ASTRONOMY CLUB OF AKRON
www.acaoh.org

The Night Sky

The Newsletter of
The Astronomy Club of Akron
www.acaoh.org

Volume 35 Number 9 **September 2013**

Next Meeting: Friday - September 27, 2013 - 8:00 PM - Tudor House

The President's Column

By Gary Smith

Hello to all fellow members of the ACA. The start of the modern era of space exploration probably was the launch of Sputnik-1 atop a two stage R-7 Semyorka Rocket on October 4, 1957 from the Baikonur Cosmodrome. The world's press was taken by surprise and the launch was front page news for months. Please note that the world's first artificial satellite, the Sputnik-1, should not be confused with the Vanguard TV3 rocket which was given the name "Flopnick" by the press.

In the years to follow, the manned space program of both countries was given top priority in newspapers, magazines, television, radio, books, of nearly every country on earth. The pilots of the manned space vehicles were heroes even before their rockets had left the ground. And we as Ohioans can take pride to have produced two of the most famous names of the American space program. John Glenn flew in a small Mercury space capsule in 1962 in a five hour flight to be the first American to orbit the Earth. Neil Armstrong is considered to be one of the most famous Americans of all time. He commanded the Apollo 11 mission in July 1969 and was the first person to set foot on the moon. This was an absolutely remarkable event in human history and is also considered to have ended the "space race" between us and the soviet union, with America declared the winner.

But there is another space program that took place at the same time, is ongoing today and for the foreseeable future. This is the unmanned exploration of space. The Soviets took an early lead with the Luna 3 lunar space probe that made a lunar flyby (it did not orbit) and took the first images of the far side of the moon in October of 1959. These historic images showed a huge impact crater now called the South-Pole Aitken basin. What is equally remarkable is the resurgence in interest for Lunar exploration. The 100 million dollar LADEE (Lunar Atmosphere and Dust Environment Explorer) lunar probe was launched on September 6, 2013 atop a Minotaur V rocket at the lesser known Wallops Island Flight Facility in Virginia.

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INTERNATIONAL SPACE STATION!

INTERNATIONAL SPACE STATION (ISS) by ACA Member Jason Shinn Captured August 25 from the grounds of the ACA observatory. Canon Digital Rebel XT at prime focus of Meade LXD55 6" refractor, ISO400, 1/1000sec.

OFFICERS 2012 – 2014

President
Gary Smith
Phone: 330-633-9873 **E-mail:** rlphsmth8@gmail.com

Vice President
Anthony Scarpitti
E-mail: ascarpitti2@neo.rr.com

Treasurer
Glenn Cameron
E-mail: glenn@cameronclan.org

Secretary
Juan Contreras
E-mail: jeconbar@hotmail.com

Assistant Secretary/Treasurer
Ann Ferrell
E-mail: annhagemaster@sbcglobal.net

Observatory Director
Ron Kalinoski
Phone: 330-837-5848

ACA Webmaster
Dave Jessie
E-mail: DJessie@neo.rr.com

Publications Secretary - Editor, Night Sky Newsletter
Jason Shinn
Phone: 330-685-5382 **E-mail:** truemartian@aol.com

Trustee
Lewis Snodgrass
E-mail: CHRPLY@aol.com

Trustee
John Shulan
Phone: 330-836-0800 **E-mail:** john@shulans.com

Statutory Agent
Mark Kochheiser
Phone: 330-882-3713 **E-mail:** mkochheiser@neo.rr.com

OTAA Representative
Lou Poda

August Treasurer's Report

By Glenn Cameron

8/1/2013 Through 8/31/2013

Checking Beginning Balance	**$2,861.01**
Income	
	0.00
Total Income	**$0.00**
Expenses	
Observatory Expenses	-323.00
Scope Accessories	-416.69
Total Expenses	**-$739.95**
Income Less Expenses	**-$739.95**
Checking Ending Balance	**$2,121.06**
Savings Beginning Balance	**$2,500.35**
Earned Interest	0.11
Savings Ending Balance	**$2,500.46**
Petty Cash Beginning Balance	**$60.01**
Postage	-0.46
Petty Cash Ending Balance	**$59.55**
Petty Cash	59.55
Savings	2,500.46
Checking	2,121.06
Grand Total	**$4,681.07**

Article by Glenn Cameron
ACA Treasurer.

