NORTHERN LIGHTS

NORTH CENTRAL REGION OF THE ASTRONOMICAL LEAGUE

Spring 2025 - Volume 9, Number 4

INSIDE THIS ISSUE OF *Northern Lights*

CHAIR'S MESSAGE

This last winter has been a wonderful time for amateur astronomers to get outside and observe unique events. On January 13, we had the lunar occultation of the planet Mars. Some of us actually had decent weather that evening and were able to observe this interesting game of astronomical hide and seek between two of our nearby planetary neighbors.

On March 14, we had a beautiful lunar eclipse, which, if the weather cooperated, was visible from all locations in our region. The resulting blood moon was a beautiful copper color. The weather cooperated, but it was barely from my particular location. There was an isolated lightning storm, not far away, but luckily, I could observe totality and capture a snapshot which you can find nearby in this newsletter.

This winter, we also had a parade of planets, which offered unique opportunities to observe all of the planets. This was great for those of us who are interested in solar system observing. Because the planets were visible in the early evening, this also provided the opportunity to conduct public observing events. One of our observing sessions in February allowed us to see all the planets, including Mercury.

Now that we are moving into the spring season, we have other opportunities for observing and gatherings of amateur astronomers around the region to celebrate the science of astronomy and enjoy the camaraderie of like-minded individuals. Of particular interest is the North Central Region of the Astronomical League 2025 conference. NCRAL 2025 will be this April 25-26 in the Minneapolis, Minnesota, area.

This image was taken from my driveway in Moline, Illinois at approximately 1:45 AM, March 14th, 2025. A 10" LX200 Wide-Field telescope at FL=1600mm was used with a ZWO ASI2600 color camera. Image credit Alan Sheidler.

We have had an enthusiastic response for the conference and if you have not yet registered, I would urge you to do so right away. If you are thinking about attending, I urge you to register before the special room rate at the Minneapolis Marriot Southwest Hotel expires on April 4th.

The agenda offers a great lineup of speakers and a tour of the Minnesota Astronomical Society's Eagle Lake Observatory, one of the finest observatories in the Region. We will also have the opportunity to visit the Bell Museum's planetarium on April 27th at a special discounted rate for attendees of the conference.

We will also have a NCRAL business meeting at the conference. I urge you to attend the business meeting so that you can find out about what's going on in the region. There will also be an awards presentation at the banquet Saturday evening during which we will be honoring recipients of the

Region Award, Newsletter Editor Award and the other awards for which we have received nominations.

I would like to thank all of the members of the conference planning committee, especially members of the Rochester Astronomy Club, who have worked very hard and done most of the heavy lifting of organizing this conference. I would also like to thank the Minnesota Astronomical Society for lending a hand and allowing us to visit their observatory. We also have many sponsors who have donated numerous door prizes, which will be given out during the event. You can find out all the specifics about NCRAL 2025 and register for the conference at www.ncral2025.org. You don't want to miss our region's most important astronomical event of the year! Everyone is welcome to attend the conference, and I look forward to seeing all of you there! As always, keep looking up!

Alan Sheidler

NCRAL Chair

TREASURER'S REPORT – JULY 1, 2024, THROUGH MARCH 31, 2025

ROY GUSTAFSON, NCRAL TREASURER

Check #	Date	Description	Amount	Deposit	Balance
	1-Jul-24	Starting Balance			$8,162.49
	6-Aug-24	NPMAS 2024 Convention Profit		$95.60	$8,259.59
1037	20-Nov-24	Al Sheidler (NCRAL 2025 expense)	$3,156.42*		$5,102.17
	6-Mar-25	Joseph B. Caulfield (donation)		$20.00	$5,122.70
	31-Mar-25	Ending Balance			$5,122.17
				Net Change	**$3,040.32**

* The $3,156.42 paid to "Al Sheidler (NCRAL 2025 expenses)" is temporary and will be paid from convention funds.

NCRAL 2025 CONFERENCE SLATED FOR APRIL 25/26, MINNEAPOLIS AREA

Mark your calendars for the 2025 NCRAL Conference, which will take place April 25-27. Bring your astronomy craving to the Minneapolis area and gather with other enthusiasts for an exciting weekend. The conference, themed *First Light: New People, New Frontiers,* will be held at the Marriott Southwest, 5801 Opus Pkwy, Minnetonka, MN.

