

Cache Valley Clear Skies

The Journal of the Cache Valley Astronomical Society



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www.cvas-utahskies.org

No Meeting This Month – July Star Parties

There is no club meeting scheduled for July. During the summer months, we instead, concentrate on getting outside for club (private) and public star parties.

The weekend of July 12th – 14th, the Ogden Astronomical Society will be camping and having a star party at the Monte Cristo Campground. Our club is also invited to participate in this. It is best to get a campsite in either loop D or loop E so that you will have easy access to the meadow where the telescopes will be. We are also invited to help out with a star party at Fossil Butte National Monument (near Kemmerer, WY) on July 14th. Either of these events will afford you with **great** dark skies.

We will also have a public star party at Nibley Park on July 20th.

Elections for Officers in September



WE WANT YOU!

September may seem like a long-ways away, but we want you to begin thinking about running for office. There will be one or more open officer positions this year, so please consider the opportunity to run for a club officer position. You may run for any office.

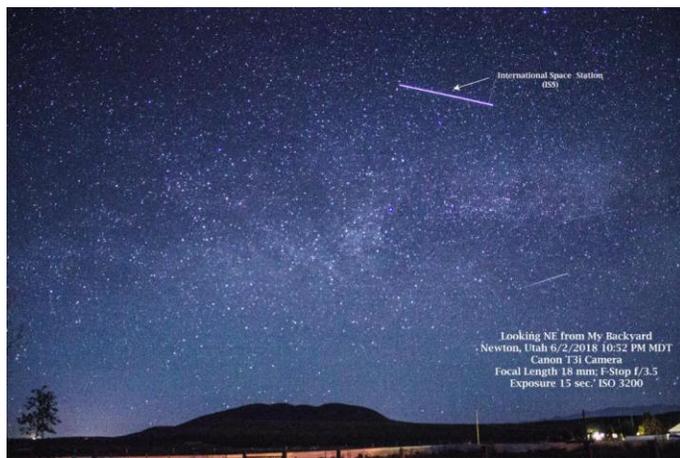
The President's Corner By Dell Vance, CVAS President



June has been a very good month for CVAS Star Parties and out-reach opportunities. The month began with Tom Westre teaching his annual Astronomy Class for the Summer Citizens. He had a very large class this year. CVAS was able to host a Star Party for them at the end of their course. It

was a very good night for all involved. That Saturday, we presented the Logan Library with the Loaner Telescope. They began loaning it out the week of June 18th. We had our annual Pot-Luck Dinner at the Nibley Heritage Park on June 16th. The party was great, but the skies were mostly cloudy. Three of us toughed it out and were able to see some objects. The next opportunity was a Star Party for the USU Married Students on June 18th. We had a very good event with them. We had 5 telescopes and six of our members there to show them the skies. There was a lot of interest among the participants. On June 22nd we hosted a Star Party for the Nibley Cub Scouts at the Cinnamon Creek Campground. The cubs were enthusiastic about seeing the stars, but the clouds again rolled in and they all went to bed. It was almost like it was all programmed. On June 23rd, we had a booth at the Nibley Heritage Days celebration. There were even some small sunspots to show the crowd. As I said before, it was a very good month.

I also had some success with my Astrophotography. I am scoping out sites around my yard to build an observatory. One night I took a picture of the skies to the North of my yard and managed to catch the International Space Station passing over head. It also shows some of the great skies we have here in Cache Valley.



Looking NE from Dell's backyard - Newton, UT 02 Jun, Canon T3i with 18mm lens, 15 sec exposure at ISO 3200 – Image courtesy Dell Vance

On another occasion, I was able to do some early morning observations and got a shot of Mars. Dale Hooper tells me that with the great dust storm Mars is having, this is probably about as good a shot as I was going to get.



Mars from Newton, 21 June, NexImage 5 Camera, NexStar 6SE, Stacked photos – Image courtesy Dell Vance

I was also able to get some shots of M57 (The Ring Nebula) and M51 (The Whirlpool Galaxy).



