



Current
Astronomy

RIVER BEND ASTRONOMY CLUB NEWSLETTER

JANUARY/FEBRUARY
2010



Orion Rising over St. Jacob from Kronk Observatory

Photo by Bill Breeden

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River Bend Astronomy club serves astronomy enthusiasts of the American Bottom region, the Mississippi River bluffs and beyond, fostering observation, education, and a spirit of camaraderie.

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Affiliated with the Astronomical League, dedicated to fostering astronomical education, providing incentives for astronomical observation and research, and assisting communication among amateur astronomical societies.
www.astroleague.org



Affiliated with the NASA Night Sky Network, a nationwide coalition of amateur astronomy clubs bringing the science, technology and inspiration of NASA's missions to the general public.

Monthly Meetings

Saturday, January 9, 2010 • 7:00 PM
at Menz Observatory

Saturday, February 13, 2010 • 7:00 PM
at Kronk Observatory

Saturday, March 13, 2010 • 7:00 PM
at Greenville (Messier Marathon)

Looked Up Lately?

Join River Bend Astronomy Club

Want to learn more about astronomy? The members of River Bend Astronomy Club invite you to join. You won't need expensive tools or special skills - just a passion for observing the natural world.

- Meetings offer learning, peeks through great telescopes, and fun under the stars.
- You will receive the club newsletter, *Current Astronomy*, packed with news and photos.
- Get connected with our member-only online discussion group.
- Borrow from the club's multimedia library.
- Borrow from the club's selection of solar telescopes.
- And that's not all! Through club membership you also join the Astronomical League, with its special programs and colorful quarterly newsletter *The Reflector* to enrich your hobby.
- We meet monthly, observe regularly, email news and quips constantly, and generally have a good time. Won't you join us?

Name _____
 Address _____
 City _____ State _____ Zip _____
 Phone _____
 Email address _____
 Where did you hear of our club? _____

How long have you been interested in astronomy? _____
 Do you have optical equipment? _____
 Are you afraid of the dark? ___Yes ___No (just kidding)
 I am submitted my application for:
 _____Adult Membership(s) ___Youth Membership(s)
 \$20/year each \$15/year each
 (18 yrs. and up) (17 yrs. and under)
 I enclose a check for \$ _____ made out to:
 Mike Veith, Treasurer, RBAC
 Signature _____
 Date _____

Mail to: River Bend Astronomy Club
 c/o Gary Kronk, 132 Jessica Drive, St. Jacob, IL 62281.
 Email: fomalhautnights@yahoo.com

A Night of Astrophotography with Gary Kronk

By Bill Breeden

Saturday night, November 7, 2009 I spent the evening with Gary Kronk at Kronk Observatory learning the basics of astrophotography. I brought my Meade 8-inch LX-90 Schmidt-Cassegrain telescope (SCT) and my Pentax K100D digital SLR camera to learn a few pointers from Gary. He has extensive astrophotography experience, and I was eager to begin learning all about it.

First and foremost, let me say that I am most certainly an “eyepiece” amateur astronomer. Nothing excites me more than peering through the eyepiece for a first-person view of faint fuzzies and galaxies far, far away. That being said, after 5 years of visual amateur astronomy, I wanted to learn some things about astrophotography; if anything so that I could understand all the “astrophoto talk” around me at star parties!



The Pentax K100D Super DSLR camera. Photo courtesy Pentax Corp.

I began by simply holding the camera and taking pictures of the sky to practice with all of the camera’s settings. Gary showed me the basics of the camera’s ISO and Bulb settings, which I knew little or nothing about. I learned that lower ISO settings are good for daytime shots, while higher settings are for darker shots. Higher ISO settings make the “film”

more sensitive to light, but crank up the ISO too much and you begin to get a grainy effect. After much experimenting, I found 800 ISO to be the sweet spot for this first night out.



The Meade 8-inch LX-90 SCT telescope. Photo courtesy Meade.

Gary gave me a few more pointers, then surprised me with a LX-90 camera mount he was no longer using on his telescope. He attached the camera mount to my LX-90, then showed me how to attach the camera. Next, he retrieved his Canon remote shutter release from his camera and connected it to my Pentax camera. Wow - my setup was beginning to look like a proper astrophotography gig!

