

Cache Valley Clear Skies

The Journal of the Cache Valley Astronomical Society



CVAS Executive Committee

Pres – Dell Vance - (435) 938-8328
avteam.dell@gmail.com

Vice Pres- Layne Pedersen – (801) 463-1701
laynepedersen@gmail.com

Treasurer- Brad Kropp - (435) 755-0877

Secretary – Dale Hooper - (435) 563-0608
dchooper5@gmail.com

Loaner Scope Coordinator/NSN Coordinator –
Garrett Smith – GarrettGillSmith@gmail.com

Past President, Webmaster, Librarian –
Tom Westre – (435) 787-6380 twestre45@aol.com

Public Relations – Lyle Johnson -
lyledj@aol.com

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Meeting Announcement

Our February meeting will be held on the **fourth Wednesday, February 28, 2018 at 7pm in room 840 of the main BATC campus.** We have room 840 for the rest of this year. Enter on the east side of the building located at 1301 North 600 West.

Our featured speaker this month is club member Tom Westre. He will be sharing with us a presentation entitled, Mars: Exploring a New Frontier. Tom will be sharing information with us about the robotic rovers and plans for future exploration. He will also discuss the potential for life on Mars now and in the past. This will definitely be an exciting astronomy year for Mars observing.

The President's Corner By Dell Vance, CVAS President

January was a very exciting month for us. After all, we experienced a "Super Blue Moon". My wife took a picture of the Super Blue Moon as it rose over the valley in the East. This really raised my expectations for better weather for the "Super Blue Blood Moon" the next morning. I was prepared to see that event on Wednesday morning. I had my telescope out on the front lawn of our home. There were clouds everywhere, but there was one hole in



the clouds to the West. It was big enough that I was able to align my telescope on Castor and Pollux.

From there I selected the Moon from the hand controller and the telescope did the rest. I figured that the hole might move around and possibly give me a glimpse of the eclipse. I had no such luck. Even the hole closed in. At about 5:50 AM the sky got much darker and I realized that we were in totality. I tracked the Moon for over an hour, but that was about the only effect that I was able to witness. I even had a neighbor come over to see if I was somehow punching holes in the clouds to see the eclipse.

Astronomy Trivia

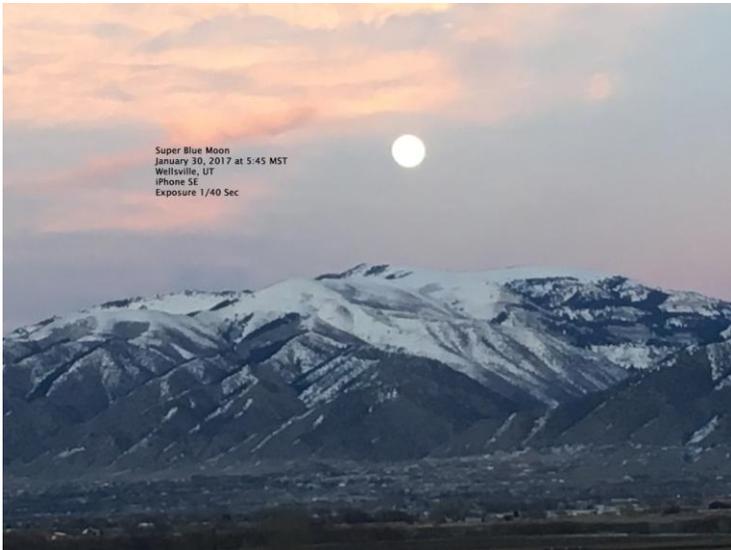
By Dale Hooper

The closest natural astronomical object that you can see with your unaided eyes (the Moon) is approximately 60 trillion times closer than the furthest object you can see with your unaided eyes (the Andromeda Galaxy, M31). Yet, the furthest object has an angular size about six times greater than the closest object!*

*I've rounded up the average distance to the Moon to 250,000 miles. The Andromeda galaxy is about 2.5 million light years away. One light year is about 6 trillion miles. So M31 is about 15,000,000,000,000,000 miles away. Divided by 250,000 miles this gives: 60,000,000,000,000. Of course, with your unaided eyes you really only see the core of the galaxy. Photographically, it subtends a width of about three degrees, whereas the Moon is about 30 arc-minutes. Hopefully this provides a bit of perspective concerning the incomprehensible size of a galaxy like M31.

