CVA Spring Star-B-Que May 16 at Big Stump

May-June 2026

The Observer

The Triumph of Artemis II

The Earth peering over the back side of the Moon on April 6, 2026, taken by the Artemis II crew. Image by NASA/ESA/CSA

The naysayers, the deniers, the foot-draggers are all silent now. Even the conspiracy mongers who, during the Artemis II mission, were insisting it was all being faked, had nothing to say after splashdown in the Pacific Ocean off San Diego. They were shut down by the sheer flawlessness(well, not quite; the most serious problem was a toilet that didn't work) of the flight(con't on inside)

A note from the editor-For many years now, I have used MS Publisher to write *The Observer* (and various other semi-literary endeavors that I've been involved in). However, Microsoft recently announced that it is phasing out Publisher and will eliminate it altogether by the end of this year. So, I have been experimenting with other publishing software and formats. This is one of them; there may be others before I settle on a permanent choice. No doubt, CVA editors and historians of the future will look at these issues from 2026 and wonder, "What was going on with him? Did all the years of dark sky viewing finally catch up?" Rest assured, there is a method to this madness and it will be resolved by December-*The Observer*, that is, not my lack of sanity.

(from front page) More than anything else, Artemis II was a flight of redemption. Boeing, the prime contractor for the SLS rocket, rose above the years of administrative and engineering blunders, cost overruns and seemingly endless delays. To the cynics who insisted that Orion's heat shield would cause it to disappear in flames during reentry, Lockheed-Martin. the spacecraft's prime contractor, proved them wrong. NASA's reputation suddenly changed from a feckless "We can't do that" to the optimistic "Can Do" that characterized its early days. Perhaps most importantly, the United States, for the first time in years, had something significant to cheer about as it forgot, at least for the moment, its divisions and animosities.

NASA officials were careful to caution that Artemis II was only a test flight, designed to show that the spacecraft and its rocket could deliver humans to the area of the Moon and return them safely. They made no secret of the fact that the next two missions, Artemises III and IV, will be much more challenging. Even with the success of Artemis II, some in the news media and elsewhere are saying that the space agency will probably not be able to meet the now-stated goal of landing at least two astronauts near the Moon's South Pole by the end of 2028. Still, the Artemis II mission has given NASA a huge shot in the arm, as well as inspiring millions of Americans and others throughout the world, most of them with no memory of the glory days of Apollo. With a young, hard-charging chief administrator in Jerod Isaacman (who seems to be the perfect person to get NASA back on track), and a dedicated cadre of professionals in in the space agency, it may well be that the space agency has regained its sense of being able to do anything. As Buzz Lightyear would say, "To infinity and beyond!"

Artemis II astronauts Victor Glover and Cristina Koch aboard a Navy helicopter after Artemis's splash-down in the Pacific Ocean on April 10.
Image from NASA/ESA/ CSA

Central Valley Astronomers-2026

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Director-Warren Maguire
Director-Fred Lusk
Director-Lynn Kleiwer
Director-Steve Brittan

Number of Exoplanets found as of April 2026-
Confirmed-6,273
How many more are out there-
Tens of thousands?
Millions?

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The President's Message

By Hubert Cecotti

As spring turns into early summer in Fresno, May and June offer a rewarding transition from "galaxy season" to the rich star fields of the Milky Way. In May, our club members should take advantage of dark, moonless evenings to explore classic galaxies in Virgo, Coma Berenices, and Leo—highlights include the Whirlpool Galaxy (M51), the Black Eye Galaxy (M64), and the Leo Triplet, all part of a prime viewing window when our line of sight looks out of the Milky Way into deep intergalactic space. As June arrives, with multiple events occurring during the summer at Millerton Lake, attention shifts toward brighter summer targets rising in the southeast, including a classic and favorite for many of us, the Great Globular Cluster in Hercules (M13), Messier 10 and 12 in Ophiuchus, and the Ring Nebula (M57) in Lyra, all well placed around midnight for backyard telescopes. For those who have missed the Messier Marathon, it is possible to hunt for many galaxies or globular clusters in a single night. By late June, the highlight is the return of the Milky Way's core in Sagittarius and Scorpius, a hazy, star-filled band visible even to the naked eye under darker Central Valley skies, offering some of the most spectacular deep-sky observing of the year. In the same way, we have Orion in Winter, the objects in Sagittarius and around are excellent targets for instruments with small apertures and for astrophotography.

