



The High Desert Observer

The Bulletin of the Astronomical Society of Las Cruces

Sharing the Universe with our Community for over 60 years

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The Astronomical Society of Las Cruces (ASLC) is dedicated to expanding public awareness and understanding of the wonders of the universe. ASLC holds frequent observing sessions and star parties and provides opportunities to work on Society and public educational projects. Members receive the *High Desert Observer*, our monthly newsletter, plus membership to the Astronomical League, which includes their quarterly publication, *Reflector*.

Individual Dues are \$30.00 per year
 Family Dues are \$36.00 per year
 Student (full-time) Dues are \$24.00

Dues include electronic delivery of the *HDO*. Prorated dues are available for new members. Dues are payable to ASLC with an application form or note to: Treasurer ASLC, PO Box 921, Las Cruces, NM 88004

ASLC members are entitled to a \$5.00 (per year) Sky and Telescope magazine discount.

ASLC Board of Directors, 2014

Board@aslc-nm.org

President: Rich Richins; President@aslc-nm.org
 Vice President: Steve Shaffer; VP@aslc-nm.org
 Treasurer: Patricia Conley; Treasurer@aslc-nm.org
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 Director-at-Large: Tracy Stuart; Director1@aslc-nm.org
 Director-at-Large: Jerry Gaber; Director2@aslc-nm.org
 Immediate Past President: csterling@zianet.com
 Director Emeritus: Walter Haas

February Meeting ***meeting room changed***

Our next meeting will be on February 28, 2014, at the DACC Main Campus, Room 141, Technical Studies Building, starting at 7:00 pm.

Our guest speaker will be Dr. Chris Churchill (NMSU Astronomy Department) who will discuss "Our Quest to Understand Galaxies."

Outreach

Outreach is a very important part of ASLC. We are always looking for more volunteers to help us educate the public. Even if you do not have a portable telescope to bring to the events, please consider attending our public outreach programs to help answer questions, share knowledge and point out constellations in the sky.

Events

ASLC hosts deep-sky viewing and imaging at our dark sky location in Upham. We also have public in-town observing sessions at both the International Delights Cafe (1245 El Paseo) and at Tombaugh Observatory (on the NMSU Campus). All sessions begin at dusk.

At our Leasburg Dam State Park Observatory, we hold monthly star parties. Located just 20 miles north of Las Cruces, our 16" Meade telescope is used to observe under rather dark skies.

Please see *Calendar of Events* for specific dates and times.

Annual Dues

Please note that annual dues were due in January. Please contact our Treasurer, Patricia Conley (treasurer@aslc-nm.org) for further information. Dues can be paid at the next meeting or via mail, sent to Treasurer ASLC, PO Box 921, Las Cruces, NM 88004.

Committee Chairs

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Leasburg Dam: Ron Kramer; ronkramer@aol.com

Jerry Gaber; jerrygaber@gmail.com

Tombaugh: Steve Shaffer; VP@aslc-nm.org

Outreach: Chuck Sterling; csterling@zianet.com

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 Night Sky Network: OPEN

The President's Column

Random Outreach Musings

I just took delivery of a 10" f/4.7 Orion Newtonian reflector telescope. It needs some cleaning and a new (Dobsonian) base, but otherwise looks to be in decent shape. The scope was generously donated by Becca Krebs. I've got it in my garage right now, and will begin constructing a new base for it. With luck, we should be able to roll it out in a month or two. It's compact enough to easily lug to Moongazes and school star parties, and big enough to really help our outreach efforts. I think that it's wonderful for our community to think of donating scopes to the club, and it's equally wonderful that Ms. Krebs was able to easily find us. She simply 'Googled' the club, and our most excellent club web site magically appeared. That (IMHO) is an effective use of one of our outreach tools.