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.



Super Blue Moon - courtesy Dell Vance

However, we did have a bright spot the previous week with our annual “Show and Tell” meeting. We had about 23 people in attendance. Thirteen Club members were there and all of them made a presentation. It was a lot of fun to see the talents and gadgets of our members. Our membership is continuing to grow and there is a lot of energy in the members. Tom Westre has volunteered to chair a Special Interest Group on the topic of Astrophotography. Several members have signed up to participate. This will be a sub-group of the club and will have meetings and discussions in addition to our monthly meetings. This will give us a chance to share ideas and techniques that we have tried or know about. If you are interested in participating in this, let Tom know to add you to the roll.

This month the meeting topic will be the planet Mars and Tom Westre will be the presenter. Tom has a wealth of knowledge on astronomy and is bound to be very informative as well as entertaining. There is a lot of interest in Mars over the last 100 years. It has been a challenge for astronomers as well as Space Exploration. There are vehicles rolling around Mars and the data keeps coming in. Be sure to bring your family and friends to this meeting it will be a good one for everybody.

Thanks again for your support.

Clear skies!

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

Request for Articles



WE WANT YOU!

Yes, you are correct – it is **not** time for club elections. But, we would like your articles and photos. If you have a topic about astronomy that you would like to cover or perhaps a book review or

astrophotos, please send them to
dchooper5@gmail.com.

CVAS Astronomy Library List

By Tom Westre

The following books are available to dues paying members of CVAS. To borrow a book from the list contact Tom Westre at 435-787-6380 or email him at: twestre45@aol.com If you contact Tom before the monthly meeting Tom will bring the book to the meeting for you to pick up for one month. It should be returned the following month. If you need it longer and there are no requests for the book contact Tom.

Asimov, Isaac. Eyes on the Universe: A history of the telescope.

Bok, Bart L. The Milky Way.

Calder, Nigel. Einsteins universe: the laypersons guide.

Carlowicz, Michael. Storms from the Sun: The emerging Science of Space Weather.

Chaisson, Eric. Astronomy Today. Prentice Hall, 1997

Carroll, Sean. From Eternity to here: the quest for the ultimate theory of time.

Corliss, William. The moon and planets: A catalog of astronomical anomalies.

Cornell, James. The First Stargazers: An introduction to the Origins of Astronomy.

Eagle, Dave. From casual stargazer to amateur astronomer: how to advance to the next level. Lots of information to help develop your skills.

Enright, Leo. The beginner's observing guide: an introduction to the night sky for the novice stargazer. For those with no or limited background with the stars and constellations.

Fix, John. Astronomy: journey to the Cosmic Frontier. McGraw Hill, 2008 5th Ed.

Greene, Brian. The Elegant universe: superstrings, hidden dimensions, and the quest for the ultimate theory . Vintage, 1999

Finlay, W.H. Concise catalog of deep sky objects: concise information for 500 galaxies, clusters, and Nebulae.

Frazier, Kendrick. Our Turbulent Sun

Greene, Brian. The fabric of the cosmos: Space, time, and the texture of reality

Hadingham, Evan. Early man and the Cosmos. (ancient astronomy, Stonehenge, death and the sun in ancient Britian, the Moon and the megaliths, Riddle of the Fairy Stone, Moon calendars of the American Indian, Sun Priests of the Southwest, Myan astronomy, Astronomy and ancient Peru, Hovenweap)

Halpern, Paul. Edge of the universe: the voyage to the cosmic horizon and beyond.

Hamburg, Michael. Astronomy made simple. Doubleday, 1995

Harrington, Philip. Starware: the amateur astronomer's ultimate guide to choosing, buying, and using telescopes and accessories.

Harriston, Edward R. Cosmology: the science of the universe.

Kaku, Michio. Beyond Einstein: the cosmic quest for the theory of the universe.