I began by slewing my telescope to the Pleiades (M45) in Taurus. With Gary’s guidance, I set the camera’s ISO to 800 and set the camera to “Bulb.” I held the shutter release open for 90 seconds and crossed my fingers. Click! My telescope is alt-az mounted, so I expected some star trails. Gary was fairly sure the photo would turn out quite nice, as 90 seconds is too short for star trails to be very noticeable.

He was right! The photo turned out great! M45 was clearly visible in the photo, and the surrounding star field in Taurus was amazingly clear for my first photo!



The Pleiades (M45). 90 second exposure. Photo by Bill Breeden.

It was time to try another photo, so I slewed the telescope to the Andromeda Galaxy (M31). M31 was nearly at the zenith, so I was in for quite a surprise when I took the photo. Gary instructed me to go for a 4-minute exposure. "Won't I get star trails?" I asked. "Yes, but M31 is faint, and you're not shooting through the telescope, so you will need the light-gathering that a 4-minute exposure will provide," he said. And he was right! The photo turned out quite nice, with M31 clearly visible just below the center. Very pronounced star "arcs" are visible because the telescope was pointed near the zenith and the alt-az mount was rotating to keep M31 centered. Amazing!



The Andromeda Galaxy (M31). 4 minute exposure. Note the arcs of star trails, since M31 was near the zenith. Remember that this photo was taken "on" the telescope, rather than "through" it. Photo by Bill Breeden.

I honestly could not believe that it was me taking these amazing photos! Before Gary's help, any time I attempted to take pictures of the sky, I would end up with a blurry, grainy picture that could be mistaken for someone's snapshot of a UFO.

I slewed the telescope to M38, an open cluster in Auriga. It was at this point that I realized that I was depending on a lot of variables to be accurate: I don't have an observatory, so I have to set up and take down my telescope for each observing session. To take these photos, I had to be sure the telescope was level and aligned on the sky properly. Then, I had to be sure the Rigel, 8x50 finderscope, and main telescope optics were aligned. And now, with a camera piggyback-mounted to the telescope, how could I be sure that *it* was pointed exactly the same way as the telescope itself? Gee whiz! So, when the telescope stopped at M38, I peered through the eyepiece. Right on target! I held the shutter release for 2 minutes and spent that time gazing through the eyepiece, just like old times. Beautiful! Then, click!



The Pleiades (M45). 90 second exposure, 200mm focal length lens. Photo by Bill Breeden.

The Double Cluster, NGC869 and NGC884, loomed temptingly above me in Perseus. Gary encouraged me to give it try, and I could always enjoy a visual gaze at it through the eyepiece as well. So, I punched in NGC884 into the LX-90's handbox, and off we go!

Beep! The telescope pointed right at it, and I enjoyed a view of it through my 13mm Nagler eyepiece. (Nothing still beats that view!) WOW! AWESOME! You would have thought I had never seen it before, but it never fails to amaze me.

Now for the photo. I set the ISO at 800 and held the shutter release for 3 minutes. Click! Three minutes is long enough to show star trails, and the high position of Perseus in the sky emphasized them even more, but the photo turned out amazing!



The Double Cluster (NGC869 and NGC884). 3 minute exposure. Photo by Bill Breeden.

Orion was rising in the east, so it was time to try my newfound knowledge to take a picture of it. I tried several exposure times ranging from 1 to 3 minutes. The image on the cover of this newsletter was taken with a 1 minute exposure. I learned that longer exposures can give you access to fainter objects, but the movement of the sky will cause star trails to become longer. Also, foreground objects will begin to noticeably blur if your telescope tracks the sky during a longer exposure.

I also tried using 1600 ISO to increase the sensitivity of the camera, but this also resulted in increasing graininess in the images. My Pentax camera has a 3200 ISO setting, so at some point I will have to try that out. All of my photos were taken with the camera piggyback mounted to the telescope, and I did not do any "digital darkroom" image processing after taking the photos.

The photo below of Orion rising was taken with a 3 minute exposure. Note the sky glow and the blurring of foreground objects at this exposure time.



Orion rising from Kronk Observatory. 3 minute exposure. Photo by Bill Breeden.