Our Facebook page continues to improve it's following. We're up to 62 'likes', and some posts have received close to 200 hits. More and more folks are posting to the site, which makes the site more interesting to look at which (in turn) brings in more followers. Thank you for posting or liking or following the site. It's just another tool that we are beginning to use effectively to get the word out. Facebook has set our next goal – 100 likes. So talk it up, people. Remember, we have a mission to surpass that club up north for the number of 'likes'. A month ago, they had 400 times our number of likes. Now, TAAS is down to only 14 times our followers. Watch out Albuquerque!!



Ron is actively seeking input for new ASLC shirt colors. A lot of us wear our shirts or hoodies to outreach events, but consider wearing your shirt (or hoodie or hat) around town. If somebody asks about it (or even if not), be ready to give your best 20-second elevator speech on our great club and the neat things that we do. If you don't have one, get some 'official' ASLC business card to pass out to interested folks to keep them aware of who we are and what we can do for them.

Finally, I vacationed at Glacier National Park this past summer. A couple of times, a volunteer came walking through the campground to personally invite people to come out to the observing session that evening. I'm thinking that we should do something like that when we do solar and evening observing at Leasburg. As the weather warms, more and more people will be using the park. We need to get the word out more effectively to the people staying at the park to come by for a fun and free day/evening of observing. Some better signage might help, but the personal touch of walking around the campgrounds would (I think) have a very positive effect. It could even end up being a lot of fun.

Outreach Events for January and February, 2014

by Jerry McMahan and Steve Shaffer

Friday, January 10; NMSU Open House

Steve Shaffer operated the club's 12.5-inch Cassegrain at the Clyde Tombaugh Observatory. He was assisted by Jerry McMahan. I was in charge of clicking the counter to keep track of how many visitors we had. I have found that I can't click and talk at the same time, but we had about 80 people observe. The terminator was near Copernicus so it made for a good phase to observe the Moon. Jupiter and all four Galilean satellites were visible five days after opposition. Steve did point at Jupiter later in the evening, but we were on the Moon most of the time.

Saturday, January 11; Sky Safari

Steve Shaffer opened the club dome for the second consecutive night, for the Sky Safari open house. The night before, Steve predicted that not many people would show up because of the open house on Friday. He was right. He said he only had about 7 observers show up. I could have handled 7 clicks on the counter, but I was at Moongaze.

Saturday, January 11; Moongaze

Chuck Sterling set up his 10-inch, Rich Richins brought his 115 mm Apochromatic refractor, Jerry McMahan had the usual 125 mm Maksutov and Sid Webb came to help out. Steve Shaffer also showed up after he finished up at the Sky Safari open house.

The Moon had a phase that showed the interior of the crater Gassendi in darkness while the top of the central peak appeared as a bright spot as it caught the rising Sun. That is a situation that most of the spectators found interesting.

Jupiter was visible with all four large moons early on. Callisto passed behind Jupiter early in the evening, so then there were three. Later in the evening (10:00), Io passed in front of Jupiter with its shadow following behind 8 minutes later, so now there were two little Moons. A few hours later Europa was scheduled to pass in front, but we were gone by the time (then there was one?). I see a mystery novel in this. Ganymede was the Butler! Don't steal my idea. The Red Spot was also visible during the evening.

Both Rich and Steve saw the Red Spot. Steve saw Io's shadow. I couldn't see either one.

Friday, January 24; Highland Elementary

We have not had much luck at this school the last couple of years. The weather has been bad and it did not look like this would be any different. Only Jupiter could be seen through thin clouds. When it was time to get started, the clouds suddenly started to clear out and we had a successful star party.

This was also a club meeting night, but we still had a number of telescopes set up. Chuck Sterling, Tracy Stuart, Steve Shaffer, Nils Allen, Bert Verstraete and Jerry McMahan set up scopes. We did not have a Moon, but Jupiter and a number of deep sky objects were observed.

Saturday, January 25; Leasburg Dam Park

For the first time in four months we had clear skies at the part observatory. There were two sessions. An afternoon session was devoted to the Sun. Rich Richins set up the single stack hydrogen-alpha scope. Mike Zura also set up for the Sun.