Kaku, Michio. Hyperspace: a scientific odyssey through parallel universes, time warps, and the 10th dimension.

Kaler, James. The Ever-changing Sky: a guide to the celestial sphere. Cambridge, 1996.

Kaufmann, William. Black Holes and warped spacetime. King, Henry C. The History of the Telescope.

Krupp, E.C. In Search of Ancient Astronomers: Stonehenge, to Von Daniken, Archeoastronomy discovers our sophisticated ancestors.

Luginbuhl, Christian. Observing handbook and catalog of deep-sky objects. 1,500 objects by constellation most often observed by amateurs.

Maffei, Paolo. Beyond the Moon. (solar system, nearby stars, variable stars, birthplace of stars, star clusters, the galaxy, Beyond the galaxy, among the galaxies, the limits of time and space.

Moring, Gary F. The complete idiots guide to the theories of the universe. Pearson, 2002

Moche, Dinah L. Astronomy: A Self-teaching guide.

North, Gerald. Astronomy Explained.

Owens, Steve. Stargazing for dummies. This book contains all you need to learn constellations, find planets, hunt down galaxies with binoculars and telescopes.

Pasachoff, Jay. Astronomy: From the Earth to the Universe.

Raymo, Chet. The soul of the night: an astronomical pilgrimage.

Rees, Martin. Before the beginning" our universe and others.

Rees, Martin. Just six numbers: the deep forces that shape the universe.

Rukl, Antonin. Atlas of the Moon. Kalmbach, 1990.

Sagan, Carl. Comet.

Schaaf, Fred. The Starry room: Naked eye astronomy in the intimate universe.

Trefil, James S. Space, Time, Infinity: The Smithsonian Views the Universe.

The Universe. (essays about our galaxy, stars, supernovae, pulsars, black holes, galaxies and clusters quasars, intergalactic matter, cosmology, other planets.

Webb Society. Web Society Deep Sky Observers Handbook. 4 volumes.

Zubrin, Robert. The Case for Mars; the plan to settle the red planet and why we must

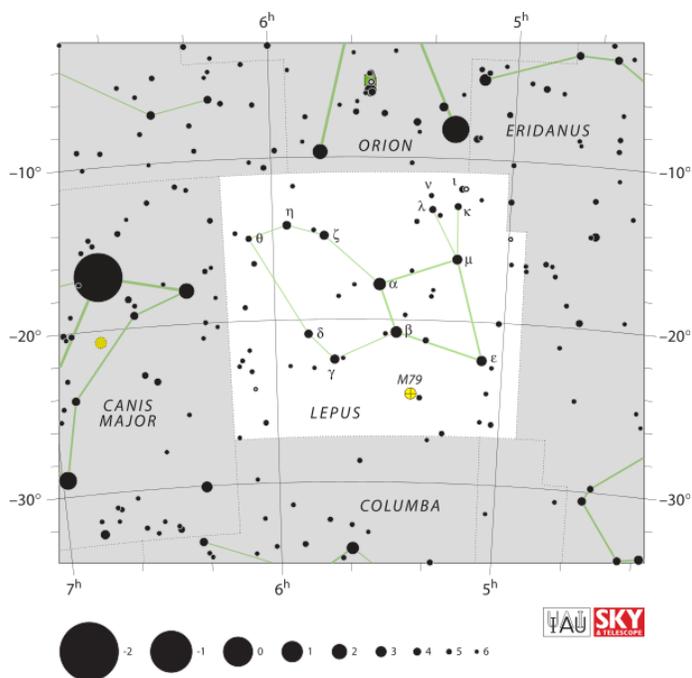
Spotlight on Lepus, the Hare

By Dale Hooper

I must confess, in all my years of observing I have never thought – I'm going to concentrate on Lepus tonight. This is especially the case since due north of Lepus is the phenomenal constellation Orion. But, there are a number of nice objects to observe in

Lepus even if it doesn't have any really bright stars. Its brightest stars are magnitude 2.6 α Leporis and magnitude 2.8 Nihal (β Leporis). It is the home to globular cluster M79, a number of very nice double stars, and some decent galaxies.