CVAS President Dell Vance presents the first Library Loaner Telescope to the Director of the Logan Library, June 9th - Image courtesy Tom Westre

On another note, we are evaluating where to put the other Loaner Telescope that we have for a Library here in the Cache Valley. There are 6 libraries in the north part of the valley and 3 libraries in the south part of the valley (including Logan). I am looking for input from the CVAS Membership as to which library we should choose. If you have a desire to have the library near you receive the telescope, let me know. Of course, only libraries will be considered if they have some member of CVAS willing to be the Library Liaison for that library. The duties of the Liaison are not difficult. They must be willing to do the following:

1. Visit the library every month and inspect the telescope to see if it is functioning properly.
2. Check the Collimation of the telescope using the provided Collimation Cap. This requires the zoom eyepiece to be removed and the collimation cap to be inserted.
3. Correct the Collimation if it needs to be adjusted. In most cases there should be no need for any major adjustment.
 - a. If the Primary Mirror requires to be adjusted, it can be done using the three locking nuts at the mirror end of the telescope.
 - b. If the Secondary Mirror requires adjustment (Very rarely needed), it can be adjusted using a 2mm allen wrench.
4. Check the eyepiece for finger prints or dirt and clean if needed.
5. If more work is required, the telescope should be pulled from the Library and CVAS will make the repairs.

All tools and supplies will be provided by CVAS to the Liaison as needed. It should not require more than ½ hour each month in most cases. The Owner's Manual will be given to each Liaison to help them complete the tasks. If you feel that you can provide this support, be sure to let me know. If you want to recommend a library, volunteer as a Liaison.

Hopefully we will see a lot of requests to get more telescopes into libraries as the program gets going.

July should be a great month as well for activities. I hope to see you out to the events as they come up. Thanks again for your support.

Clear Skies!



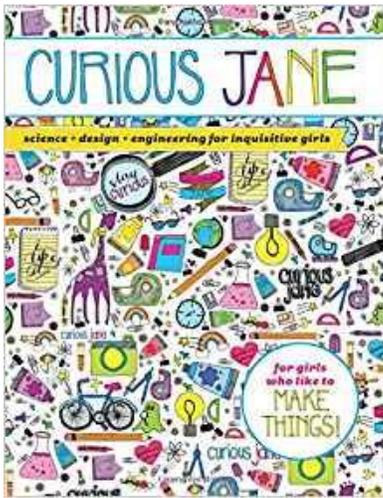
Core of the Andromeda Galaxy (M31) - 2 minute, unguided, unprocessed test image (ISO 1600, Canon T2i, 14" Edge HD with .7x reducer, AP 1600Gto) – Image from Dale Hooper

Kidstronomy Corner

By Bonnie Schenk-Darrington

One thing I have been pondering a lot lately is getting girls interested in science and technology. I liked science starting in about seventh grade; before then, the science curriculum at school seemed quite patchy. I don't remember having a lot of meaningful instruction in it. In high school, I might not have done as much with science, but I had a very cute boyfriend who talked me into taking AP Biology with him. I later took AP Chemistry with him, too. I'm proud to say that I took and passed both tests, and later enjoyed many more biology and chemistry classes in college.

It seems to me that, in these more enlightened times, we can do better than hoping our girls' hot boyfriends will drag them along on their science journeys. We have many resources now to help introduce and attract girls to STEM fields, including astronomy and its related disciplines. It was with the desire to sample these resources that I picked this month's books.



Girls Dream Out Loud, Inc. 2017. *Curious Jane: Science + Design + Engineering for Inquisitive Girls*. New York: Sterling Children's Books. Ages 6 – 11 years, \$9.49 on Amazon.com https://www.amazon.com/Curious-Jane-Science-Engineering-Inquisitive/dp/1454922354/ref=sr_1_1?ie=UTF8&qid=1530423551&sr=8-1&keywords=curious+jane



(2 out of 5 planets)

Curious Jane/Girls Dream Out Loud is a business that runs summer camps and workshops for girls in New York City, as well as publishes a magazine. The book title word that captured my attention as I browsed science books geared toward girls online was *engineering*. As you all know, my daughter Alannah wants to be an aerospace engineer/astronomer. Engineering was not even on my radar when I was in high school and college; I have found her journey quite fascinating. So, I chose this book with the idea that it might have some fun engineering projects for beginners like me, and not-so-beginners, like her.