The evening session involved the 16-inch in the observatory and several scopes that were set up outside the building. Mike, Rich, Ed Montes, Daniel Giron, Sid Webb, Chuck Sterling, Jerry Gaber, Ron Kramer and Jerry McMahan participated. We may have had more club members than members of the public to look through the scopes.

Chuck put the 10-inch on the galaxy M82. It was the first time that Chuck, or myself, had ever seen a super nova through a telescope.

Monday, January 27; Mayfield High School

We had a rare night-time event at a high school. For the third consecutive star party, we had a clear night. Ed Montes, Nils Allen, Rich Richins, Tracy Stuart, Bert V, Chuck Sterling and Jerry McMahan participated.

The Pleiades were a perfect fit for my 120 refractor. Ed had his small refractor. Chuck Sterling pointed his 10-inch at the super nova in M82. Rich Richins set up a six-inch Dobsonian and let people point the scope themselves, mostly at Jupiter. Tracy and Bert had their eight inch Schmidt Cassegrains. Tracy had a double star that could easily be mistaken for Alberio.

Saturday, February 1; Museum of Natural History

Chuck Sterling and Ed Montes did a solar telescope session at the museum. They both had white filters on refractors. They set up from 9:00 am to 1:00 pm. Chuck said they had a good showing of sunspots. The NMSU astronomy department also participated with a hydrogen-alpha scope, but clouds prevented it from working well.

Friday, February 7; Tombaugh Observatory NMSU Open House

We had 77 people look at the Moon through our telescope Friday evening. A bit of haze moved in about the time we finished.

Jerry McMahan and I make a good team, he knows about what we are viewing and I know how to work the telescope.

Saturday, February 8; Moongaze

Steve Shaffer, Chuck Sterling and Jerry McMahan set up telescopes at International Delights. Daniel Giron also stopped by. Daniel wants to get permission to set out information about club events inside the restaurant, in the rack with the free papers. The owner is in Virginia, but I am sure he will give permission when he gets back. Good idea Daniel.

The seeing conditions were pretty good early on. The Moon had the crater Copernicus with the rim showing, but it was still dark at the bottom. Chuck had Jupiter and the Moon Ganymede was in transit. An hour later its shadow began to cross the planet. I told you that Ganymede was a shadowy character.

Two different families had girls about 10 year old, that were fascinated by the telescopes. Both told their parents that they wanted to join the club. Both sets of parents seemed to like the idea. Maybe they will attend the club meeting.

Calendar of Events: February - March, 2014 (Mountain Time - 24 hr. clock)

FEB 27	14:24	Moon - Mercury Conjunction
28	19:00	ASLC MEETING, Room 141, DACC Main Campus, Technical Studies Bldg.
MAR 01	01:00	New Moon
01	Dusk	DSO Upham
06	19:00	OUTREACH; Central Elementary
07	15:07	Moon - Aldeberan Conjunction
07	20:00	OUTREACH; NMSU Open House; Tombaugh Observatory
08	06:27	First Quarter Moon
08	Dusk	OUTREACH; MoonGaze; International Delights
08	20:00	OUTREACH; Sky Safari; Tombaugh Observatory
09		Daylight Saving Time starts (set clocks ahead one hour)
11	19:00	OUTREACH; Desert Springs Christian Academy
16	11:08	Full Moon
18	14:38	Moon - Spica Conjunction
18	21:14	Moon - Mars Conjunction
20	10:57	Vernal (Spring) Equinox
20	21:40	Moon - Saturn Conjunction
22	Dusk	OUTREACH; Leasburg Dam State Park Observatory
23	19:46	Last Quarter Moon
26	09:06	Moon - Spica Conjunction
28	19:00	ASLC MEETING, Room 141, DACC Main Campus, Technical Studies Bldg.
29	Dusk	DSO Upham; Messier Marathon
30	12:45	New Moon

Be sure to visit our web site for the latest updates: www.aslc-nm.org

January 2014 Meeting Minutes by John McCullough

Show & Tell

A Show & Tell segment was not presented at tonight's meeting.