With Orion up, now was my chance to photograph the Orion Nebula (M42). Since I was not taking these photos through the telescope, I attached a telephoto lens to my Pentax camera and turned it to 200mm focal length. At this point, I was completely dependent on my telescope's pointing accuracy for imaging M42. With Gary's advice, I held the shutter release for 2 minutes. I captured M42 and the surrounding area of Orion's sword. Amazing!



The Orion Nebula (M42). 2 minute exposure. Photo by Bill Breeden.

What a great night! I hope to try some more imaging real soon! RBAC

Meeting Locations Update!

By Bill Breeden

Please note that the January 9, 2010 meeting of the River Bend Astronomy Club will be held at Menz Observatory in Highland. The address is 13721 Kayser Road, Highland, IL 62249. Please watch the online Yahoo! group for driving directions, or contact a club member.

The February 13 meeting will resume at Kronk Observatory. The address is 132 Jessica Drive, St. Jacob, IL, 62281.

The March 13 meeting will be held at Greenville College for our annual Messier Marathon. Driving there can be tricky, even if you have done it before. We usually meet at the Powhatan Restaurant in Pocahontas, Illinois and caravan to Greenville. I would strongly suggest that if you plan to attend our Messier Marathon that you join the caravan. We will meet at the Powhatan Restaurant at 5:00 PM. Complete details and driving directions will be posted on the Yahoo! group and in the next issue of *Current Astronomy*. [RBAC](#)

Starry Starry Night

By Bill Breeden

Mark your calendar for Saturday, January 16, 2010. Karla Danford at the Edwardsville Children's Museum would like to have members of the River Bend Astronomy Club back to present the night sky to kids this winter!

The event is scheduled from 6-8PM, so if you would like to volunteer, plan on arriving at 5PM to setup your telescope and materials. The event is scheduled to be held even if the sky is cloudy, so bring materials for an indoor event as well.

We will have a one-day old Moon, so it will not be visible. Mars will be rising and Jupiter will be setting, so we have two showpiece planets up! If you want to show off some deep-sky treats, the Orion Nebula (M42), the Pleiades (M45), and the open clusters in Auriga (M36, M37, and M38) always make fine targets.

The Edwardsville Children's museum is located at 722 Holyoake Road, Edwardsville, Illinois, 62026. (At Hwy. 159 and Park Place, next to Leclaire baseball field.) We hope to see you there! [RBAC](#)

Greenville Outreach Event a Success

By Bill Breeden

Members of River Bend Astronomy Club ventured out to Greenville College on Saturday evening, November 21, 2009 to present the night sky and telescope viewing to visitors. Clouds quickly moved in, but we did get a chance to show views of the Moon, Jupiter, and some constellations. [RBAC](#)



Cassiopeia over Greenville. 30 second exposure. Photo by Bill Breeden.



Clouds move in over Greenville. The Pleiades (M45) are visible at bottom right. 30 second exposure. Photo by Bill Breeden.



Sunglasses for a Solar Observatory

By Patrick Barry

In December 2006, an enormous solar flare erupted on the Sun's surface. The blast hurled a billion-ton cloud of gas (a coronal mass ejection, or CME) toward Earth and sparked days of intense geomagnetic activity with Northern Lights appearing across much of the United States.

While sky watchers enjoyed the show from Earth's surface, something ironic was happening in Earth orbit.

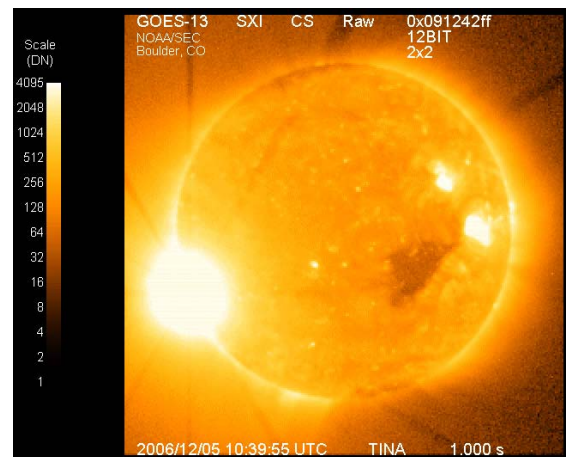
At the onset of the storm, the solar flare unleashed an intense pulse of X-rays. The flash blinded the Solar X-Ray Imager (SXI) on NOAA's GOES-13 satellite, damaging several rows of pixels. SXI was designed to monitor solar flares, but it must also be able to protect itself in extreme cases.