May 16 is one of our biannual Star-BQ. I hope to see many of you at this event and that the weather will be on our side for a great night. Come with your family and do not hesitate to invite a few friends. Finally, more and more people like myself get tempted by smart telescopes such as the Seestar telescopes. These telescopes are small and efficient at capturing deep-sky objects; they are certainly an easy way to capture images.

Clear skies-
Hubert

Great images taken by Hubert with the Seestar telescope-

M81 in Ursa Major

NGC 4631, the Whale Galaxy, in Canis Venatici

The Markarian Chain(including M86(see “Galaxy in the Eyepiece” In this issue) in Virgo

The always familiar M51, the Whirlpool Galaxy, in Canis Venatici(many people think it’s in Ursa Major, but it’s not)

CVA Calendar for May and June

May 1-Monthly meeting at Round Table Pizza, First and Bullard, begins 7pm

May 16-Spring Star-B-Que at Big Stump

May 22-Public starwatch at Riverpark

June 5-Monthly meeting at Round Table Pizza

June 6-Public starwatch at Millerton Lake

June 13-Club starwatch at Big Stump

June 12 ,13,14-Starwatch at Courtright

June 26-Public starwatch at Riverpark

Reminder-no club monthly meetings in July and August

After Artemis II-What Comes Next?

With the success of Artemis II, NASA will now gear up to tackle its next major goal: two Orion-SLS missions that will put Americans and Europeans on the Moon by the summer of 2028. While much of the effort has been in the works for almost twenty years, it will be largely driven by the space agency's new chief administrator, Jerod Isaacman. Young(only 43), highly motivated, and dedicated to excellence, Isaacman, a billionaire internet entrepreneur, a pilot who flies his own jet from one NASA facility to the next, and a two-time veteran astronaut, has taken on the job, at the behest of President Trump, of kicking NASA out of its lethargy and regaining the lean, trim "Can Do" mentality of the 1960s. Even though he's been in office for only four months, he has already shaken up NASA to face the future with determination and confidence. He put his mark on the investigation report into the Boeing Starliner near-disaster in 2024(see "What's New in Space" in this issue) and followed that up with a complete reorganization of the Artemis Program, which was announced on February 27 of this year. On that day, Isaacman said at a press conference that NASA will be making Artemis III not a lunar landing mission, as it had previously planned, but an Earth orbital flight in the summer of 2027, which will test either Space-X's Lunar Starship lander or Blue Origin's Blue Moon lander, and possibly both(this flight will be similar to Apollo 9 in February 1969, which tested the lunar module in Earth orbit). Afterwards, NASA will decide which lander to use for the first landing mission (see *What's New in Space* in this issue), Artemis IV, which will take place as early as the summer of 2028. The crews for Artemis III and IV have not yet been announced, but with Artemis II now concluded, they probably will be within the next month or two. Beyond that, Isaacman announced that NASA will accelerate the Artemis lunar landing schedule by eliminating the long-delayed Block 2 SLS booster, which will allow lunar launchings as frequently as every six months starting with Artemis V as early as December 2028.

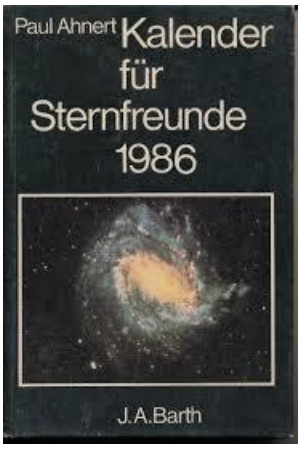
Along with that, Isaacman announced on March 24 that NASA will be "pausing" the Gateway lunar space station and instead concentrate on building a permanent base near the Moon's south pole over the next seven to ten years. Indications are that, unlike first reports that it had been cancelled altogether, the Gateway program will be put aside for the time being and may be returned to sometime in the future. In addition, Isaacman said NASA and its commercial aerospace partners will send uncrewed robotic spacecraft to study the Moon at the rate of ten a year for the next several years.(Isaacman came into the chief administrator's job knowing that he would have to make serious decisions concerning NASA's major projects, all of which are behind schedule and over budget. One or more of them had to go in order to bring NASA's finances back into line. The Gateway is the first to be cut; many familiar with the space program believe that the Mars soil sample return mission, which is four years behind schedule and $6 billion over budget, will be next.)