Objects which rank at least three stars in *The Night Sky Observer's Guide* (Lepus is in Volume 1) have been included. As usual, the table is organized according to increasing Right Ascension values.



IAU and Sky & Tel - Roger Sinnott & Rick Fienberg



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

Object	R.A.	Dec.
NGC 1832 (Galaxy mag 11.3)	05h12.1m	-15°41'
h3750 (Double star)	05h20.4m	-21°14'
h3752 (Double star)	05h21.8m	-24°46'
NGC 1888 (Galaxy mag 11.9)	05h22.6m	-11°30'
Messier 79 (Globular cluster)	05h24.4m	-24°33'
h3759 (Double star)	05h26.0m	-19°42'
IC 418 (Planetary nebula)	05h27.5m	-12°42'
NGC 1964 (Galaxy mag 10.7)	05h33.4m	-21°57'
NGC 2017 (Open cluster)	05h39.4m	-17°51'
La1 (Double star)	05h39.7m	-20°26'
γ Leporis (Double star)	05h44.5m	-22°27'
NGC 2139 (Galaxy mag 11.4)	06h01.1m	-23°40'
NGC 2196 (Galaxy mag 11.1)	06h12.2m	-21°48'

CVAS Minutes – January 2018

The January CVAS meeting was held on January 24 at BATC. A proposal was made, seconded and adopted to find and purchase two telescopes for placement in local libraries.

This was our annual “Show & Tell” meeting and we had great participation. There were twenty-three people in attendance. The following people made presentations:

Jeff Clayton (a new member) – he showed some of his recent astrophotography work. For deep sky work he uses five to fifteen minute exposures using a QHY camera. He does much of his post processing using photoshop. Everyone agreed that we need to have Jeff back as the main presenter! He also detailed how he uses a video camera for planetary imaging.

Jeff also wanted to share a link to all of his astrophotos, they are at:

<https://www.astrobin.com/users/Astratudo/>

You will definitely want to spend some time on his site. The link will also be posted on our club website.

Byron Ray – He has seven different telescopes that he uses. He showed the book Seeing Stars (from 1935) which was the beginning of a lifelong interest in astronomy.

Blaine Dickey – Blaine showed his Astronomers without Borders collapsible 5 inch Dob. This is a very clever design. He also showed lots of good images produced by using a DSLR from five inch and twelve inch telescopes.

Robert Cook – Showed some great new eyepieces that he has obtained. They are Meade 18mm and 9mm HD60 models.

Bruce Horrocks – Showed a hyperstar and astrophotos obtained using the hyperstar and a 9 ¼ inch Celestron SCT. The hyperstar produces a *very* fast focal ratio.

Harvey Brown – Showed us a really cool Moon night light that he purchased from eBay. He mentioned that they come in various sizes from about 8cm to basketball size. They have adjustable brightness and are generated using a 3D printer.

Clark Salisbury – Showed a stereo viewer and his Zhumell 25x100 *mega* binos. He has created an adapter for the binos to mount a laser pointer on the central bar.

Wendell Waters – He purchased his first serious scope last summer. He has also purchased subscriptions to Sky and Telescope and Astronomy magazine. He told us about several things that should be very beneficial to us as amateur astronomers. He discussed an online archive of all of the Sky and Telescope magazine (to 2010) and Astronomy magazine for 2013 – 2016. The archive for Sky and Telescope can be found at: <https://archive.org/search.php?query=sky%20and%20telescope>

He also discussed The Ultimate Messier Object Log (TUMOL) which can be downloaded and also printed for marathons or other times. He also has a version with blank circles so you can sketch the objects.

Janice Bradshaw – She has a new Celestron 8 inch SE telescope! She also showed the new Celestron lithium ion firecell light, charger and hand warmer.

Brad Kropp – He showed his Coronado PST which he uses to observe sunspots and prominences. Brad said that this is now his favorite telescope.

Dale Hooper – He displayed some wide field 2.1x42 binoculars that he purchased at AstroCon last August. He also showed the Orion Astro lantern. It has four red light levels and two white light levels. It contains a lithium ion battery and can also act as a charger. Dale also displayed the DVD's for the digital archives of The Sky and The Telescope which are currently discounted.