Call to Order

Rich Richins, President, Astronomical Society of Las Cruces (ASLC, the Society), called the January business meeting to order at 7:21 pm, 24 January 2014, Room 147, Doña Ana Community College (DACC), Las Cruces, New Mexico.

President's Comments

The President, Rich Richins, welcomed the group to tonight's meeting. Rich announced there had been a disconnect in scheduling a meeting location with DACC, resulting in the last minute relocation to Room 147. This also necessitates vacating the room by 8:30 pm, thus the earlier Call to Order to accommodate tonight's presentation. Rich welcomed new member Oscar Pilhoefer and returning members Emile Bourdet and Steve Henderson.

Secretary's Report

The Secretary, John McCullough, reported that the minutes for the November 2013 meeting, the last regular meeting of 2013, were submitted for publication in the December issue of the Society newsletter, the High Desert Observer (HDO). Robert Williams moved that the minutes be accepted as submitted, Ron Kramer seconded and the motion passed by acclamation. There was not an additional Secretary's report.

Treasurer's Report

The Treasurer, Trish Conley, reported on the status and balances of the Society's accounts. There was not an additional Treasurer's report. She also has a RASC handbook and calendar for purchase.

Committee Reports

Apparel

Ron Kramer, acting Chairman, reported he is putting together an order for ASLC apparel including a golf shirt. He has an example of the shirt available for examination. He expects the shirts to cost \$30 each and asked the members present to vote on the choice of colors tonight. Also, a full-time/permanent chair for this activity is needed.

Library

Brenner Fody, Society Librarian, was not present. There was no Library report.

Loaner Telescopes Program

Ron Kramer, Program Coordinator, reported there are four (4) scopes active in the program and two (2) that need some work. These include a classic 4" Unitron refractor, a 12" Dobsonian, and two (2) ETX 90's available and a 10" Dobsonian that is in work. The fee is \$10/month or repair one of the non-working telescopes in exchange for two months use.

Membership

John McCullough, Committee Chairman, asked that members and visitors please register on the sign-in sheets. Ron Kramer reported that the supply of Society brochures is almost exhausted and he is considering updates prior to the next print run.

Outreach

Chuck Sterling, Outreach Coordinator, and Steve Shaffer, Tombaugh Observatory Chairman, are both supporting outreach events tonight. Jerry Gaber, ASLC Observatory at Leasburg Dam State Park (LDSP) Co-chairman, announced a 3rd Quarter Moon event at LDSP on 25 January.

There were no additional officer or committee reports.

Old Business

There was no old business for discussion.

New Business

There was no new business for discussion.

Ron Kramer moved to adjourn the business portion of tonight's meeting, Robert Williams seconded. The business meeting concluded at 7:31 pm.

Announcements/Awards

There were no awards announced.

The recently discovered super nova in M82 was discussed.

There were no additional announcements made.

Presentation

This month's presentation was by New Mexico State University (NMSU) adjunct professor and Society member Bill Stein. His topic was *The November 03 2013 Hybrid Eclipse: An Experience from Kenya*. Bill started by discussing the mechanics of eclipses involving the earth, moon and sun. He also talked about the dynamics of the system and the SAROS cycles. Bill and his wife participated in the Sky & Telescope (magazine) safari and eclipse viewing as part of a group of thirty people. After several days of safari and wildlife viewing, the group set up in Sibiloi National Park on the shore of Lake Turkana. Unfortunately, the weather didn't cooperate as wind and rain blew in just before the beginning of the eclipse. Bill did have some images of the Bailey's Beads and diamond ring effects to display. Although disappointing for eclipse viewing, Bill enjoyed the experience overall.

Rich Richins announced that ASLC now has a Facebook page. He encourages everyone to visit and like it. The Albuquerque Astronomy Society (TAAS) has more than 1000 likes; he'd like to surpass that.