All of this portends a major acceleration of NASA's plans after many years of what aerospace experts have seen as dithering and foot-dragging. The SLS Moon rocket itself is eight years behind schedule and the Gateway is four years behind schedule (as well as both programs being billions over budget). As well, NASA's main commercial contractors have been given warnings that they need to step up and complete their spacecraft programs on time and within budget or face serious consequences. Isaacman has made it clear that he's the new kid in town, he's not going to put up with delays or overruns; he's going to knock heads and get NASA back on track to doing what it was originally established to do: lead the way in exploring the unknown.

Profiles in Astronomy

Paul Owsald Ahnert 1897-1989

Ahnert was born and raised in Chemnitz, in what is now Saxony, in Germany. He was educated at local schools and served in the Germany Army during World War I. After the war, he worked as a primary school teacher and took up astronomy, which had always interested him. He studied variable stars and wrote many astronomy articles for science magazines in the 1920s and 30s. In 1933, Ahnert, a committed opponent of fascism and militarism, was arrested by Hitler's regime and put into a concentration camp He was released after a few months but was blacklisted by the Nazis and was unable to find steady work for several years.



However, in 1938, he was hired at the Sonneberg Observatory as a computer(at that time, the term referred not to a machine, but to a person who did mathematical calculations) and spent the war years as an assistant to the astronomers there. After World War II, the Observatory promoted him to a full-time astronomer; he married Eva Rohlfs, another German astronomer in the post-war era; and continued his research into variable stars. He also conducted studies in solar astronomy.

Ahnert is best recognized for his astronomical calendar, the *"Kalender für Sternfreunde"* ("Astronomy Enthusiasts' Calendar") which he began in 1949 and edited for almost forty years. It is still published annually today and is well known to European astronomers. He finally turned it over to a younger colleague only a few years before his death in 1989. The minor planet 3181 Ahnert is named after him.

CVA Riverpark Public Events Drawing Larger Crowds

Maybe it's the warmer weather, maybe it was the beginning of spring break, maybe it's just something in the air, but CVA's Riverpark public star events have drawn large crowds since they resumed in March. Those of us who have worked at them have noticed the lines have been growing longer, people have been posing more questions about astronomy; young parents, in particular, have asked about how they can buy telescopes and get their children more interested in astronomy. In fact, that's become a major theme at these events: more and more children wanting to look even though, due to light pollution, the viewing options are limited. Many people are telling us that it's not just that they happen to be shopping on Friday night and drop by, but they and their children are coming because they know we're going to be there, and they want to know about future events as well. My own idea is not just the interest in space due to the Artemis mission, but a longing for something beyond social media, world events, and the uncertainty of everyday life. Whatever gets them to come, they're more than welcome at our events.

Feedback from the Messier Talk

At the CVA meeting at Round Table on March 6, I gave a talk on the life of Charles Messier, who is best known for his catalogue of nebular-type objects. He also discovered 13 comets and was the co-discoverer of several more. Members had several questions relating to Messier and his discoveries. I answered as best as possible at the meeting, but after I got home, looked them up and in this column have provided more details about them. -the editor

What was the Gregorian telescope?

James Gregory (1638-1675) was a Scottish mathematician who, in the late 1650s, drew up plans for a reflecting telescope. This was not a new idea. Many scientists before him, including Galileo, had discussed telescopes using mirrors rather than lenses. Gregory, though, conceived a telescope using a curved primary mirror with a hole in its center, and a curved secondary mirror. He wanted to build one but knew little about optics and could not find an optician to grind and polish the mirrors, so he gave up. He did, however, publish his design in a science journal in 1663; many historians believe that a young Isaac Newton read it and got his own ideas for a reflecting telescope from it. Newton eliminated the hole in the primary mirror and turned the secondary mirror at an angle so the image came out the side of the telescope tube rather than the bottom. So, Newton developed the first practical operating reflector telescope. During the 1700s and 1800s various astronomers built and used Gregorian telescopes, but the design never became popular, and they are rarely seen today. Messier used several different telescopes during his observing career, but his two favorites were a 7" Gregorian reflector and a 4" refractor.

How many comets are found every year? Is this any different from when Messier found his comets in the 1700s?