SWAP & SHOP

For Sale:

Pentax XW 20mm Eyepiece

- Excellent condition.
- Small mark on 1.25" barrel.
- Always used in a compression clamp.

Asking: $220 (cash)
Contact: Fred Fry
Email: riverfry@gmail.com

For sale:
15mm Ultra-Wide Angle Eyepiece
Asking: $40
Contact: Lew Snodgrass
Phone: 330-819-4886
Phone: 330-867-4800 Ask for Lew.
Email: chrply@aol.com

For sale:

Televiev Radian 12 mm Eyepiece

- Excellent condition.

Asking: $180 (cash)
Contact: Fred Fry
Email: riverfry@gmail.com

For Sale:

Televiev Radian 18 mm Eyepiece

- Excellent condition.

Asking: $180 (cash)
Contact: Fred Fry
Email: riverfry@gmail.com

For Sale:

22mm Orion Epic ED-2 ED Eyepiece
25mm Orion Epic ED-2 ED Eyepiece
Asking: $40 each or $70 for both
Contact: Glenn Cameron
Phone: 330-737-1472
Email: glenn@cameronclan.org

Advertize in the Swap n Shop!
Send a picture of your item and relevant information to the newsletter editor:
truemartian@aol.com

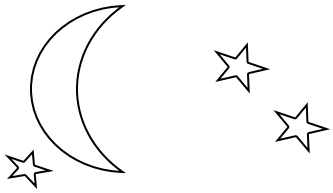
Observatory Report

By Ron Kalinoski

We had a couple of good impromptu observing sessions in August and September. The observatory telescope has performed well. We are still working on a couple of telescope issues and hope to have these resolved soon. As Autumn arrives, so does beautiful crisp evening skies with earlier sunset times. This makes for great star parties when skies are clear and we plan to capitalize on each opportunity. Members and non-members have been asking about our next scheduled solar party. We'll try to schedule one within the next couple of weeks while the Moon reappears in the evening sky. Thanks to all members who helped make our star parties a success.

The observatory building and privy needs some external work to get them prepared for winter. We should plan a maintenance day at the observatory to address these issues. Some of the problems needing attention are: molding on privy needs attached or replacement, roof roll off area supports need paint, weeds need pulled, ACA Observatory sign needs paint, and the observatory building needs cleaning and rearrangement. I would also like to plant some arborvitae on the observatory grounds to help block car headlights. Mark Kochheiser has checked with park officials and all we need to do is present them with a plan. Let's discuss at our September meeting.

Article by Ron Kalinoski,
ACA Observatory Director.



President's Column Con't

It is a robotic mission that will orbit the moon to gather information about the lunar atmosphere, conditions near the surface, and environmental influences on lunar dust.

One of the most interesting aspects of this exploration of space are the space probes sent to the king of the planets, Jupiter. In Roman mythology, Jupiter is the king of the gods, and the god of sky and thunder. Jupiter with his two brothers, Neptune and Pluto, presided over the three realms of the universe; the Sky, the Waters, and the Underworld.

