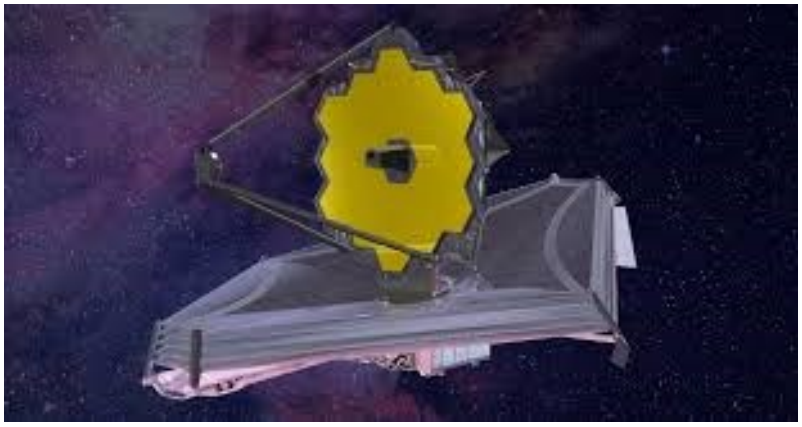
Spring Star-B-Que at Big Stump May 24!

THE OBSERVER

The Newsletter of Central Valley Astronomers of Fresno May-June 2025



Life on Another Planet-or a Glitch in the Data?

On April 17, scientists at Cambridge University announced that, based on data from the James Webb Space Telescope, they had found evidence of organic molecules in the atmosphere of exo-planet K2-18b in the constellation Leo, about 125 light years from Earth. They cautioned it did not indicate that life might actually exist, only that the molecules were found. They believe that K2-18b is a watery planet with a large ocean, and the chances for life might be possible, but, at this time, they had no way of verifying that. Nevertheless, the popular media pounced on it, claiming that possible life had been found on another planet. However, only a few days after the initial announcement, scientists from other institutions, most notably the University of California-Riverside, said they also looked at the findings, and no evidence of molecules was seen. Scientists at Oxford also claimed they ofund no evidence of organic processes. As a result, the researchers at Cambridge said they will review their findings to see if they made a mistake in the analysis. For now, the question of life on other planets remains where it has been for many years-literally up in the air.

JWST image by NASA

Astronomy Quote of the Month-

"To achieve the density of a neutron star at home, just cram a herd of 50 million elephants into the volume of a thimble."
-Neil deGrasse Tyson

In this Issue-

Central Valley Astronomers

Web address www.cvafresno.org

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CVA Schedule for May and June 2025

May 2-Public starwatch at Riverpark

May 9-Monthly meeting at Round

May 24-Star-B-Que and starwatch at Big Stump

June 6-Public starwatch at Riverpark

June 13-Monthly meeting at Round Table

June 21-Public starwatch at Millerton Lake

June 25-27-CVA starwatch at Courtright

June 26-CVA starwatch at Big Stump

Reminder-no monthly meetings in July and August

Number of exoplanets found as of April 2025-

Confirmed-5,885

How many more are out there?

Tens of Thousands? Hundreds of Thousands?

Millions?

Larry Parmeter is the editor of *The Observer*- He can be contacted at 559-288-3456 or at lanpar362@gmail.com

Another great image from the James Webb Space Telescope-NGC 1514 in the constellation Taurus-taken in April 2025

Image from NASA/ESA/ CSA/STSI/JWST

The President's Report

The weather has been bad for amateur astronomers in the Central Valley recently. Multiple star party events had to be canceled due to poor weather conditions. With the Spring weather, we will meet more often at the Big Stump parking lot, the Helipad, or other locations to get back on track and perform serious sessions of observations. While it was possible to appreciate the Orion nebula and other deep-sky objects from Fresno when the Moon is up, driving to dark-sky locations is better. The club has its own Facebook page and group, where members can share information about who is going where to improvise convivial nights. It is better to chat and observe with other people.