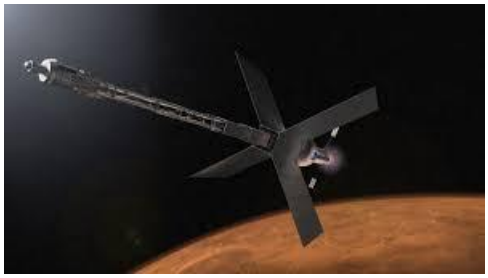
According to several internet comet sites, today, between 30 and 50 comets are found every year. However, most of them are so small and dim that they are known only to amateur comet hunters and professional astronomers who study comets. Maybe one or two a year, like Hale-Bopp or 3I/ATLAS, are significant enough that they are noticed by the larger astronomical community and make the news. Since official records started being kept of comets in the 1700s, over 7,500 have been found, averaging about 31 a year, so Messier's record of 22 discovered or co-discovered over a 50+ year observing career, an average of one every 2.5 years, is not unusually high.

Who holds the record for finding comets?

Carolyn Shoemaker(1929-2021) holds the record for the most comets found by an individual, with 32 over a 35 year period. The interesting thing is, she did not get into astronomy until she was almost 50; she taught at a junior high school and raised a family while her husband, Gene Shoemaker, became one of the world's leading experts on meteorites and impact craters. She later said when the kids were grown and out of the house, she had nothing to do, so she started helping Gene with meteorite and asteroid detections, and from there graduated to comets. She is also credited with discovering over 800 asteroids.

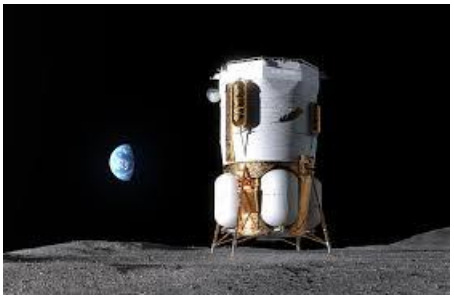
What's New In Space

NASA to Send Nuclear-Powered Spacecraft to Mars in 2028



At the same press conference on March 24 in which chief administrator Jerod Isaacman announced NASA's revised Moon base plans, he also announced that the space agency will send a nuclear-powered spacecraft to Mars in 2028, the next "window" for favorable Mars launchings. Although it came as a surprise to some, many veteran space reporters have been aware that NASA has been working on such a craft for several years. Included with the craft will be not one, but several mini-helicopters similar to the one that was aboard the Curiosity rover and successfully flew above the Martian surface over forty times before breaking down. Indications are that the nuclear power plant aboard the Mars craft will be similar to the one that NASA recently announced will be deployed on the Moon in the coming years.

Blue Origin to Conduct Test Flight of Blue Moon Lander



Although the company is saying little, Blue Origin plans to conduct a test flight of its Blue Moon lunar lander before the end of August. According to sources, the lander will be launched via a New Glenn rocket, refuel in Earth orbit, and then be sent on a trajectory to the Moon, making a soft landing on it. According to Blue Origin's website, the company is working on two versions of the Blue Moon lander, which was announced in 2017. The first, known at the Mark 1(image on right), will be an unmanned cargo supply version. This is the lander which will be making the flight in the summer of 2026. The second lander, called the Mark 2, will be a crewed version which will hold four astronauts on the moon for up to thirty days at a time. In 2021, after reviewing both landers, NASA chose Space-X's modified Starship at its lunar lander for the first two Artemis landing missions, and in 2023, chose Blue Moon for the next two afterwards. However, with Space-X's Starship program behind schedule and the delaying of the Artemis landing missions, NASA wants to see how both landers perform before deciding which one will be used for the first landing mission, now scheduled for Artemis IV in the summer of 2028. Given the intense rivalry between Elon Musk and Jeff Bezos, Blue Origin would like nothing better than deflate Space-X's ego with the first lunar landing.