The planet Jupiter is an undisputed favorite of amateur astronomers throughout the world. When other planets are obscured or poorly visible, Jupiter stands out. As the largest of the planets and a gas giant, it takes a good imagination to comprehend its size and planetary characteristics. Jupiter's mass is only one thousandth of the Sun, but that makes it 2 ½ times as massive as all other planets combined. It is composed mostly of hydrogen with helium accounting for ¼ the mass of the planet. Because Jupiter is gaseous and rotating rapidly, its equatorial diameter (11.2 x earth's) is larger than the polar diameter (10.5 x earth's). Jupiter at maximum brightness is –2.94, making it the third brightest object in the night sky (at its max luminosity). In the darkest places on Earth, it is bright enough to cast a shadow. Its angular diameter varies from 29.8" to 50.1" depending on its distance. The maximum angular diameter of Jupiter is 2.65% of the average diameter of the moon, which is not bad considering Jupiter's average distance from the Sun is 5.2 A.U's. And does the king of the planets have any moons? The answer is yes, and plenty of them. It now has been credited as having 67 moons.

The four largest moons of Jupiter are the Galilean Moons of Io, Europa, Ganymede, and Callisto. The name Galilean is from Galileo Galilei who turned his first telescope to the skies and also toward the planet Jupiter in 1610. The diameter of these moons is enormous. Europa's diameter is 89.8% the diameter of the Earth's Moon. Io is 1.05 times, Callisto is 1.38 times, and Ganymede is 1.51 times the diameter of the Moon. The fact that all these moons have solid surfaces has long made them tempting targets (along with Mars) for places to land a manned or unmanned spacecraft.

The year 1979 was a banner year for fans of this large gas giant planet. Both Voyager 1 and Voyager 2 spacecraft made flyby's past Jupiter with state of the art cameras and relayed the images back to Earth. The close distance of the Voyagers to Jupiter gave us Earth-bound humans the best images of Jupiter to date. And things were going to get better. On October 18, 1989 the space shuttle Atlantis launched with the 5,653 lb. Galileo spacecraft in its cargo bay. We have heard the slogan "faster, better, cheaper" from NASA, this was just the opposite. The estimated cost of the Galileo space mission was 1.6 billion dollars. In 1989 dollars this is the equivalent to a "blank check". The 1986 space shuttle Challenger disaster had a major impact on the Galileo spacecraft launch date. The earliest planned launch date was January of 1982. There were delays caused by the process of developing and improving the space shuttle. And by the lack of an alternative plan to launch via a conventional rocket. The Challenger disaster occurred on January 28, 1986. Galileo finally launched October 18, 1989 with a substantially less powerful solid-fuel booster. The Galileo spacecraft fired its braking thruster on December 8, 1995 and became the first man-made object to orbit the planet Jupiter.

The Galileo spacecraft completed 35 orbits around Jupiter over the following eight years. Its mission ended with the planned deorbit and entry into Jupiter's vast atmosphere on September 21, 2003. The Galileo mission gathered a wealth of information and images of Jupiter and its moons which will be studied for years to come.

I have at this time what are considered to be nine of the most important discoveries made by the Galileo Mission.

1. Galileo made the first observation of ammonia clouds in another planet's atmosphere. Jupiter's atmosphere creates ammonia ice particles from material coming up from lower depths.
2. The moon Io was confirmed to have extensive volcanic activity that is 100 times greater than that found on Earth. The heat and frequency is reminiscent of early Earth.
3. Complex plasma interactions in Io's atmosphere create immense electrical currents which couple to Jupiter's atmosphere.
4. Several lines of evidence from Galileo support the theory that liquid oceans exist under Europa's icy surface.
5. Ganymede possesses its own substantial magnetic field – the first satellite known to have one.
6. Galileo magnetic data provide evidence that Europa, Ganymede, and Calliso have a liquid-saltwater layer under the visible surface.
7. Evidence exists that Europa, Ganymede, and Callisto all have a thin atmospheric layer known as a "surface-bound exosphere".
8. Jupiter's ring system is formed by dust kicked up as interplanetary meteoroids smash into the planet's four inner moons. The outermost ring is actually two rings, one embedded with the other. There is probably a separate ring along Almathea's orbit as well.

