74 D | 75 O | T | ■ | ■ | ■ | ■ |
| 76 B | 77 L | 78 E | 79 N | D | ■ | 80 U | N | D | 81 O | ■ | 82 M | A | 83 D | 84 C | 85 A | 86 P |
| 87 L | Y | R | E | ■ | 88 B | R | A | ■ | 89 N | 90 B | E | ■ | 91 R | O | L | E |
| 92 A | R | A | B | ■ | 93 O | U | R | ■ | 94 C | O | G | ■ | 95 U | P | O | N |
| 96 B | A | S | E | ■ | 97 A | S | L | ■ | 98 E | P | A | ■ | 99 M | E | E | T |

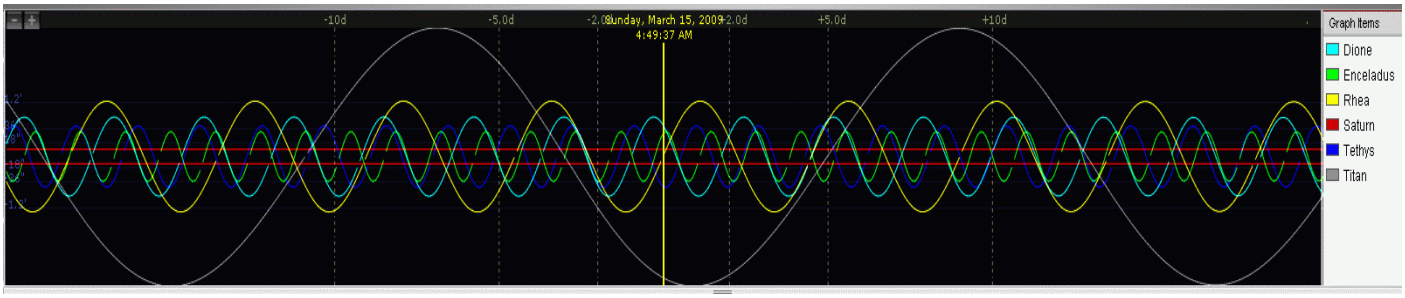
## Jupiter Moon Calendar

Here is a graphical depiction of the visible moons of Jupiter for the month of March 2009.