ALCon 2015 will be 08 - 11 July 2015 in Las Cruces. Ron Kramer will be contacting the members that committed to volunteering soon. He noted that IDA, AAVSO, and ALPO may also hold conventions in Las Cruces at the same time.

There will be an Outreach event at Mayfield High School on 27 January. Clyde Tombaugh Day at the Las Cruces Museum of Nature and Science will be 01 February. Volunteers are needed for both events.

The January meeting of the Astronomical Society of Las Cruces concluded at 8:22 pm.

-Respectfully submitted by John McCullough, ASLC Secretary

Back at the Telescope by Berton Stevens

As early astronomers applied Kepler's laws to the planets, they discovered a seeming gap between Mars and Jupiter. They had come up with the Titus-Bode Law that appeared to fit the orbits of the Solar System's known planets. This law predicted a planet between Mars and Jupiter, so astronomers set out to find this missing planet.

The first discovery was asteroid (1) Ceres, which was discovered on January 1, 1801. Giuseppe Piazzi at the Academy of Palermo, Sicily, was looking for a "Zodiacal star" when he happened across a star moving much like a planet. He first thought that it was a comet. After observing it on a number of days, its slow, uniform motion, made him think that it must be something else. His initial announcement was to two other astronomers on January 24, 1801. In April he sent his twenty-four observations to three other astronomers and the observations were published in September.

By that time, Ceres was near the Sun and not observable. Later in the year, Carl Friedrich Gauss developed a fast and efficient method of orbit computation and provided a prediction where to look for it. On December 31,

1801, Franz Xaver von Zach and Heinrich W. M. Olbers found Ceres near the predicted position. This confirmed the discovery and improved the orbit. The Minor Planet Center reports 6,423 observations in its database for Ceres, starting in January 1802. It orbits the Sun every 4.60 years.

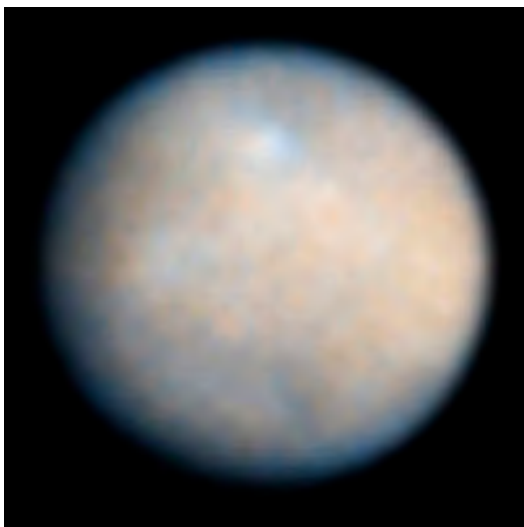
Ceres is the largest asteroid between Mars and Jupiter. It becomes as bright as magnitude 6.7, so it is a naked-eye object in a very dark site. Ceres is certainly an easy object with any type of optical aid. It is currently in the morning sky and will be in opposition in mid-April at magnitude 7.0. (1) Ceres and (4) Vesta will be 7.6 minutes-of-arc apart on June 30, 2014.

Ceres is only 605.4 miles across, much smaller than even our Moon (2158.8 miles across). But it has enough mass to pull itself into hydrostatic equilibrium, which means that it is essentially spherical. This is unlike most of the asteroids that are irregular in shape. Ceres probably has a rocky core with a sixty-mile-deep mantle overlaying it. It rotates about its axis every 9 hours and 4 minutes.

Recent observations from the Herschel Space Telescope have shown that there are deposits of ice on the surface of Ceres. Ice on a body closer than 460 million miles from the Sun gets warmed enough by sunlight to sublimate into water vapor. Since Ceres is well inside this limit, the ice on its surface is emitted as water vapor and that is what the Herschel Space Telescope detected.