9. The Galileo spacecraft has identified the global structure and dynamics of Jupiter's magnetosphere.

These are only the highlights of the results from Galileo's eight years in orbit around the gas giant Jupiter. And this is not the end! In April 2012 the European Space Agency recommended Project JUICE over two other major projects. Project JUICE stands for JUpiter ICy Moon Explorer. This is a very large budget planned return mission to the Jovian system focusing in particular on the three Galilean moons, Ganymede, Callisto, & Europa. It will study these three worlds, all thought to have significant bodies of liquid water beneath their surface. The planned launch is in 2022 via an Ariane 5 Rocket. It will contain a myriad of complex scientific instruments along with cameras. It is hoped to provide evidence that liquid water does exist below the frozen surface of these large Jovian moons.

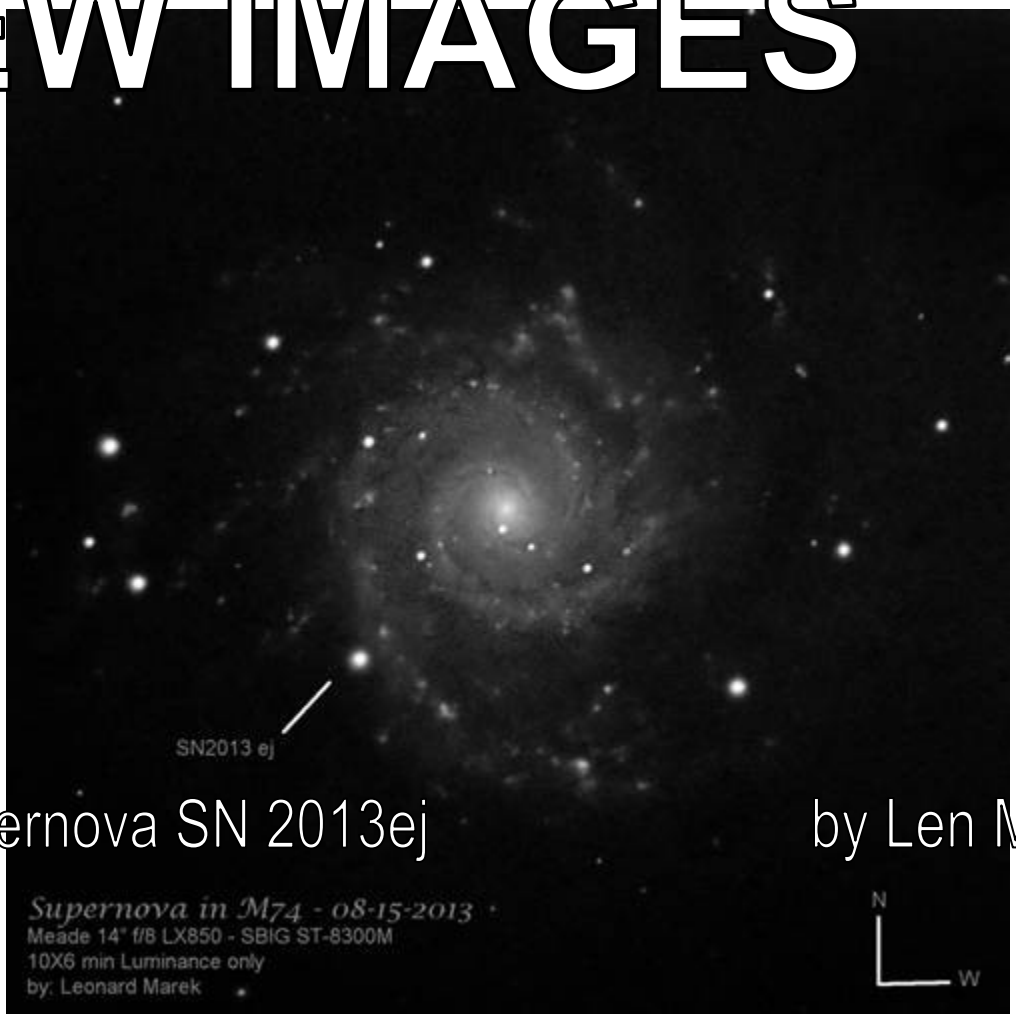
Article by Gary Smith,
ACA President.