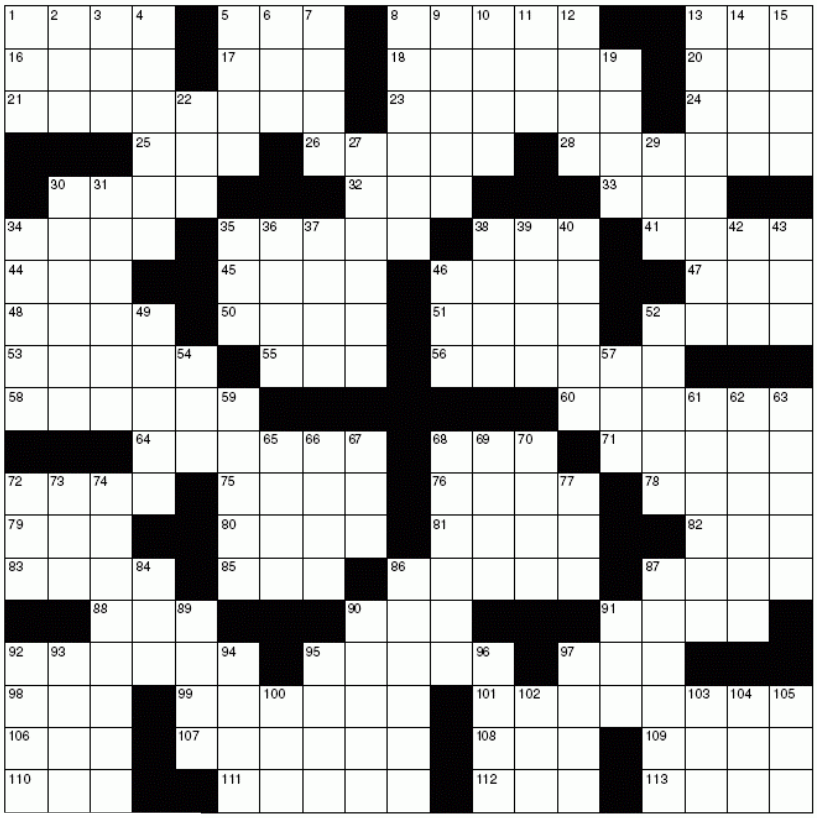



## Saturn Moon Calendar

Here is a graphical depiction of the visible moons of Saturn for the month of March 2009.



# March 2009 – More on the Messiers



**ACROSS**

**1** Time periods
**5** Move away
**8** Hotel room cleaners
**13** Lingerie
**16** Artist Chagall
**17** ***M65 is in this Constellation***
**18** List of errors
**20** Throw
**21** Straightened
**23** Mischief-maker
**24** Alphabet
**25** Day of the wk.
**26** Asian nation
**28** ***M74 is in this Constellation***
**30** Take unawares
**32** Fuel
**33** Question
**34** Clothing stitch
**35** Desire
**38** Hertz
**41** Snaky fish
**44** Central processing unit
**45** Alleviate
**46** Italian currency
**47** Affirmative
**48** Canoe propellers
**50** Pros
**51** On top
**52** Gather
**53** Vertical line
**55** In possession of
**56** ***M35 is in this Constellation***
**58** Writings
**60** Ruler
**64** Airtight
**68** Villain
**71** ***Common Name for M82***
**72** Unwilling
**75** Greek sandwich
**76** Mined metals
**78** Ma
**79** Wing
**80** Canal
**81** Torah table
**82** Turkey
**83** Obligation
**85** Pocket
**86** Wait for
**87** Gent
**88** Drink
**90** Before (prefix)
**91** Greenish-blue color
**92** Weight loss attempter
**95** Deer
**97** Pluck
**98** Ornament
**99** ***M36 is in this Constellation***
**101** Before surname
**106** Rio de Janeiro
**107** Looked
**108** National police
**109** Beehive State
**110** Sixth sense
**111** ***M48 is in this Constellation***
**112** Shrill bark
**113** Land worker

**DOWN**

**1** Flightless bird
**2** Dashed
**3** Circle part
**4** ***M11 is in this Constellation***
**5** Women's magazine
**6** Hive dweller
**7** Person
**8** Mermaid's counterpart
**9** Constellation
**10** Take the wrinkles out
**11** Digital audio tape
**12** Stair
**13** ***Common Name for M64***
**14** Kimono
**15** The alphabet
**19** Opera solo
**22** Direct
**27** A way out
**29** South southeast
**30** Floral leaves
**31** ***M1 is in this Constellation***
**34** Scientific instrument
**35** Affirmative
**36** Every
**37** At sea
**38** Quote
**39** High school dance
**40** Tasty
**42** Downwind
**43** Concord e.g.
**46** Dawdle
**49** Bang up
**52** Something very small
**54** Farewell
**57** New York City
**59** Wise people
**61** Modern female mystery writer Christie
**62** Island inhabitant
**63** Bum
**65** ***M56 is in this Constellation***
**66** Little Mermaid's love
**67** Female deer
**68** Filament
**69** Realm
**70** Less than usual in size, power or character
**72** Cub
**73** Bullfight cheer
**74** Surface of a table
**77** Stood opposite
**84** Make lace
**86** Fleet
**87** ***M29 is in this Constellation***
**89** Green legumes
**90** Beeper
**91** Prompt
**92** Challenge
**93** Spring flower
**94** Candy bar Baby __
**95** Fowl
**96** Flukey
**97** Slip
**100** Visible light
**102** Kimono sash
**103** Snacked
**104** Damage
**105** Extremely high frequency (abbr.)

Note: All clues in bold (11 total) are Related to and/or derived from the Messier objects.