On Easter Monday, April 21st, 2025, I took the 18-inch f/4 Dobsonian I use for outreach events to the Big Stump parking lot. The sky was clear, with no clouds, but the transparency was mediocre. With the Paracorr 1.15x and my Explore Scientific eyepiece 82 degree 24 mm, the magnification was 87.6, with an exit pupil of 5.22 mm.

The night started with some rather bad views around astronomical darkness at 9 p.m. I started with the Leo triplet and was shocked to see NGC 3628, the Hamburger Galaxy, barely visible. However, later in the night, the view improved substantially with details in M65 and M66. Disappointed by the Leo triplet, I went to M51 - a well-known target and benchmark -, which was not much better at the beginning of the night. I stayed in this sky area around Canes Venatici to observe the cocoon galaxy (Arp 269), then went down to meet NGC 4618 and 4625. Orthogonal to the middle of the segment representing Canes Venatici, I checked M94. Now, having an orthogonal line to the Canes Venatici segment, I went straight on to observe M63.

The night was getting better, and I had better views. I went to Coma Berenecies. First, I checked the Needle galaxy (NGC 4564). Then, I went down in the right angle described by the constellation to catch NGC 4889, 4816, and 4789. Using the telrad circles, I then went straight to M64.

The main event was to observe galaxies in Virgo. It is galaxy season, Leo, Coma Berenices, and Virgo are the places to be. During the rest of the year, there is plenty of time to check galaxies in Ursa Major and around. It is easy to get lost among the galaxies in Virgo, particularly those around the Markarian chain. I aimed halfway on the line between Denebola in Leo and Vindemiatrix in Virgo. My journey in Virgo started with the couple M86 and M84 and their dim neighbors, which were all clearly visible without averted vision: NGC 4402, 4387, 4388, 4413, and 4425. It was a great start with seven galaxies in the field of view. M86 and M84, with all the galaxies around, are a good starting point to avoid confusion with other galaxies. Continuing on the Markarian chain, I reached the eyes, an easy target (NGC 4438 and 443).

After the eyes, I arrived at another sweet dim couple, NGC 4461 and 4458, then continued galaxy hopping within the same field of view of the eyepiece, I reached NGC 4473, then followed by NGC 4479, which was rather dim, and NGC 4477, which was right next to it. Continuing up with the telescope, I reached NGC 4459 and NGC 4474, another dim, small object. Pushing to the side, I arrived at M88, which has two stars on its edge (magnitude 13.65 and 14.30) that pop out of the galaxy. I continued to the side to find M91, but the conditions were disappointing for observing any structure in the galaxy. Going down with the telescope now, I continue towards M90 and M89 while crossing NGC 4571. I had NGC 4550 and 4551 in the same field of view, confirming that I was not lost and not on a different object. A slow push to the side led me to M87 with some small galaxies nearby. Going back to M89, I continued down to find M58, a little push to the side to find NGC 4564, and underneath the Siamese twins NGC 4567 and 4568. Returning to M58 as a safe reference, I continue towards M59, a relatively small object for a Messier object, followed by NGC 4638 and M60 with its companion NGC 4647. That was enough galaxies for me on that side of Virgo, so I moved to one of the feet of Virgo, where it is possible to find two galaxies next to the star 109 Vir: NGC 5740 and NGC 5746, a barred spiral galaxy. It is a very nice target that can be compared to M104. I continued in the foot of Virgo, starting from 110 Vir, arriving directly at NGC 5838 and then a group of galaxies around NGC 5845, which were difficult to distinguish.

Other objects of the night included M13 and its nearby galaxy. M13 is never boring, if it is up in the sky, it has to be appreciated. I quickly looked at M53, the Cat's Eye Nebula, the Sombrero Galaxy, and the Antennae Galaxies (also known as NGC 4038/NGC 4039 in Corvus).

During that night at Big Stump, I had the company of another amateur astronomer with his 20-inch Dobsonian, a regular and dedicated visual observer at Big Stump. With work at 8 a.m. in the morning, I left soon after midnight after viewing more than 50 galaxies and some other objects. More nights like that will happen in the following months, and all the CVA members are welcome to join to share the views, with or without a telescope.