Tom Westre – Proposed a new astrophotography SIG (Special Interest Group) and a number of people have signed up for it. Tom agreed to head up the

SIG. He also showed the Celestron Star Sense (\$350) which works with any computerized Celestron mount to auto align the scope in about three minutes. He has an 8 inch Celestron SCT that he uses it with and he said it has made a huge difference.

Dell Vance – He made his own solar filters for his binoculars. Dell also showed us his new Celestron firecell. It is obvious that astro gear companies are still *very* creative.

Upcoming Star Parties

There are currently no CVAS star parties planned for February 2018.

Upcoming Events

- 01 Feb Regulus 1.0° south of Moon
Space shuttle Columbia disintegrates during re-entry (2003)
- 02 Feb Groundhog day
- 03 Feb Luna 9, first craft to soft-land on Moon (1966)
- 04 Feb Clyde Tombaugh born (1906)
- 05 Feb Zodiacal light. The zodiacal light is visible from dark sites for the first half of February. Look toward the west after sunset for a tall, hazy light pyramid.
- 07 Feb Last Quarter Moon
Bruce McCandless, first untethered space walk (1984)
- 09 Feb Vesta 0.9° north of Moon
- 11 Feb Saturn 2° south of Moon
- 13 Feb Mardi Gras
- 14 Feb Valentine's Day
- 15 Feb New Moon
Galileo born (1564)
- 16 Feb Gerard Kuiper discovers Uranus' moon Miranda (1948)
- 18 Feb Clyde Tombaugh discovers Pluto (1930)
- 19 Feb President's Day
Nicolas Copernicus born (1473)
- 20 Feb Uranus 5° north of Moon
John Glenn first American in orbit (1962)
- 23 Feb First Quarter Moon
Aldebaran 0.7° south of Moon

- Supernova 1987A first detected (1987)
- 24 Feb Discovery of first pulsar announced (1968)
- 28 Feb **CVAS Monthly Meeting, 7pm**
BATC room 840
- 01 Mar Full Moon
Regulus 0.9° south of Moon
Venera 3, first craft to impact Venus (1966)
- 05 Mar Mercury 1.4° north of Venus
- 07 Mar John Herschel born (1792)
- 09 Mar Last Quarter Moon
Mars 4° south of Moon
- 10 Mar Saturn 2° south of Moon
Rings of Uranus discovered (1977)

Observations From -369.7 Degrees Fahrenheit



Taken from inside Chamber A at the Johnson Space Center in Houston in September 2017 while the combined optical and science instrument element of the [James Webb Space Telescope](#) was undergoing cryogenic testing, the temperature at the time this image was taken was approximately 50 kelvins (about -369.7 degrees Fahrenheit/-223.2 degrees Celsius). The camera that captured this image was placed inside the chamber to measure the telescope's alignment, but engineers also used it to monitor the black DuPont™ Kapton® covering that outlines Webb's primary mirror. Engineers used this and other images to assess the material's slack as the telescope shrank ever so slightly in the extreme cold of the chamber.

Once Webb is fully deployed and in orbit at the second [Lagrange point \(L2\)](#), this Kapton® "wreath" around the primary mirror will block unwanted light from behind the telescope from interfering with its observations. There are five so-called "Lagrange Points" - areas where gravity from the Sun and Earth balance the orbital motion of a satellite. Putting a spacecraft at any of these points allows it to stay in a fixed position relative to the Earth and Sun with a minimal amount of energy needed for course correction.