Guests arriving Friday can join us at the nearby Eagle Lake Observatory for a Star-B-Q with the help of our friends at the Minnesota Astronomical Society (MAS). The evening will include good food, some discussions by MAS members, a talk by Greg Bragg (on the state of the astronomy industry), tours of the observatory, and weather permitting some viewing!

Saturday will begin at 8:00 AM with a door prize drawing followed by the NCRAL business meeting. Then we get into the meat of the conference with a day of presentations by our guest speakers:

- Evan Skillman, professor, University of Minnesota
- Mike Benson, accomplished astro-photographer
- Clem Pryke from the University of Minnesota
- John Rummel of the Madison Astronomical Society
- Bob King of Sky and Telescope magazine
- And keynote speaker, Lawrence Rudnick, professor Emeritus, University of Minnesota.

A banquet dinner Saturday evening is included with your reservation fee. Go to https://ncral2025.org/ to make reservations and to book your room. The website contains additional information on the speakers and a synopsis of their presentations.

Attendees may also visit the fascinating Bell Museum planetarium in St. Paul that weekend using a discount code which will be made available to conference attendees. If you have questions, email the planning committee at NCRALConference@gmail.com

NCRAL 2025 Conference

April 25 & 26, 2025
Minneapolis Marriott Southwest,
Minnetonka, MN

Registration: https://ncral2025.org/register/

Speakers!

John Rummel:
Can the Milky Way Cast a Shadow?

Clem Pryke:
Studying the Universe from the Bottom of the World

Lawrence Rudnick:
Game Changers in the Radio Sky

Evan Skillman:
Using the Large Binocular Telescope to Measure the Primordial Helium Abundance

Mike Benson:
Astrophotography, My Journey

Greg Bragg:
State of the Astronomy Industry

Bob King:
NASA's Planned NEO Surveyor Hunts Killer Asteroids

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FINAL CALL FOR 2025 NCRAL NOMINATIONS & APPLICATIONS

CHAIR/VICE CHAIR/REGIONAL REP/REGION AWARD/NEWSLETTER EDITOR AWARD/MINI-GRANTS

The current terms of NCRAL's Chair, Vice Chair, and Regional Representative end with the close of the Regional Business Meeting on April 26th. Chair Alan Scheidler is nearing the end of his first two-year term but is willing to continue in office if that is what the Region desires. Still, others interested in this leadership position are welcome to stand for election. Vice Chair Bill Davidson is nearing the end of this third two-year term and is ineligible to run for a fourth term due to limits imposed by the Region's bylaws. A nominee for the Vice Chair position is needed. Region Rep. John Attewell is nearing the end of his three-year term but is willing and able to continue in this position if elected. Please get in touch with one of the existing leaders if you'd like to self-nominate or nominate someone else to fill either of these positions.

It's never too early to start thinking about nominations for the NCRAL Region Award. Do you know someone who has dedicated time and energy to promoting astronomy? Wouldn't you like to let them know they are appreciated for their arduous work? This is your chance! This award recognizes exceptional individual effort and meritorious service to amateur astronomy through the member's local astronomy club, public outreach, the NCRAL, or the Astronomical League.

The Region award will be presented in a ceremony concluding the dinner banquet of the next Regional convention. The rules for Region Award nominations are as follows:

1. The nomination must be made using the official NCRAL Region Award nomination form, an interactive PDF that must be completed in its entirety before submission.
2. The individual must be a member in good standing, either through an AL/NCRAL-affiliated club, association, or society or as a current member-at-large in the North Central Region.
3. The three current regional officers and the regional representative are ineligible for this award, as are past winners.
4. The Regional officers are the voters and will base their decision on the information provided. Past winners of this award will be asked to assist in the case of a tie vote. Each member votes independently and will use his/her best judgment. All decisions are final.
5. The winner will be contacted at least 21 days before the NCRAL meeting at which the award will be presented. The winner will be publicly revealed at the time of the presentation. Those nominated but not selected will not be revealed.
6. All non-winning nominations will be kept on file for two years after the initial submission. After such time, a new nomination needs to be completed. Nominations for the 2025 Region Award MUST BE RECEIVED by March 31st. Any nominations received after this date will be kept on file for 2025.
7. All nominations must be sent via email to Bill Davidson, NCRAL Vice Chair, at rochesterskies@outlook.com

Let's not forget about the **NCRAL Newsletter Editor Award**. The next award is expected to be conferred at the NCRAL 2025 meeting. Submission Guidelines: The president of the club/society/association should email a copy of the designated issue of the associated newsletter in Adobe Acrobat pdf file format to NCRAL Vice Chair Bill Davidson (rochesterskies@outlook.com), along with a cover letter of recommendation in the same file format. In addition, complete contact information of the editor must be included. A photo of the newsletter editor, preferably in an astronomical-type setting, must be received electronically in jpg format to the same email address by March 31st.