More about Blue Origin(That Does not Make the Company Look Good)

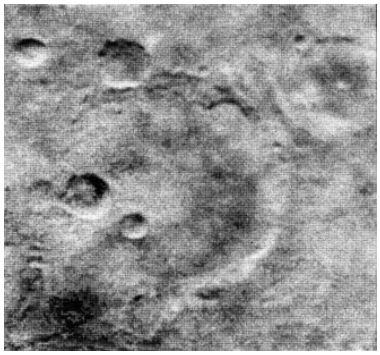
On Sunday, April 19, Blue Origin launched its New Glenn heavy lift rocket carrying an ATS SpaceMobile spacecraft, intended to facilitate satellite and cell phone communications. However, due to a suspected main engine failure, the satellite was put into a much lower orbit than planned and is now useless. Both Blue Origin and the FAA say that the New Glenn is grounded until the malfunction is identified and fixed. Not a positive sign for a company that wants to send a lander to the Moon in a few months.

Space Age Archeology

Mariner 4

Mariner 4, a continuation of the Mariner planetary series that began with the Mariner 1 probe to Venus in 1962, was the first spacecraft to successfully fly by Mars and return images of the Red Planet. It set the stage for the exploration of Mars into the 21st century.

The Mariner Mars missions originated in 1960, and were an outgrowth of the Mariner series of spacecraft to explore the inner planets; i.e., Mercury, Venus, and Mars. All the Mariner spacecraft were designed and built at NASA's Jet Propulsion Laboratory in Pasadena, California. Mariners 1 and 2, which targeted Venus, designs were based on the Ranger spacecraft which went to the Moon, but for the Mariner Mars flights, a larger, more sophisticated craft was needed. The basic Ranger instrument "bus" formed the core of the Mars craft, but it was larger, over 50 inches in diameter, to hold more instruments and cameras. Four solar panels instead of two were added as well as a much larger antenna. The instrument package was made up of a magnetometer, a Geiger counter, a plasma probe, and cosmic ray and radiation detectors. The camera was a television scan camera attached to a small Cassegrain telescope.* Completely assembled, the spacecraft weighed 575 Earth pounds. Three Mariner Mars spacecraft were built, one for backup and testing, and two to actually go to the planet. They were launched by an Atlas-Agena rocket from Cape Canaveral Air Force Station in Florida.



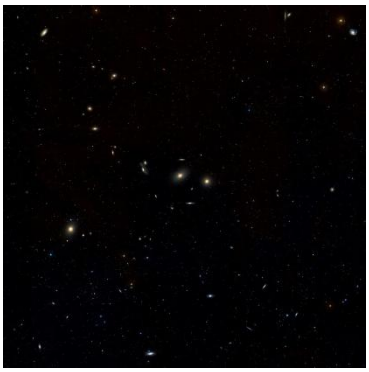
Mariner 3 was launched on November 5, 1964. Once the spacecraft reached orbit, however, the payload shroud failed to separate and the craft was lost. Mariner 4 was launched three weeks later, on November 28, 1964. This time, the shroud separated as expected and the spacecraft settled in for a seven-month journey to Mars. It made its closest approach to the Red Planet on July 15, 1965. The craft flew by 6,100 miles from the Martian surface and 134 million miles from Earth. While other instruments measured the atmosphere and the space around Mars, the scan camera took 21 images of the surface. They were stored in a recorder and transmitted back to Earth the next day, taking over six hours. Scientists had long since dismissed Percival Lowell's notion of advanced civilizations and canals but still expected to see vegetation and possibly forest or shrub-like environments. Instead, the images showed a dry dusty crater-pocked surface with no evidence of life anywhere. The Mariner 4 images completely changed their perception, not only of Mars, but of planetary evolution in general. It marked the beginnings of the field of planetary geology.

After flying by Mars, Mariner 4 went into a heliocentric orbit. Mission scientists were able to keep in touch with it over the next two-and-a-half years while it sent back data on micrometeorite hits, cosmic rays, and other phenomena. First, its thruster fuel supply ended, then its solar panels started to fail. Finally, JPL scientists ceased transmission to it altogether on December 21, 1967. It was the first successful planetary probe and paved the way for exploration of Mars that continues to this day.

***Editor's note-Many years ago, after I gave a talk on the Mars spacecraft, a man who worked at JPL told me that the reason the Mariner 4 images were so few and grainy was not because of the camera; it was the fact that the receiving equipment on Earth was not yet sophisticated enough to handle large amounts of data being transmitted from such a distance. By Mariner 9 in 1972, that problem had been solved and it returned over 7,000 high-quality images of the entire planet.**

Galaxy in the Eyepiece
M86

Messier 86 is one of the many galaxies in the Virgo cluster and is usually overshadowed by its larger and more famous sibling, M87. It's an interesting object in its own right, though, for a number of reasons. By the latest measurements, it is 55 million light years from Earth, has an apparent magnitude of 8.9, and is about 135,000 light years in diameter. It is estimated to have almost 3,700 gobular clusters. Along with M84, one of the lesser-known Messier Objects, and several other NGC galaxies, it forms a subcluster of its own within the Virgo Cluster.