And I wasn't wrong, but . . .

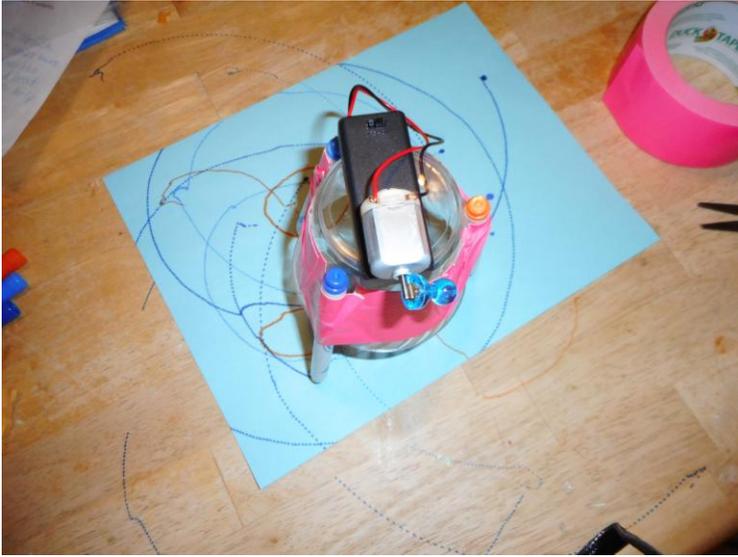
First of all, I might be an unnecessarily harsh reviewer of this book. As a freelance book editor, I have been editing children's craft and science project books for many years. I know what types of information a good craft/science book contains. This book does not contain that information. Secondly, I'm such a novice to engineering, I might need more detailed instructions than people who know what they're doing would. I'm stunned this

book didn't explain some of the details of the projects better. Thirdly, most of the projects in this book have very little to do with science or engineering. Many of the projects are straight-up arts-and-crafts projects. Examples of craft projects include the "Nature Walk Bracelet" (p. 15), "Wishes + Dreams Jar" (p. 16), "T-Shirt Pillow" (p. 122), "Snow Globes" (p. 114), "Glitter Jars" (p. 102), and so on. I would say over half the projects are crafts with no real science component.

My girls both found the book engaging, as did my boy. The book design tends toward the colorful, with lots of photos, and comments like "Awesome!" in funky fonts in the margins. All three of my kids found projects they'd like to try. One of the more sciencey projects was "Fizzy Bath Bombs" (p. 46), so I decided we'd try that one. Also, I know that robotics is an exciting field right now, and something I know positively nothing about, so I decided I would try to make "Draw Bot" (p. 56).

At this writing, we haven't made the bath bombs yet, but I am highly annoyed at the process of buying the stuff to make them. Most of the items on the ingredient list are things we already have: Epsom salts, olive oil, and so on. One of the ingredients, though, was citric acid. I've heard of it, but I didn't really know anything about it. I did various Internet searches for it at craft stores that sell soap-making supplies, like JoAnn's and Michael's, and couldn't find it. I was about ready to just order some from Amazon.com when I found it at Walmart.com, where I found out it's a supply commonly used in home canning, and very easy to find at a grocery store. In any decent craft or science book, the author would kindly tell you this—I know this because I not only use those books, I edit them! The closest the authors ever come to telling you where to get supplies is on p. 128, where they list their favorite suppliers. "Your local supermarket" did not make the list.

I felt further frustration when I checked out the list of supplies to make my Draw Bot, which is a little robot with three magic markers for legs. You turn it on and it wiggles around, drawing circles. The list requires, among other things, "two AAA (1.5) volt batteries; AAA battery housing with switch; . . . motor with rotating rod; Mabuchi FA-130 Motor."