The next official star party is scheduled for Saturday, April 26, 2025, followed by the biennial anticipated Star-BQ on Saturday, May 24, 2025.

Clear skies-
Hubert Cecotti

Profiles in Astronomy

Olin Eggen 1919-1998

Eggen, the son of Norwegian immigrants, was born and raised in Wisconsin, and, after public schools, attended the University of Wisconsin. He served in the OSS(Office of Strategic Services) during World War II, and then returned to Wisconsin, where he earned a Ph.D. in astrophysics in 1948. During his long career, he worked at number of different institutions, including the Mount Wilson Observatory, Caltech, the Royal Greenwich Observatory, and Lick Observatory. In his 50s, he moved to Australia to be at the Australian National Observatory and later was associated with the Cerro-Toledo Inter-American Observatory in Chile.

Eggen is best known for his studies of galactic evolution. In the 1960s, with Alan Sandage at Mt. Wilson, he studied galaxy formation and wrote an influential paper stating that the Milky Way formed from the collapse of gas clouds. He also did pioneering work in star clusters and their motions.

Eggen was a member of a number of different organizations, including the Astronomical Society of the Pacific, the American Astronomical Society, the Royal Astronomical Society, and the Astronomical Society of Australia, where he was president in the 1970s. An astronomy scholarship at the Australian National University is named for him.

Astronomy Short

When Caroline Herschel(1750-1848) was growing up in Hanover, Germany, the eighth of ten children and the youngest of four girls, her mother considered her a failure who wouldn't go much beyond a parlor maid, and refused to allow her to attend school. However, her father, a musician in the Hanover military band, saw potential in her and educated her as well as he could, mostly in mathematics and music. After his death in 1772, she was able to escape her mother's domination and immigrated to England at the urging of her older brothers William and Alexander, who were already living there. She moved in with William, took up singing as a career, and eventually started helping him with his astronomical observations. The rest, as they say, is history.

Right-Caroline at about age 25. She lived to be 98.

Galaxy in the Eyepiece
M87

M87, also known as NGC 4486, has the distinction of being one of the largest galaxies ever found, several times the size of the Milky Way. It is estimated to contain two to three trillion stars and has up to 15,000 globular clusters. Not surprisingly, it also has a black hole at its center, which was "imaged" for the first time by the Event Horizon Telescope consortium in 2019.

M87 was first observed by Charles Messier in 1781, the eighty-seventh in his list of non-stellar objects. It was extensively studied in the 1800's and was given the designation of NGC 4486 by John Dreyer in 1888 when he reorganized the Herschels' catalog of objects. In the late 1920s, Edwin Hubble identified it as an extragalactic bright nebula.* In the early 1930s, Curtis Herber at Lick Observatory found x-ray material emanating from the core of the object and assumed it to be a powerful radiation source. In 1947, an early radio telescope identified the object known as Virgo A, which was putting out massive amounts of radio activity, to be M87, and connected the jet-ray that Heber found to be responsible for it. In 1966, a sounding rocket identified the center of the galaxy to be an x-ray source, Virgo X-1, which led to to the idea that a huge black hole was at its center. This was verified during studies in the 1980s and 90s. In 2019, the EHT Consortium made the first successful "image" of a black hole using a worldwide network or radio telescopes.

M87 is classified as an E0 elliptical galaxy, with an almost perfect spherical shape. It is known to be 53 million light years from Earth, which was confirmed from measurements by the Hubble Space Telescope (HST also used M87 to confirm Hubble's constant, and subsequently the size and age of the universe, a figure which is now under fire due to more recent measurements from the James Webb Space Telescope).It has an apparent magnitude of 8.6, is considered one of the brighter elliptical galaxies, and can be easily seen in a small telescope. The jet emanating from the core, however, is much more difficult to observe and needs a much larger telescope to distinguish it the rest of the galaxy.