That's why NASA engineers gave the newest Geostationary Operational Environmental Satellite a new set of sophisticated "sunglasses." The new GOES-14 launched June 27 and reached geosynchronous orbit July 8.

Its "sunglasses" are a new flight-software package that will enable the SXI sensor to observe even intense solar flares safely. Radiation from these largest flares can endanger military and civilian communications satellites, threaten astronauts in orbit, and even knock out cities' power grids. SXI serves as an early warning system for these flares and helps scientists better understand what causes them. "We wanted to protect the sensor from overexposure, but we didn't want to shield it so much that it couldn't gather data when a flare is occurring," says Cynthia Tanner, SXI instrument systems manager for the GOES-NOP series at NASA's Goddard Space Flight Center in Greenbelt, Maryland. (GOES-14 was called GOES-O before achieving orbit). Shielding the sensor from X-rays also reduces the amount of data it can gather about the flare. It's

like stargazing with dark sunglasses on. So NASA engineers must strike a balance between protecting the sensor and gathering useful data. When a dangerous flare occurs, the new SXI sensor can protect itself with five levels of gradually "darker" sunglasses. Each level is a combination of filters and exposure times carefully calibrated to control the sensor's exposure to harmful high-energy X-rays. As the blast of X-rays from a major solar flare swells, GOES-14 can step up the protection for SXI through these five levels. The damaged sensor on GOES-13 had only two levels of protection—low and high. Rather than gradually increasing the amount of protection, the older sensor would remain at the low level of protection, switching to the high level only when the X-ray dose was very high. "You can collect more science while you're going up through the levels of protection," Tanner says. "We've really fine-tuned it." Forecasters anticipate a new solar maximum in 2012-2013, with plenty of sunspots and even more solar flares. "GOES-14 is ready," says Tanner.

For a great kid-level explanation of solar "indigestion" and space weather, check out spaceplace.nasa.gov/en/kids/goes/spaceweather.



X-9 class solar flare December 6, 2006, as seen by GOES-13's Solar X-ray Imager. It was one of the strongest flares in the past 30 years.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Looked Up Lately?

Observing is what we are about, so here are deep-sky observing lists for January and February. These lists include objects that transit around 10pm during those months. Your observing sessions will be more fun if you are prepared with an observing plan. Prepare a list of your own, or print these and bring 'em to our next meeting/observing session.

January Observing List

Prepared by Bill Breeden

Double Stars

_____ 1 Camelopardalis SAO 24672 Const. CAM Type DS RA 04 32.0 Decl. +53° 55' Mag. 5.7 6.8
_____ 118 Tauri SAO 77201 Const. TAU Type DS RA 05 29.3 Decl. +25° 09' Mag. 5.8 6.6
_____ 55 Eridani SAO 131442 Const. ERI Type DS RA 04 43.6 Decl. -08° 48' Mag. 6.7 6.8
_____ Beta Orionis SAO 131907 Rigel Const. ORI Type DS RA 05 14.5 Decl. -08° 12' Mag. 0.1 6.8
_____ Chi Tauri SAO 76573 Const. TAU Type DS RA 04 22.6 Decl. +25° 38' Mag. 5.5 7.6
_____ Delta Orionis SAO 132220 Mintaka Const. ORI Type DS RA 05 32.0 Decl. -00° 18' Mag. 2.2 6.3
_____ Gamma Leporis SAO 170759 - Const. LEO Type DS RA 05 44.5 Decl. -22° 27' Mag. 3.7 6.3
_____ Iota Orionis SAO 132323 Nair al Saif Const. ORI Type DS RA 05 35.4 Decl. -05° 55' Mag. 2.8 6.9
_____ Lambda Orionis SAO 112921 Meissa Const. ORI Type DS RA 05 35.1 Decl. +09° 56' Mag. 3.6 5.5
_____ Sigma Orionis SAO 132406 Const. ORI Type DS RA 05 38.7 Decl. -02° 36' Mag. 4.0 7.5 6.5
_____ Struve 747 SAO 132298 - Const. Type DS RA 05 35.0 Decl. -06° 00' Mag. 4.8 5.7
_____ Theta 1 Orionis Trapezium Const. ORI Type DS RA 05 35.3 Decl. -05° 23' Mag. 6.7 7.9 5.1 6.7
_____ Theta 2 Orionis SAO 132322 Const. ORI Type DS RA 05 35.4 Decl. -05° 25' Mag. 5.2 6.5
_____ Theta Aurigae SAO 58636 - Const. AUR Type DS RA 05 59.7 Decl. +37° 13' Mag. 2.6 7.1
_____ Zeta Orionis SAO 132444 Alnitak Const. ORI Type DS RA 05 40.8 Decl. -01° 57' Mag. 1.9 4.0 9.9