Lastly, don't forget about our two **NCRAL mini-grants**. A mini-grant will be awarded following a successful written proposal originating with the president of an NCRAL affiliate. The focus of a mini-grant must be oriented to an increase in either (1) an affiliate's membership whose mini-grant proposal must focus on both recruitment and retention (Member Recruitment & Retention Mini-grant) or (2) an increase in the number of A.L.-affiliated clubs, societies, or associations within the North Central Region (Non-affiliate Recruitment Mini-grant). Applications for 2025 (interactive PDFs) can be found at https://ncral.wordpress.com/awards/. The application deadline for all mini-grants is March 31st. Mini-grants, if approved, will be announced following the NCRAL 2025 banquet.

SPEAKERS BUREAU

The leadership of the North Central Region proudly announces the beginning of this new service. The brainchild of NCRAL Chair Alan Sheidler, the NCRAL Speakers Bureau will facilitate the acquisition of professional speakers for meetings and other events for our Region's affiliates. Many individuals have indicated a willingness to serve as speakers. Most speakers are available for presentations over Zoom, though some might also be willing to attend club meetings and other events. Please contact the speaker directly through our NCRAL Speakers Bureau listing to arrange a presentation. Speak with them frankly about arrangements, including accommodations, meals, travel expenses, and honorarium, if any.

AstroBits

Here are some news notes that readers might find interesting or helpful. Items appear here as bullet points because they are too short to merit separate articles. If readers have something to share and want it to appear here, email this newsletter's editor at carlwenning@gmail.com.

- The Milwaukee Astronomical Society is hosting an astronomy and astrophotography gallery at the Schlitz Audubon Nature Center, running through March 31st. This is the last month to come check out our free gallery of about 90+ astrophotos and information about amateur astronomy in Southeastern Wisconsin. Admission is free during the day, visitors to the Schlitz Audubon Nature Center should note they are there to see the astronomy gallery at the gate when you arrive. Current Art Gallery Exhibit information: https://www.schlitzaudubon.org/visit/art-gallery/
- *What's Up With the Astronomical League* March 2025 is available for download HERE. In this issue…
  - Digital only Reflector for March 2025, Questions and Answers
  - Astronomy Days for 2025
  - 2025 NCRAL Regional Convention Compiled by Carroll Iorg, Immediate Past President
  - Reminder that many annual awards submission deadlines are March 31, 2025
- Did you know NCRAL produces a newsletter for the North Central Region presidents, ALCors, and newsletter editors? The ***NCRAL Blotter*** newsletter is disseminated monthly. You can view back issues on the NCRAL website. If your club's leaders are not receiving the blotter, please have them contact carlwenning@gmail.com to add them to the mailing list.
- **Save the Dates!** The Illinois Dark Skies Star Party, hosted by the Sangamon Astronomical Society, will take place September 18-20, 2025, at the Jim Edgar Panther Creek State Fish & Wildlife Area.

Northern Lights Index of Feature Articles (2016-2024)

The editor of ***Northern Lights*** has created a listing of articles he considers of considerable interest and lasting value. This listing will increase the ease of finding and the likelihood that these articles will be read and re-read. Please review these article titles and see what you have missed since the current series of newsletters was established in 2016. This information (recently revised and updated to include articles through Autumn 2024) can now be found on the NCRAL website's newsletter archive page: https://ncral.wordpress.com/newsletter-archive/

NOTEWORTHY!

The North Central Region members continue to shine brightly. The following NCRAL members have completed the Astronomical League observing and award programs in recent months and have been recognized in the March 2025 issue of ***Reflector.*** Congratulations to all!