Draw Bot- Image courtesy Bonnie Schenk-Darrington

I got to the end of that list and thought, “It needs two motors?” I looked at the various photos of the Draw Bot to try and figure out what the deal with the motors was. The pictures confused me worse than ever. In some of the photos, their Draw Bot clearly has a AA battery housing with one battery and no switch, instead of a AAA battery housing with two batteries and a switch. This is the first time I have ever used supplies like motors and battery housings, remember. I stared at the pictures and read the supply list and instructions over and over and *over* to try and figure this out. I finally decided that the supply list was poorly edited, and that only one motor was necessary. I also finally recognized, after shopping online for battery housings, that two completely different Draw Bots were pictured, and that it was the battery housing, and not the motor, that was different in the photographs. I’m sure any mechanically inclined person would have picked up on this immediately (I should have asked Alannah for help!), but it caused me real bafflement.

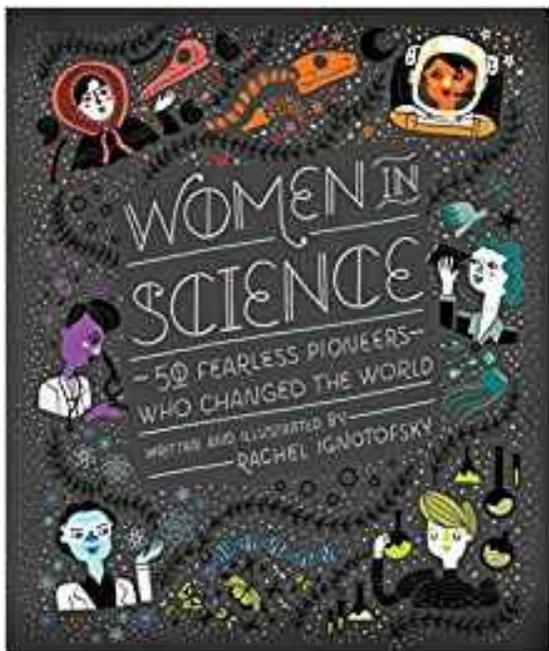
I also tried to shop for the motor and battery housing at some of the author’s preferred websites, but found the search engines on those sites lacking and ended up back on Amazon, my old standby, to buy them. Making the actual robot (at long last!) took less than 5 minutes. When I turned it on, though, I realized that my Draw Bot wasn’t making cute little concentric circles like the Draw Bot in the book. No, my Draw Bot danced right off my sheet of paper and drew all over the table, as you can see in the above photo. [Facepalm.] Again, a thoughtful

author warns you in advance about stuff that might go wrong—that an 8.5x11-inch piece of paper is not going to do the job, and that you should use washable markers (which, fortunately, I did), and so on. These authors didn’t do that.

So, while the book contains fun projects and an engaging design, the photos, lists, and instructions may not be terribly helpful to you as you do your project. True science projects are few and far between, and the engineering chapter is pretty lackluster. There were a couple of cool projects like the Draw Bot, as well as “Twinkly Fox Ears” (p. 54), where you can make a set of costume ears that light up. But there were also some “meh” projects like “Suspension Bridge” (p. 60) and “Wind-Up Rubber Band Cars” (p. 52). I mean, who gets through middle school without having made some variation on those two projects already?

Finally, I have to say this: Some of these projects will be appropriate for kids ages six to eleven, but the trouble I had finding supplies and understanding the instructions/photos suggests that the author and publisher were pretty clueless when setting the targeted age group. With adult guidance, kids that young could cope with this stuff, but it might not work all that great if you just give the kid the book and set them loose. I think tweens (ages nine to eleven) and teens are a more realistic audience for this book.

Long story short: **Don’t buy this book.** You can borrow it from me if you really want to see it. And if I come across a good science/engineering project book in the future, I will review it here!

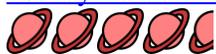


Rachel Ignatofsky. 2016. *Women in Science: 50 Fearless Pioneers Who Changed the World*. Berkeley: Ten Speed Press.