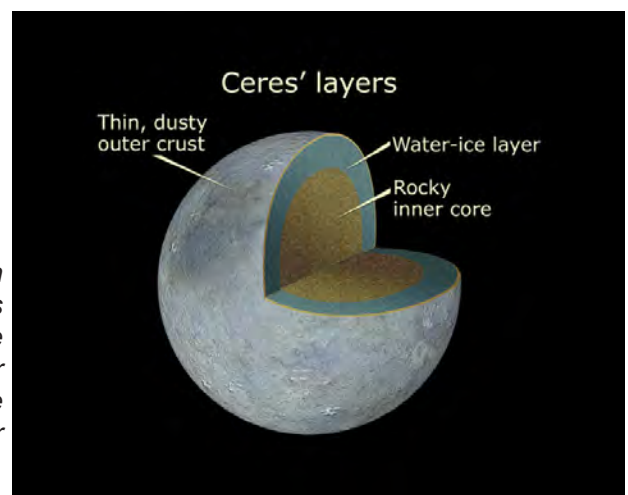
If you ask what the difference is between a comet and an asteroid, the answer is that a comet emits gas and dust into space around it. A number of recent comet discoveries are moving star-like objects that have a slightly bigger seeing disc than the stars in the image, implying that the comet is emitting some gas and/or dust. This makes it appear larger than the surrounding stars.

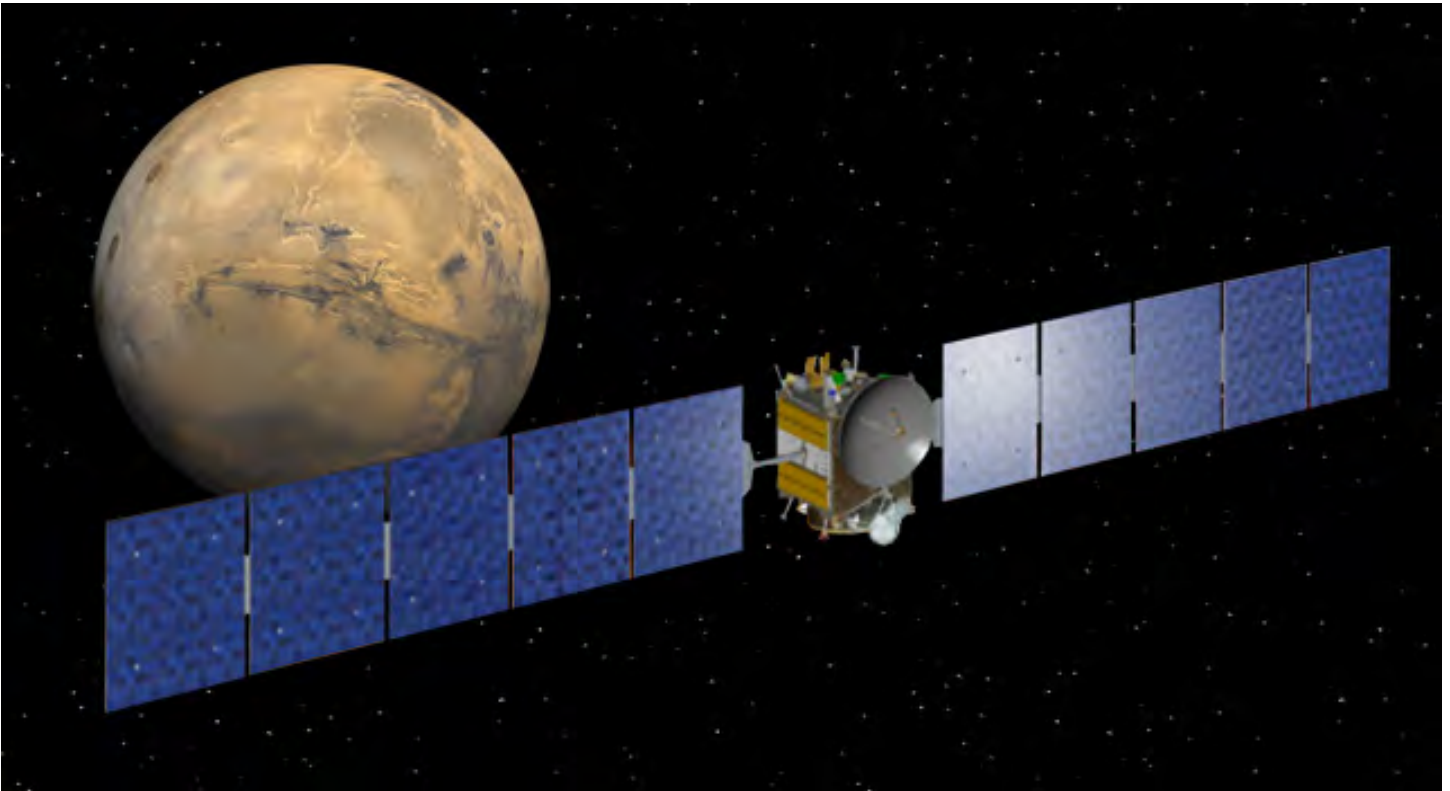
But if the only difference is that comets emit gas into space, and Ceres is emitting a gas (water vapor) into space, does that not make discoverer Giuseppe Piazzi correct in his initial assumption that Ceres is a comet? We will find out much more about Ceres in the spring of next year when the Dawn spacecraft arrives next to the dwarf planet and begins to send back images and data about it. The images and data that Dawn sends us from Ceres will be extremely interesting as it teaches us more about the smaller objects in our Solar System.