***M87 was not given the designation of galaxy until the early 1950s, due to the fact that up to then, the term *galaxy* was reserved solely for the Milky Way, and all other objects outside it were simply called extra-galactic nebulae.**

`From the Observer Archives

By Matt Mazurek-Beginner's Corner
Definition of Polar Alignment

A common back problem many observers exhibit while observing with equatorial telescopes. Only chiropractors can cure "polar alignment." Seriously, it is the very tedious task of properly adjusting an equatorial mount so it's parallel to the Earth's axis. You might hear four letter words followed by a swift OUCH! after the owner of the scope curses and kicks the telescope mount because it refuses to become "polar aligned."

From the September 1993 Observer

Space Age Archeology

Syncom 2

Syncom 2 was the first geosynchronous satellite to orbit the Earth. It followed what was known as a Clarke Orbit, named after the British scientist and science-fiction writer Arthur C. Clarke, who speculated in the 1940s that satellites placed in an orbit approximately 23,000 miles above the Earth would remain stationary relative to the Earth's rotation. This concept would lead to huge numbers of communications, weather, and military spy satellites being put into Clarke orbits. But Syncom 2 was the first.

Three Syncom satellites were originally commissioned by NASA and designed and built by Hughes Aerospace in Southern California. They all looked basically the same: cylindrically shaped, 28 inches in diameter and 15 inches high, covered with solar cells for power around their rims. At launch, Syncom 2 weighed 168 pounds(which was tiny at the time; some geosynchronous communications satellites today are up to five feet in diameter, ten feet in length and weigh over 2,000 pounds. But, then, the rockets to launch them were much smaller as well), was an experimental satellite which was designed to test wireless communications carried by satellites. It could handle one telephone conversation or up to fifteen teletype communications.

Syncom 1 was launched from Cape Canaveral on February 14, 1963 but contact with it was lost during the climb from low Earth orbit to geosynchronous orbit. Radar later showed that it was in a geosynchronous orbit, the first satellite to do so. Syncom 2 was launched on July 26, 1963. It, too, went into geosynchronous orbit and remained operational for almost two years, the first successful geosynchronous communications satellite. During that time, NASA conducted tests involving telephone and teletype transmissions, as well as attempts at television video transmission, which were only partially successful. A major milestone came when President John F. Kennedy, in Washington, D.C., used Syncom 2 to talk by telephone to Nigerian Prime Minister Abubakar Balewa, who was in Lagos, the country's capital(via a U.S. Navy communications ship in Lagos harbor).

Syncom 3 was launched on August 19, 1964 and placed in geosynchronous orbit above the Pacific Ocean. Its main goal was to test television communications, and it successfully transmitted live television imagery of the 1964 Tokyo Olympics to the United States. Syncom 3 was later used to facilitate military communications during the Vietnam War starting in 1966. It was shut down in 1969 and is still in orbit today.

Once the Syncom satellites proved the viability of geosynchronous operations, they were followed by a whole series of much larger and more powerful satellites which, by the 1980s, could carry thousands of communications at a time, as well as television imagery, and eventually, internet transmissions. But the Syncoms were the first, pioneering a new era in world-wide communications.

The world would be a safer place
If someone had a plan
Before exploring outer space
To find the inner man

E.Y. Harburg*

***Edgar Yipsel Harberg, born Isidore Hochberg(1896-1981) was a songwriter and lyricist in the 1930s, 40s, and 50s. He is best known for writing all the songs for *The Wizard of Oz*, including "Over the Rainbow."**

What's New In Space

James Webb Space Telescope Threatened by Funding Cutbacks

A preview of NASA's 2026 budget shows, among other things, proposed cuts to the James Webb Space Telescope, part of the Trump Administration's efforts to cut spending in the federal budget. The Great Observatories program, which consists of JWST, the Hubble Space Telescope, and the Chandra X-Ray Telescope, is currently slated for a 20% cut in its operating budget, sparking concern among scientists. They are less worried about Hubble and Chandra, which were launched in the 1990s; Hubble is 35 years old and Chandra is 26; and are past their prime, but Webb is just getting started on what is projected to be a ten to twelve year observing lifetime. Already, it has made discoveries which are changing currently accepted theories about the origin and nature of the universe. Even with the cuts, JWST will still be able to make observations, but at a reduced level. Scientists are hoping that the proposed cuts will be restored; currently, JWST's operating budget is $187 million a year.