No suggested age range, but I think this book would be difficult for anyone under age 12 to read.

\$11.55 on Amazon.com

https://www.amazon.com/Women-Science-Fearless-Pioneers-Changed/dp/1607749769/ref=sr_1_1?s=books&ie=UTF8&qid=1530423937&sr=1-1&keywords=women+in+science



(4 1/2 out of 5 planets)

Hey, remember in Chemistry when you were learning about Niels Bohr, and your textbook showed a photo of him flashing his washboard abs?

Yeah, me neither.

That issue, in a nutshell, highlights what I love, love, *love* about *Women in Science*. I feel irritated when female scientists are girlyfied or glamourized. Or when they are criticized for their non-supermodel looks. It's not good enough to have a beautiful brain? Women scientists have to be young, white, blonde, and have perfect bodies, too?

Rachel Ignatofsky subverts our lookist tendencies by writing and illustrating this book impressionistically. The colorful, cartoonlike illustrations and accompanying text therefore both

illuminate these women's accomplishments and downplay their appearance.

Each scientist gets a two-page spread with a cartoon of her at work on the left page, and a brief biography surrounded by mini-illustrations on the right page. The scientists are pictured smiling, with their equipment. And the mini-illustrations and text describe their challenges and accomplishments—papers authored, Nobel prizes, discoveries made, “firsts” they accomplished, and so on. They are in chronological order, starting with Hypatia of ancient Egypt, and ending with Maryam Mirzakhani, who was born in 1977.

Race is perhaps the issue Ignatofsky sidesteps most skillfully. You may not realize Katherine Johnson was African-American (she is turquoise in the book) until you read that she got a job at NASA in the 1950s when they had more openings for African-Americans (p. 75). Likewise, Valentina Tereshkova, a cosmonaut, is probably white in real life, but in the book is tangerine-orange (p. 94). Astronomer Cecilia Payne-Gaposchkin is white with blue hair (p. 50). Race/ethnicity/nationality is definitely mentioned in the text—those things affect everyone's life. But they are not the focus. And if you look, in this book you will find accomplished women from all over the world, and from all the major ethnicities living in the United States, except Native American. (At least, none of the scientists appeared to be Native American to *me*—but it's possible I missed it. As I say, Ignatofsky does not make it easy for the reader to pigeonhole the scientists.)

Other lookism categories are also skillfully dealt with. Most scientists are shown at an indeterminate age between twenty and forty. But some scientists are definitely shown in their senior years with gray hair and wrinkles around their mouths, such as botanist Mary Agnes Chase (p. 30) and neurologist Rita Levi-Montalcini (p. 62). The text notes that people made fun of the looks and weight of mathematician Emmy Noether; a mini-illustration shows Emmy declaring unapologetically, “If I don't eat I can't do mathematics!” (p. 39). Only one illustration showed a woman in a “sexy” pose: Hedy Lamarr (p. 68). Are you surprised Hedy Lamarr is in this book? It turns out that she was not only a film actress; she was also an inventor. Working with George Antheil, she developed a radio

technology called frequency-hopping spread spectrum (FHSS) and was awarded a patent for it. It was smart of Ignatofsky to include Lamarr in the book, as if to say, “Look, girly girls have a place in science, too.” So, overall, I felt that the illustrations and text both acknowledged and subverted lookism against female scientists.

The book also emphasizes the individuality of the women highlighted by showing that some were married; some were not. Some achieved notoriety in their lifetimes; some received recognition and honors only after their deaths. Some partnered with men to make their discoveries; some partnered with women; some worked alone. Some were born well-to-do; some were born into poverty. Some worked in attics, basements, and closets, because funding was not available to women. All of them were born into a sexist world, and did great things anyway. And many of them did meaningful work in multiple arenas, not just science. Mamie Phipps Clark’s subheading calls her a “Psychologist and Civil Rights Activist” (p. 71). Marjory Stoneman Douglas’s subheading calls her a “Writer and Conservationist” (p. 43). Florence Bascom’s subheading calls her a “Geologist and Educator” (p. 27).