Messier Objects

_____ M1 NGC1952 Crab Nebula Const. TAU Type EN RA 05 34.5 Decl. +22 01 Mag. 8.2
_____ M36 NGC1960 Const. AUR Type OC RA 05 36.1 Decl. +34 08 Mag. 6.3
_____ M37 NGC2099 Const. AUR Type OC RA 05 52.4 Decl. +32 33 Mag. 6.2
_____ M38 NGC1922 Const. AUR Type OC RA 05 28.4 Decl. +35 50 Mag. 7.4
_____ M42 NGC1976 Orion Nebula Const. ORI Type EN RA 05 35.4 Decl. -05 27 Mag. 4
_____ M43 NGC1982 Orion Nebula Const. ORI Type EN RA 05 35.6 Decl. -05 16 Mag. 9.1
_____ M78 NGC2068 Const. ORI Type EN RA 05 46.7 Decl. +00 03 Mag. 10.3
_____ M79 NGC1904 Const. LEP Type GC RA 05 24.5 Decl. -24 33 Mag. 8.4

Caldwell Objects

_____ C031 IC405 Flaming Star Nebula Const. AUR Type BN RA 05 16 12.00 Decl. +34 16 00.0 Mag. 6
_____ C041 Mel 25 Hyades Const. TAU Type OC RA 04 27 00.00 Decl. +16 00 00.0 Mag. 1
_____ C073 NGC1851 Const. COL Type GC RA 05 14 06.00 Decl. -40 03 00.0 Mag. 7.3
_____ C103 NGC2070 Tarantula Nebula Const. DOR Type BN RA 05 38 42.00 Decl. -69 06 00.0 Mag. 1

Royal Astronomical Society of Canada Objects

_____ RASC19 NGC1491 Const. PER Type EN RA 04 03.4 Decl. +51 19 Mag. -
_____ RASC20 NGC1501 Const. CAM Type PN RA 04 07.0 Decl. +60 55 Mag. 12
_____ RASC22 NGC1535 Const. ERI Type PN RA 04 14.2 Decl. -12 44 Mag. 10.4
_____ RASC23 NGC1514 Const. TAU Type PN RA 04 09.2 Decl. +30 47 Mag. 10.8
_____ RASC24 NGC1931 Const. AUR Type E/RN RA 05 31.4 Decl. +34 15 Mag.
_____ RASC25 NGC1788 Const. ORI Type RN RA 05 06.9 Decl. -03 21 Mag.
_____ RASC26 NGC1973+ Const. ORI Type E/RN RA 05 35.1 Decl. -04 44 Mag.
_____ RASC27 NGC2022 Const. ORI Type PN RA 05 42.1 Decl. +09 05 Mag. 12.4
_____ RASC28 NGC2024 Const. ORI Type EN RA 05 40.7 Decl. -02 27 Mag.