In the photo, you can see each of Webb's 18 hexagonal primary mirror segments, though the ones further from the camera quickly fade into darkness. The bright elements in the photo — the "stars" that

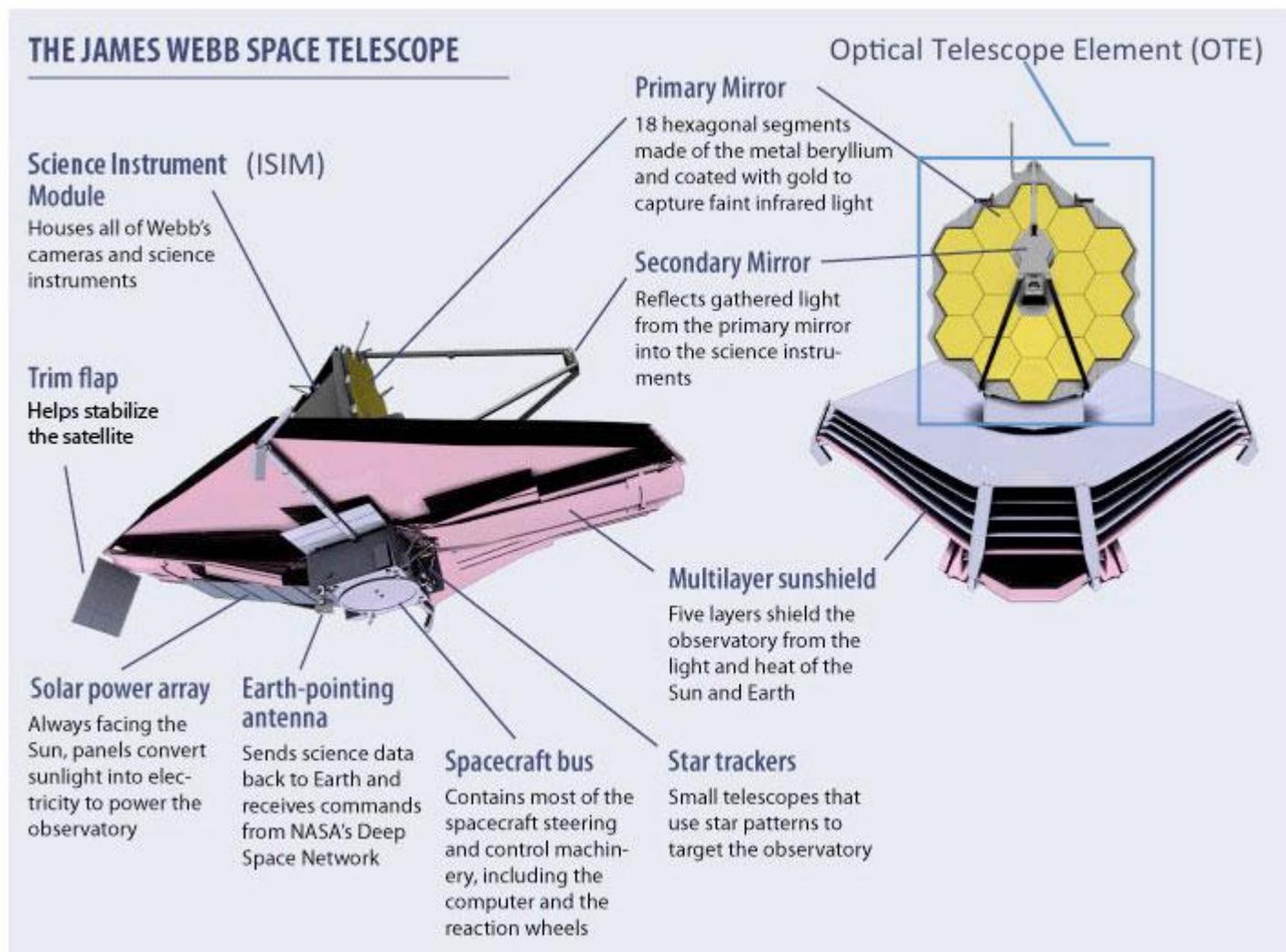
seem to envelope Webb within the chamber — are targets that were used to measure extremely precise movements of the telescope as it cooled. Those targets appear so bright because this photo had a very long exposure time.

Webb's combined optical and science instrument element completed cryogenic testing inside the chamber in November 2017.

Image Credit: NASA/Chris Gunn

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Editor: Yvette Smith



JWST components - Courtesy NASA

You can see a 3D view of the James Webb Space Telescope, its optics, instruments and systems at the following URL (Adobe flash is required for viewing it):

<https://jwst.nasa.gov/Webb3d/>