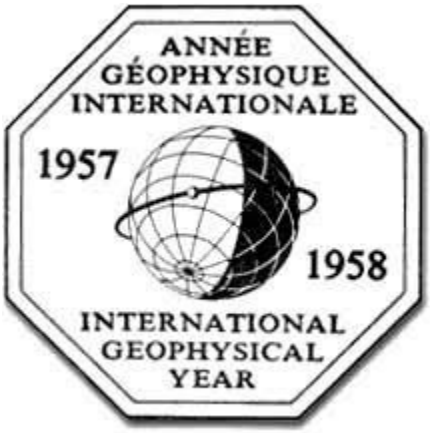
Artemis II Mission Hardware Proceeds

In late March, engineers and technicians at the Kennedy Space Center mated the core body of the SLS rocket to the solid rocket boosters, another step in preparing for the Artemis II mission, now scheduled for April 2026. It will carry four astronauts, three American and one Canadian on a circumlunar mission lasting six days. At the same time, the Orion-MPCV capsule that will hold them is being mated with its European-built service module preparatory to testing. By mid-summer, the Orion and the SLS will be joined and completed, followed by several months of testing prior to launch. The mission, which is almost seven years behind schedule, has been delayed numerous times due to problems with both the SLS rocket and the Orion spacecraft, the most recent having to do with the heat shield. After the Artemis 1 flight in November 2022, it was found to have charred more than expected during reentry, leading to a lengthy investigation into the cause. In October 2024, NASA concluded that the excessive wear was within acceptable boundaries, leading some scientists to charge that it was covering up potentially dangerous flaws, and demanding a two-to-three-year additional delay to redesign and rebuild the shield. NASA, though, is going forward with the flight, and if it is successful, will launch Artemis III as early as October 2027. That mission, using a modified Starship, will land near the moon's south pole, the first time humans will set foot on the moon since 1972.

Speaking of the Moon…

On March 1, 2025, Blue Ghost, a lander designed and built by Firefly Technologies of Austin, Texas, became the first private commercial spacecraft to successfully land on the moon. It was launched atop a Space-X rocket on February 27. NASA, which had several experiments aboard, hailed it as an important step in the exploration of our natural satellite. On the other hand, a second lander, called Athena, built by Intuitive Machines of Houston, landed on the moon, again, near the south pole, on March 6, but tipped over shortly after landing. It was able to send back some images and data from its instrument package, but, with the solar panels unable to generate electricity, was declared dead after twenty-four hours. This was the second attempt by Intuitive Machines to land on the moon; the same thing happened to its first lander in 2024.

The International Geophysical Year (IGY) 1957-1958



The International Geophysical Year, or IGY, as it was commonly known, has been all but forgotten in the eyes of the public. But it still holds a special place in the annuals of science, and many in the aerospace community see it as the true beginning of the Space Era.

The IGY began at a dinner party outside Washington, D.C., in April 1950 at the home of James Van Allen, where a number of scientists gathered to honor British geophysicist Sydney Chapman, who was visiting the U.S. At the party, Lloyd Berkman, an American geophysicist and friend of Van Allen's, suggested the time was right for a third International Polar Year(The First IPY was in 1882-1883; the second in 1932-1933; both were dedicated to studying the polar regions), only this time a world-wide effort to study not just the polar areas, but the entire Earth environment. They agreed that advances in technology as a result of World War II, such as computers and rockets, made large-scale research of our planet and its atmosphere much more feasible and accessible. Within a few months the group made a formal proposal to the International Council of Scientific Unions that the event take place in 1958, a solar maximum year. In 1952, the ICSU established a special committee, with Chapman as its president, to officially organize the event and coordinate its scientific goals. The following year, the death of Soviet leader Joseph Stalin allowed the Soviet Union to join the almost 70 nations that would participate in the event. The U.S. effort was headed by Henry Wexler, a meteorologist with the U.S. Weather Service, who would propose and help design Tiros 1, the first weather satellite.