There really is a scientist heroine in this book for every girl. The only thing I didn’t like about it was that the type is very small. But if you can cope with the type, you will find this to be an extremely informative and inspiring book!

CVAS July Sky Events

By Tom Westre

July is an exciting months for planetary observers.

Mercury at magnitude +0.5 is easy to observe in early July. It sets about 90 minutes after the Sun. On July 11th Mercury is at greatest elongation, at 26 degrees from the sun. It can be seen 12 degrees to the lower right of Venus. On July 20th it will be fainter at magnitude +1.1 and harder to see. On July 14th look low to the west about 45 minutes after sunset to see the thin crescent moon about 2 degrees above Mercury.

Venus is very noticeable in the western sky. In a telescope it shows a gibbous phase like the moon. Venus will reach greatest elongation in mid-August.

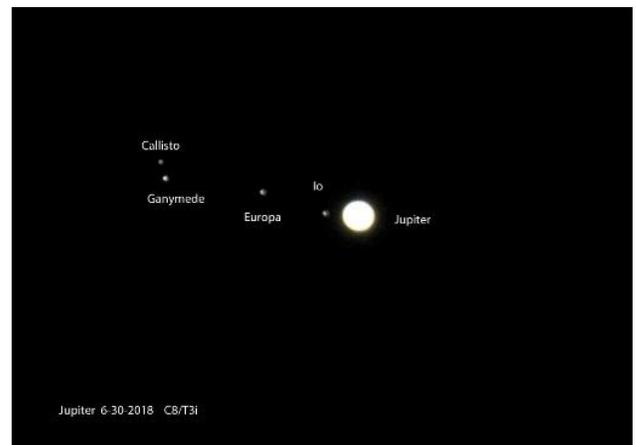
On July 9th note the fainter 9th magnitude star Regulus near Venus. They are within 3 degrees of each other from July 7 to 12. On July 15th the 3 ½ day old moon is 2 to 3 degrees to the right of Venus.

Earth reaches aphelion, its farthest distance from the Sun on July 6 at 11 am at a distance of 94, 507, 803 miles.

Mars is the main object for the summer skies. It is closest to the earth since 2003. Mars rises two hours after the sun sets by July 15th. The distance of Mars to earth decreases from 41 to 37 million miles. Mars gets brighter, its magnitude increases from -2.2 to -2.6 outshining Jupiter by July 7.

Mars moves west in southern Capricornus rising 4 minutes earlier each night. Mars reaches opposition in the evening of July 26-27. Even a small telescope should show dark surface features and shrinking polar cap tilted towards earth. Mars is closest to the earth on July 31 at 1:50 am MDT at a distance of 35.78 million miles. The next time it gets this close to Earth will be on September 11, 2035.

Jupiter shines at magnitude -2.2 in the south southwest. After July 11 note Jupiter will move east relative to the background stars. Its distance from Zubenelgenubi (alpha Librae) decreases from 2 degrees to 1 ½ degrees by the end of July. On June 20th Jupiter is 3 ½ degrees below the moon just past first quarter.



Jupiter and the Four Galilean Moons
- Image courtesy Tom Westre

Saturn is just past opposition on June 27th in Sagittarius and is well placed in the evening. Saturn

crosses the meridian due south in the evening. The rings are easily seen in any telescope along with magnitude 8.5 Titan.



Saturn and several of its brighter moons
- Image courtesy Tom Westre

This is a great time to invite neighbors over to view these wonderful planets.

CVAS Loaner Telescope

CVAS provides a 10 inch Dobsonian telescope to club members. Contact Garrett Smith to make arrangements to use this telescope. Garrett can be contacted by email at GarrettGillSmith@gmail.com.



Binocular Supports

The club now has available a number of mostly completed binocular supports. These supports are being sold to club members at cost. These supports just need the binocular attachment – which is tailored to the type of binocular being mounted.

Please contact Ned Miller or Dell Vance if you are interested in purchasing a binocular support. The images below show what they look like with binoculars attached as well as an image showing them folded for storage.