The Hubble Space Telescope has taken a number of images of Ceres. This one is from January 23, 2004. It was taken by the Advanced Camera for Surveys (ACS) and has been enhanced to sharpen the features. The brighter and darker regions could be from asteroid impacts. They could also simply be different materials on the surface. Credit: NASA, ESA, J. Parker (Southwest Research Institute), P. Thomas (Cornell University), L. McFadden (University of Maryland, College Park), and M. Mutchler and Z. Levay (STScI)

Here is a cutaway view of Ceres. The central rocky core is covered with a 60-mile thick mantle and a thin layer of dust. Recent observations or water vapor indicate that there are probably areas of ice on the surface. These areas are less than 36 miles across. The water vapor could be from this ice sublimating, or a cryo-geyser from deeper in the planet. Dawn should give us deeper insight into the observed water vapor.





Dawn coasts past the planet Mars on its way to the asteroid belt. Dawn has an ion rocket engine that has been firing for much of the mission. First it pushed Dawn out to the asteroid belt, then slowed it down to orbit (4) Vesta. After studying Vesta, the ion engine pushed it out of Vesta's sphere of influence and on toward Ceres.

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Image of the Month

The *Image of the Month* on the next page was taken on January 26, 2014 by ASLC President, Rich Richins, using his C-11 @ f6.3 from Leasburg Dam State Park in Radium Springs, New Mexico. It represents a little over 2 hours of exposure time at ISO 1600 in 5-minute subs.

This object, formally known as Barnard 433 (from the *Barnard Catalogue of Dark Markings in the Sky* [*Barnard's Catalogue* for short] is better known to most astronomers as the Horsehead Nebula. Located in the constellation Orion, the Horsehead is a dark nebula in the foreground of emission nebula IC 434. It is about 1,500 light years away.

The red/pink glow behind the Horsehead is primarily Hydrogen gas which is ionized by the bright star Sigma (σ) Orionus and the dark nebula itself is mainly dust, and you can also see the shadow of the dark nebula to the lower left.

We just happen to be at the right place, at the right time. In about 100,000 years (or less), this dust will dissipate (due to stellar winds) and will be almost unrecognizable as a horse's head. Likewise, if our Solar System was not in it's present location, we would be viewing this object from a different angle, and would be calling it something entirely different.