The IGY concentrated on scientific research in several areas: atmospheric physics, meteorology, glaciology, navigation, oceanography, seismology, cartography, space sciences, and solar physics. A special emphasis was given to the newly emerging field of plate tectonics and continental drift, as well as to ocean floor mapping, which was also relatively new. As well, the third International Polar Year was incorporated into the IGY. As part of the effort, the United States announced in 1955 that it would put an artificial satellite into Earth orbit as part of the IGY to explore the upper atmosphere and monitor the Earth from space. This led to the Navy starting the Vanguard program and the Army establishing the Explorer program.

The IGY formally began in July 1957 and ran through the end of 1958. Shortly before its inception, scientists agreed to establish the World Data Center, with its main facilities in Washington, D.C., Moscow, and Paris. It would collect and organize all data sent in from scientific efforts during the IGY. The World Data Center still exists today with facilities in several cities and still gathers and coordinates data from scientists throughout the world.

The main focus of research during the IGY was in Antarctica, in keeping with the International Polar Year program. Over 20 nations established scientific bases on the icy southern continent, with the U.S. leading the way with a now-permanent base at the South Pole itself. There, scientists studied atmospheric conditions, especially auroras; glacial properties; and weather forecasting, among many other areas. In the Arctic, several bases were set up on the ice pack to observe sea and ice flow and perform mapping of the Arctic Ocean floor. In other parts of the world, scientists studied ocean currents; mapped earthquake fault lines; observed solar flares during the solar maximum; and followed hurricanes, typhoons, and cyclones, among other research targets. Much of the data pointed to evolving atmospheric conditions, leading to the theory that human events were causing global temperatures to rise; the first hints that climate change was influencing the Earth came out of the IGY. But by far the most important event of the IGY had to be the Soviet Union's launch of Sputnik 1 in October 1957, which had not been previously announced and shocked the world, heralding the beginning of the Space Age. It was followed by Sputnik 2 in November 1957, and then by the US's Explorer 1, in January 1958, and Vanguard 1 In March 1958. Explorer 1 made one of the most important discoveries of the IGY, the

Van Allen radiation belts encircling the Earth.

Officially, the IGY ended in December 1958, but IGY data from scientists kept flowing into the World Data Centers for years afterwards. One direct result of the IGY was the Antarctic Treaty, in which the continent was declared *Terra Nullis*, and all nations involved agreed to use it only for peaceful scientific purposes. In the U.S., the IGY led to the establishment of NOAA, the National Oceanic and Atmospheric Administration, which was the result of combining several smaller organizations. The Soviet Union's Sputnik launches also led to the formation of NASA out of the old National Commission for Aeronautics(NACA). In 2007-08, a fourth International Polar Year focused on climate change and related scientific research, especially in the Arctic and Antarctic. The most lasting legacy of the IGY, though, has been the Space Age. From the earliest satellite launches to human spaceflight and ISS, IGY has changed the way humanity looks at the world, the universe, and ultimately, at itself.

A Vanguard Recovery Mission?

As a follow-up on the IGY article, a number of scientists are currently discussing and formulating preliminary plans to possibly recover and bring back to Earth the Vanguard satellite, which was the second American spacecraft launched into Earth orbit, on March 17, 1958. Unlike Explorer 1, the first American satellite, which reentered the atmosphere in 1967, Vanguard is still in orbit after 67 years. It went dead in 1964, but the Air Force still tracks it; it is in a highly elliptical orbit of 406 miles by 2,400 miles. A sphere measuring six inches in diameter and weighing only three pounds, Vanguard was the first satellite to use solar cells to provide electricity. It was designed and built by the Navy's Advanced Research Laboratory and launched atop a rocket, also called Vanguard, built by the then-Martin Company. Its main goal was to measure atmospheric density and drag and to test different radio frequencies in space.