SPECIAL ANNOUNCMENT
GENERAL MEMBERSHIP
MEETING SEPTEMBER 27
AT THE TUDOR HOUSE

The Guest Speaker for our September 27, 2013 ACA Meeting is Mr. Gary Kader, Director of the Burrell Memorial Observatory. The Burrell Memorial Observatory houses a Warner & Swasey 13 3/8inch refracting telescope which is the largest refractor between here and Pittsburgh. It is on the campus of Baldwin Wallace University. The topic of Mr. Kader's presentation is a subject that goes to the very core of modern astronomy: The Big Bang Theory. For more information on our September 27th guest lecture with very informative links, please visit the ACA website at www.acaoh.org .

Article by Gary Smith,
ACA President

NEW IMAGES



Supernova SN 2013ej by Len Marek

MOONS

A H Y Q U G R V H Q R E N H Q D K C L G
Q T P S B Q Z S A S A H Y O C A C Y Z N
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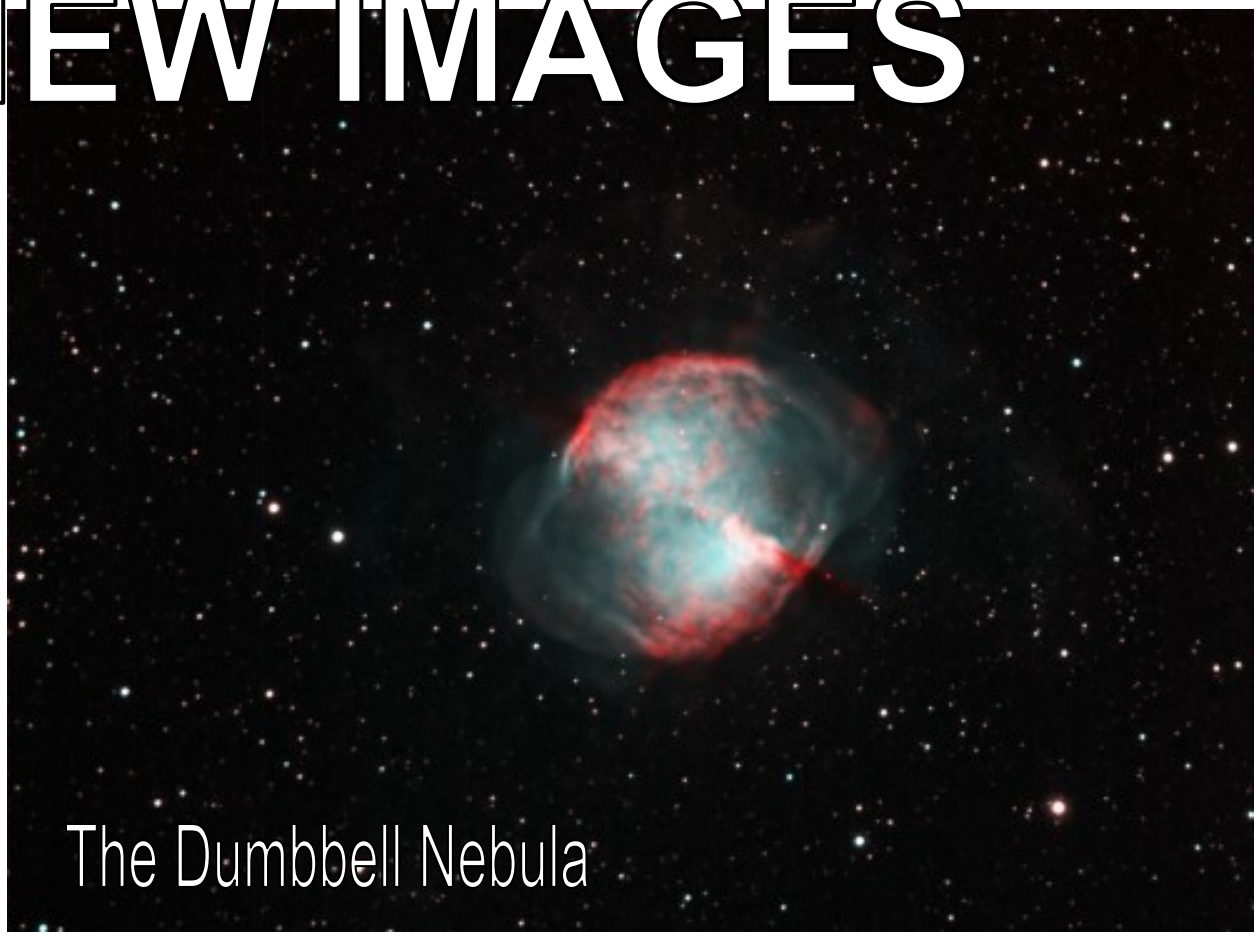
ARIEL
CALLISTO
CHARON
DACTYL
DEIMOS
DIONE
DYSNOMIA
ENCELADUS
EUROPA
GANYMEDE
HYPERION
IAPETUS
MIMAS
MIRANDA
NEREID
OBERON
PHOBOS
PHOEBE
PROTEUS
PUCK
RHEA
TETHYS
THEMOON
TITAN
TITANIA
TRITON
UMBRIEL