Completed Binocular Support (with binos attached) -
Courtesy Ned Miller



Binocular support (folded for storage) - Courtesy Ned Miller

Spotlight on Ursa Minor, the Little Bear

By Dale Hooper

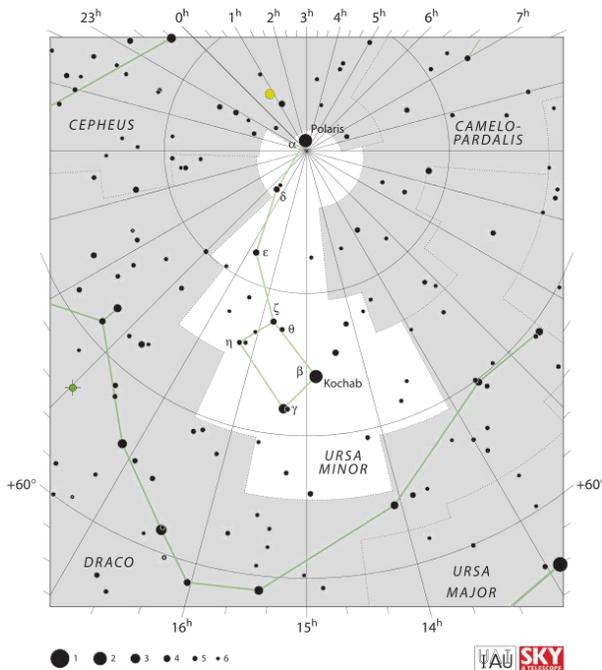
Even though none of its stars is especially bright, Ursa Minor is probably one of the best known constellations – at least it has one of the best known asterisms, The Little Dipper. This is, of course, because on the handle end (or tail end of the little bear) is the North Star or Polaris. Polaris has been one of the most important navigation stars for centuries. This is because it is currently quite close to the north celestial pole and remains fairly motionless over the course of the evening.

Polaris is also great to observe because it is a beautiful binary star! The main component star α (UMi A, magnitude 1.97) is a Cepheid variable so it is one of the “standard candle” stars used for distance determination (it is also a spectroscopic

binary). The secondary star (α UMi B) is magnitude 8.7 is 18" from the primary.

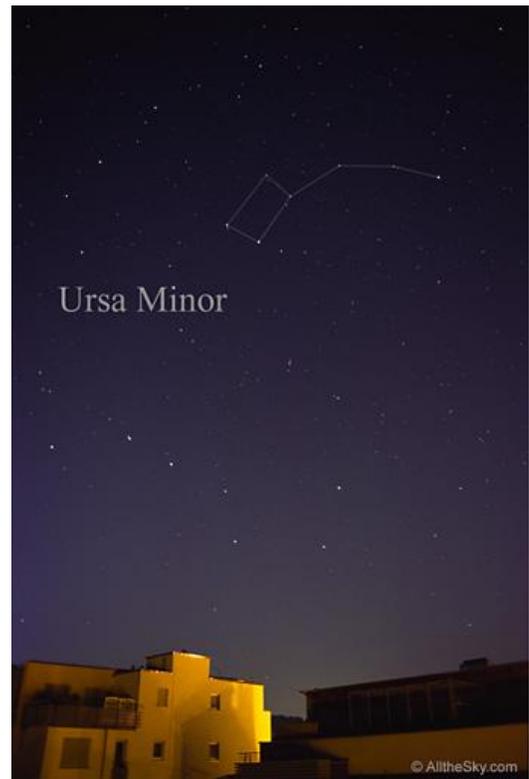
Surprisingly, there aren't many bright galaxies in Ursa Minor, even though it is a significant distance from the plane of the Milky Way. There are a "few" decent deep sky objects and several spectacular multiple star systems.

Objects which rank at least three stars in *The Night Sky Observer's Guide* (Ursa Minor is in Volume 2) have been included. As usual, the table is organized according to increasing Right Ascension values.