Scientists believe that it can be retrieved either by a robotic mission, or by slowly decreasing and adjusting its orbit to the point where it can be captured and brought aboard the International Space Station and later returned to Earth. Engineers would like to see how well it has fared after so many years in space and also inspect its instruments for durability. Once the research on it has been completed, they say, it will probably be put into the Smithsonian's Air and Space Museum as a true relic of the early Space Age.

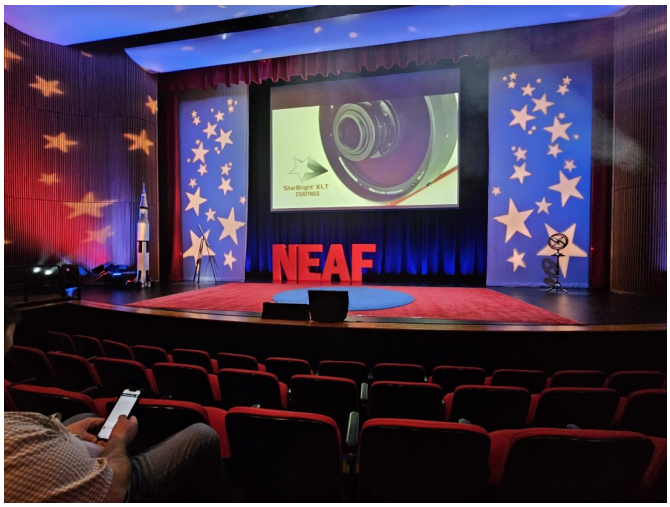
Astronomy (Bad) Joke

How do you know when the moon is going broke-It's down to its last quarter

From funnyjokeshub.com

The 2025 NEAF Convention

In early April, CVA member Bill Ducas and his wife attended the annual Northeast Astronomy Forum at SUNY Rockland in Suffern, New York . Over a hundred venders, displays, workshops and talks were presented. Bill brought back a number of images of the event, a few of which are shown here.



Another in a continuing series on lesser known-but still important-observatories throughout the world

The Ankara Observatory

The Ankara Observatory, managed by the department of astronomy and space sciences at Ankara State University in Turkey, was established in 1963 by Egbert Kreiken, a Dutch-born astronomer at the university. Although its administrative offices are on the university grounds, the observatory's telescopes are at Golbasi Ankara, about ten miles from the university, at an altitude of 4,100 feet.

The observatory has several telescopes, the largest being a 16" Meade Schmidt-Cassegrain; it also has a 14" Schmdt-Cassegrain, and a 12" Makutsov reflector, along with four smaller telescopes and a Zeiss Coude reflector telescope. For many years, it also had a small radio telescope, but that has since been taken out of operation. All are used by the astronomy professors and graduate students at the university. Although the telescopes are used for everything from planetary studies to galaxy research, the observatory's main interest is in binary and variable stars.
Above right-the 16" Meade telescope at Golbasi Ankara

Star Stories

Alkaid

Alkaid is the star at the end of the handle of the Big Dipper. Also known as Eta Ursa majoris, it is unique in that it is not part of the Ursa Major group of stars, most of which are believed to have formed together in the same nebula. It is classified as a B3 star, has an apparent magnitude of 1.86 and an absolute magnitude of -.67. The latest measurements show it to be 104 light years from Earth. It has six times the mass of the Sun, and is about 3.5 times the size of our Sun.

Alkaid is a young star by astronomers' definition, having been formed only about ten million years ago. It is a very stable main sequence star, and, as such, is often used as a standard comparison when studying similar stars. It has no known companion stars or exoplanets.

The name Alkaid comes from the Arabic and means "the head of the daughters of the bier," the other three stars of the handle being the other daughters and the stars of the cup being the bier. The Chinese knew it as Yao Guang, the "star of twinkling brilliance," and the scientists of India knew it as Marici, one of the seven ancient men of wisdom, personified by the seven stars of the Big Dipper.