NEW IMAGES

Globular Cluster M15

Galaxy NGC7331 by Len Marek

NEW IMAGES



The Dumbbell Nebula

Nova Delphini 2013 by John Crilly

THE ASTRONOMY CLUB OF AKRON

OCTOBER 2013 ACTIVITIES CALENDAR

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3 Uranus at opposition 14h UT.	4 STOW ASTRONOMY PUBLIC EVENT (www.stowastronomy.org)	5 New Moon 0:34UT ACA OBSERVATORY PUBLIC EVENT 7:00p
6	7	8	9 Mercury greatest elongation at 10h UT. (morning sky 25°)	10 Moon at perigee (closest) at 23h UT.	11 First Quarter 23:02UT STOW ASTRONOMY PUBLIC EVENT (www.stowastronomy.org)	12
13	14	15	16	17	Full Moon 23:38UT 18 STOW ASTRONOMY **PENUMBRAL LUNAR ECLIPSE. MID AT 23:50UT. MOONRISE AT 22:30UT.**	19
20	21 **ORIONID METEOR SHOWER PEAKS.**	22	23	24	25 ACA MEMBERSHIP METTING (KIWANIS) 8:00p Moon at apogee (farthest) 14h UT.	26 Last Quarter 23:40UT ACA OBSERVATORY PUBLIC EVENT 7:00p
27	28	29	30	**HAPPY HALLOWEEN** 31 		**AKRON, OH** **SUNRISE** OCT 1 7:23AM EDT OCT 31 7:56AM EDT **SUNSET** OCT 1 7:08PM EDT OCT 31 6:23PM EDT

EST = UT - 5 hrs, EDT = UT - 4 hrs

The Night Sky
Newsletter of the Astronomy Club of Akron
c/o Jason Shinn, Editor
1025C Hemlock Hills Dr.
Akron, OH 44313

The Astronomy Club of Akron
c/o Glenn Cameron
8019 Glendevan St. NW
Massillon, OH 44646-9018

Yes! I want to become a member of the Astronomy Club of Akron
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(PLEASE PRINT)

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CITY: _____ STATE: _____ ZIP: _____

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Astronomy Club of Akron annual memberships renew in the month of May.

ADULT (ages 18 and older) ___$30.00
ADDITIONAL ADULT member ___$15.00
JUNIOR (ages 12 to 17) _____$15.00
FAMILY MEMBERSHIP _____$40.00

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