IAU and Sky & Tel - Roger Sinnott & Rick Fienberg

Object	R.A.	Dec.
α Ursae Minoris (Polaris) (Double star)	02h31.8m	+89°16'
h2682 (Triple star)	13h40.7m	+76°51'
π Ursae Minoris (Double star)	15h59.2m	+80°27'
NGC 6217 (Galaxy mag 11.2)	16h32.6m	+78°12'
NGC 6324 (Galaxy mag 12.8)	17h05.4m	+75°25'



The constellation Ursa Minor as it can be seen with the unaided eye. © T. Credner & S. Kohle, AlltheSky.com - used with permission

CVAS Minutes – June 2018

There was no CVAS meeting in June.

Upcoming Star Parties

- 12 Jul –
- 14 Jul Monte Cristo Campground Star Party with OAS
- 14 Jul Presentation at Fossil Butte National Monument (near Kemmerer Wyoming).
- 20 Jul Public Star Party – Heritage Park
2456 S. 800 W., Nibley
- 10 Aug CVAS Star Party – Beaver Mountain
- 11 Aug Solar Party, 10:30am – Noon
Logan Library
- 17 Aug Public Star Party – Macey's Parking Lot,
Providence

Upcoming Events

- 03 Jul Neptune 3° north of Moon
- 04 Jul Independence Day
Crab Nebula supernova first seen (1054)
Mars Pathfinder lands on Mars (1997)
Deep Impact smashes impactor into Comet 9P/Tempel (2005)
- 06 Jul Last Quarter Moon
Earth at aphelion

07 Jul Uranus 5° north of Moon
09 Jul Venus 1.1° north of Regulus
Voyager 2 flies past Jupiter (1979)
10 Jul Aldebaran 1.1° south of Moon
12 Jul New Moon
Partial solar eclipse
Mercury at greatest eastern elongation (26°)
Pluto at opposition
14 Jul Mercury 2° south of Moon
Mariner 4, the first flyby of Mars (1965)
New Horizons flies past Pluto (2015)
15 Jul Venus 1.6° south of Moon
16 Jul First segment of Comet Shoemaker-Levy 9
smashes into Jupiter (1994)
17 Jul First stellar photograph (Vega) (1850)
Apollo/Soyuz space docking (1975)
19 Jul First Quarter Moon
20 Jul Jupiter 4° south of Moon
Apollo 11 lands on the Moon (1969)
Viking 1 lands on Mars (1976)
22 Jul Friedrich Bessel born (1784)
23 Jul Chandra X-Ray observatory deployed
(1999)
24 Jul Pioneer Day
25 Jul Saturn 2° south of Moon
27 Jul Full Moon
Longest duration Total Lunar Eclipse of the
21st Century – unfortunately not visible from
North America
Mars at opposition
Mars 7° south of Moon
28 Jul First photograph of a total solar eclipse
(1851)
29 Jul NASA founded (1958)
Delta Aquarid meteors
30 Jul Delta Aquarid meteors
31 Jul Neptune 3° north of Moon
Mars closest to Earth
Delta Aquarid meteors

CACHE VALLEY ASTRONOMICAL SOCIETY MEMBERSHIP APPLICATION FORM

Member # _____

NAME: _____
 First Middle Initial Last

Address: _____
 Street City State Zip Code

Home Phone: _____ Cell Phone: _____

Work Phone : _____ Occupation : _____

Email Address: _____

How did you learn about CVAS?

_____ Website _____ Star Party _____ CVAS Member _____ Other _____

Membership: \$20 a year

Tell us about yourself: Do you have a special interest in astronomy? Do you have special skills? Are you willing to volunteer on CVAS projects or attend public outreach star parties? Astro equipment owned.

By signing this application, I acknowledge I have access to the CVAS website, cvas-utahskies.org, and the CVAS Constitution. I agree to abide by the constitution.

Signature: _____ Date: _____

Bring this form to the meeting or Mail Application to:

Brad Kropp, CVAS Treasurer
1573 E 1425 N
Logan, UT 84341

For any questions contact our Treasurer at brad.kropp@usu.edu or our Secretary Dale Hooper at dchooper5@gmail.com