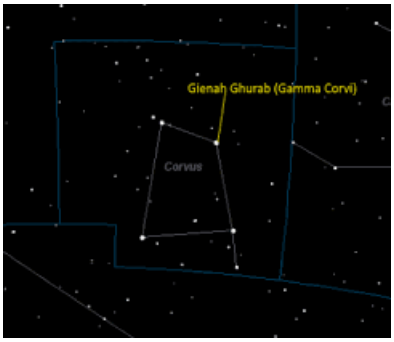


M86 was first seen by Charles Messier in 1781 and observed and studied by many other astronomers in succeeding years. It was not until the mid- 20th century, though, that scientists noticed something unusual about it: it is one of the few galaxies that is blue shifted; i.e., it is coming towards Earth, not moving away from it. In fact, it has the highest blue shift of all the Messier objects. Scientists have also observed streams of material in M86 that are connected to the spiral galaxy NGC 4438, indicating that it may have had a close encounter with 4438 in the past and is now tearing it apart. M86 also has additional streams of material that lead scientist to believe that, in the past, it "ate" several dwarf galaxies.

M86 is now known to be a member of Markarian's Chain(above image) a line of galaxies that includes M84, NGC 4477, NGC 4473, NGC 4461, NGC 4458, NGC 4438 and NGC 4435.

Star Stories
Gienah

Gienah is the brightest star in the constellation Corvus, the Crow, and is designated Gamma Corvi. It is actually a binary star system; the larger star is g Corvi A, is a B8 giant over four times the size of our Sun and has an apparent magnitude of 2.5. The smaller star, g Corvi B, has a classification of K5 and an apparent magnitude of 9.5. It is only about 80% the size of our Sun. Together, the system has an absolute magnitude of -.79. The latest measurements show the system is 154 light years from Earth.



Until recently, the complete system was given the name Gienah, from the Arabic, meaning the "Right Wing of the Crow." However, in 2017, the International Astronomical Union's committee on stellar names gave the name Gienah to g Corvi A only, leaving the second smaller star unnamed. In Chinese astronomy, the star was known as Zhen Su Yi, The First Star of the Chariot.

Another in a continuing series on lesser-known, but still important, astronomical observatories around the world

The PAGASA Observatory

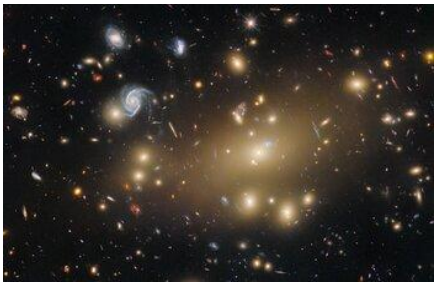
The PAGASA Astronomical Observatory is located on the campus of the University of the Philippines in Quezon City, near Manila, in the Philippines. It is the largest observatory in the country and is owned and managed by the University. The term PAGASA stands for the Philippine Atmospheric, Geophysical, and Astronomical Services Administration.

The observatory was established in 1954 and for many years used a .3m reflector telescope. In 2001, a .5m Cassegrain reflector was donated to it and has been in use ever since. In recent years, it has been updated with modern electronic equipment, including an advanced CCD camera. It is currently used by professors and students at the University and, among other observations, specializes in stellar studies.

Some Recent Images from Hubble

With all the recent focus on the James Webb Space Telescope, and now the Artemis II mission, it's easy to forget that the Hubble Space Telescope is still up there and still going strong after 36 years. It's going to have a big brother, Lazuli, in a few years, which will take over many of its duties, but it can still wow the world with its images. Here are a couple of them taken within the past year.

NGC 1309 in the Constellation Eridanus. It is about 100 million light years away



Abel 209 in the constellation Cetus, almost 2.7 billion light years from Earth

The Globular cluster NGC 1786 in the Large Magellanic Cloud, 180,000 light years from Earth