February Observing List

Prepared by Bill Breeden

Double Stars

- _____ 12 Lyncis SAO 25939 - Const. LYN Type DS RA 06 46.2 Decl. +59° 27' Mag. 5.4 7.3
- _____ 19 Lyncis SAO 26311 Const. LYN Type DS RA 07 22.9 Decl. +55° 17' Mag. 5.6 6.5
- _____ Alpha Geminorum SAO 60198 Castor Const. GEM Type DS RA 07 34.6 Decl. +31° 53' Mag. 1.9 2.9
- _____ Beta Monocerotis SAO 133316 Const. MON Type DS RA 06 28.8 Decl. -07° 02' Mag. 4.7 5.2
- _____ Delta Geminorum SAO 79294 Wasat Const. GEM Type DS RA 07 20.1 Decl. +21° 59' Mag. 3.5 8.2
- _____ Epsilon Canis Majoris SAO 172676 Adhara Const. CMA Type DS RA 06 58.6 Decl. -28° 58' Mag. 1.5 7.4
- _____ Epsilon Monocerotis SAO 113810 Const. MON Type DS RA 06 23.8 Decl. +04° 36' Mag. 4.5 6.5
- _____ Kappa Puppis SAO 174198 Const. PUP Type DS RA 07 38.8 Decl. -26° 48' Mag. 4.5 4.7

Messier Objects

- _____ M35 NGC2168 Const. GEM Type OC RA 06 08.9 Decl. +24 20 Mag. 5.3
- _____ M41 NGC2287 Const. CMA Type OC RA 06 46.0 Decl. -20 44 Mag. 4.6
- _____ M46 NGC2437 Const. PUP Type OC RA 07 41.8 Decl. -14 49 Mag. 6
- _____ M47 NGC2422 Const. PUP Type OC RA 07 36.6 Decl. -14 30 Mag. 4.5
- _____ M50 NGC2323 Const. MON Type OC RA 07 03.2 Decl. -08 20 Mag. 6.3
- _____ M93 NGC2447 Const. PUP Type OC RA 07 44.6 Decl. -23 52 Mag. 6

Caldwell Objects

- _____ C007 NGC2403 Const. CAM Type SG RA 07 36 54.00 Decl. +65 36 00.0 Mag. 8.9
- _____ C025 NGC2419 Intergalactic Tramp Const. LYN Type GC RA 07 38 06.00 Decl. +38 53 00.0 Mag. 10.4
- _____ C039 NGC2392 Eskimo Nebula Const. GEM Type PN RA 07 29 12.00 Decl. +20 55 00.0 Mag. 9.9
- _____ C046 NGC2261 Hubble's Variable Nebula Const. MON Type BN RA 06 39 12.00 Decl. +08 44 00.0 Mag.

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- _____ C049 NGC2237-9 Rosette Nebula Const. MON Type BN RA 06 32 18.00 Decl. +05 03 00.0 Mag.
- _____ C050 NGC2244 Const. MON Type OC RA 06 32 24.00 Decl. +04 52 00.0 Mag. 4.8
- _____ C058 NGC2360 Const. CMA Type OC RA 07 17 48.00 Decl. -15 37 00.0 Mag. 7.2
- _____ C064 NGC2362 Tau Cma Cluster Const. CMA Type OC RA 07 18 48.00 Decl. -24 57 00.0 Mag. 4.1
- _____ C071 NGC2477 Const. PUP Type OC RA 07 52 18.00 Decl. -38 33 00.0 Mag. 5.8
- _____ C096 NGC2516 Const. CAR Type OC RA 07 58 18.00 Decl. -60 52 00.0 Mag. 3.8

Royal Astronomical Society of Canada Objects

- _____ RASC29 NGC2194 Const. ORI Type OC RA 06 13.8 Decl. +12 48 Mag. 8.5
- _____ RASC30 NGC2371/2 Const. GEM Type PN RA 07 25.6 Decl. +29 29 Mag. 13
- _____ RASC31 NGC2392 Eskimo Nebula Const. GEM Type PN RA 07 29.2 Decl. +20 55 Mag. 8.3
- _____ RASC32 NGC2237+ Const. MON Type EN RA 06 32.3 Decl. +05 03 Mag.
- _____ RASC33 NGC2261 Hubble's Variable Nebula Const. MON Type E/RN RA 06 39.2 Decl. +08 44 Mag. var
- _____ RASC34 NGC2359 Const. CMA Type EN RA 07 18.6 Decl. -13 12 Mag.
- _____ RASC35 NGC2440 Const. PUP Type PN RA 07 41.9 Decl. -18 13 Mag. 10.3
- _____ RASC37 NGC2403 Const. CAM Type G-Sc RA 07 36.9 Decl. +65 36 Mag. 8.4



The Moon (center) and Jupiter over Greenville, with clouds rolling in. Photo by Bill Breeden.