Solar Eclipse Observing Challenge (2024):
Steve Wolfgram, Silver, La Crosse Area Astronomical Society

Binocular Double Star Observing Program Award:
Jack Shelton, Minnesota Astronomical Society

Comet Observing Program:
Kevin C. Carr, Silver, Minnesota Astronomical Society

Deep Sky Binocular Observing Program:
Craig Endres, Milwaukee Astronomical Society

Imaging – Caldwell Observing Program:
Tom Holman, Minnesota Astronomical Society

Imaging – Messier Observing Program:
Tom Holman, Minnesota Astronomical Society

Lunar Observing Program:
Jack Shelton, Regular, Binocular, Eyes-Only, Minnesota Astronomical Society
David Husom, Regular, Binocular, Eyes-Only, Minnesota Astronomical Society
Kevin Carr, Binocular, Minnesota Astronomical Society

Outreach Program:
David Burnes, Outreach, Champaign-Urbana Astronomical Society

Solar Neighborhood Observing Program:
Kevin Carr, Eyes-Only, Minnesota Astronomical Society
Kevin Carr, Binocular, Minnesota Astronomical Society

Sunspotter Observing Program:
Jack Shelton, Minnesota Astronomical Society

Urban Observing Program:
Jack Shelton, Minnesota Astronomical Society

Variable Star Observing Program:
Lisa Wentzel, Twin City Amateur Astronomers

ADD YOUR EMAIL ADDRESS TO THE NCRAL MEMBER DATABASE

Did you know that only about 525 of our Region's 2,300 members receive this newsletter? That's less than one-quarter of the membership! Please help NCRAL get its newsletter out to the membership by encouraging fellow club members to add their email addresses to the NCRAL member database. Editors, please include this information in your affiliate's newsletter. It's one of the many benefits of belonging to the Astronomical League.

When one adds their email address to the NCRAL member database, they will receive direct notifications about the availability of ***Northern Lights***. In addition, subscribers receive important and timely announcements about Regional conventions, elections, star parties, etc. Only blind addressing (Bcc:) will be used with this email list, so others will not see subscribers' email addresses. Email addresses will never be shared with or sold to outside entities.

No one will add your email address to this list, so you must do it yourself. Sign-up takes only about a minute. Resubscribe if you recently changed your email address and are not receiving our notifications. You must provide your name, email address, and astronomy club affiliation (or indicate A.L. membership-at-large) and let us know if you hold specific positions within your club. Go to the following case-sensitive URL to add your information to our database at https://tinyurl.com/NCRAL today so you won't miss critical future communications.

Donations to NCRAL to be Matched up to $500 Maximum – Last Chance!

Because of its affiliation with the Astronomical League, the North Central Region of the Astronomical League (NCRAL) possesses 501(c)3 non-profit status as a charitable educational organization. Donations to NCRAL are tax-deductible to the extent permitted by law. Considering this fact, **a generous donor has agreed to match dollar-for-dollar contributions to NCRAL between now and March 31, 2025**. The maximum total amount of this match is $500. So, your donation of $50 will be worth $100 to NCRAL and so forth. Thus far only $20 has been donated to support future NCRAL programming. *Let's not leave a potential $480 matching contribution lying on the table. Please donate today to support the activities of the Region.*

Imagine a world where every amateur astronomer has the resources and knowledge to unlock the wonders of the night sky. NCRAL has been your steadfast partner in this journey, fostering community, sharing expertise, and offering programs that deepen our passion for the cosmos. Now, we invite you to help us take the next leap forward. Your support will sustain the programs you love and expand our educational offerings within the Region and possibly during future conventions, inspiring and aiding future generations to reach for the stars. Together, we can ensure that every member continues to grow in their astronomical knowledge and pursuits. Will you join us in shaping the future of amateur astronomy?

Please donate to NCRAL today by sending a check to our treasurer at the following address. In the memo line, please indicate "Donation." Make your check payable to NCRAL. Mail to: Roy Gustafson, NCRAL Treasurer, 11 Deer Run Road, Orion, IL 61273.

NCRAL Seeking Future Convention Hosts

During NCRAL's annual business meeting, the Region receives offers to host future conventions. We are now looking for hosts for NCRAL 2027 and beyond. It's never too early to plan to host an NCRAL Regional convention.

Whether or not your club has ever hosted an NCRAL Regional convention, please consider doing so. While hosting a regional convention is a lot of work, it can be rewarding – even fun. It allows you to highlight your group's facilities and accomplishments, build club camaraderie, and personally get to know interesting guest speakers. You can also use such an event to grow your club's membership. Please make your reservations for a future year now (4, 5, or 6 years in advance), so you have plenty of time to think about them and plan the event. No affiliate (or group of affiliates) is too big or small to host.

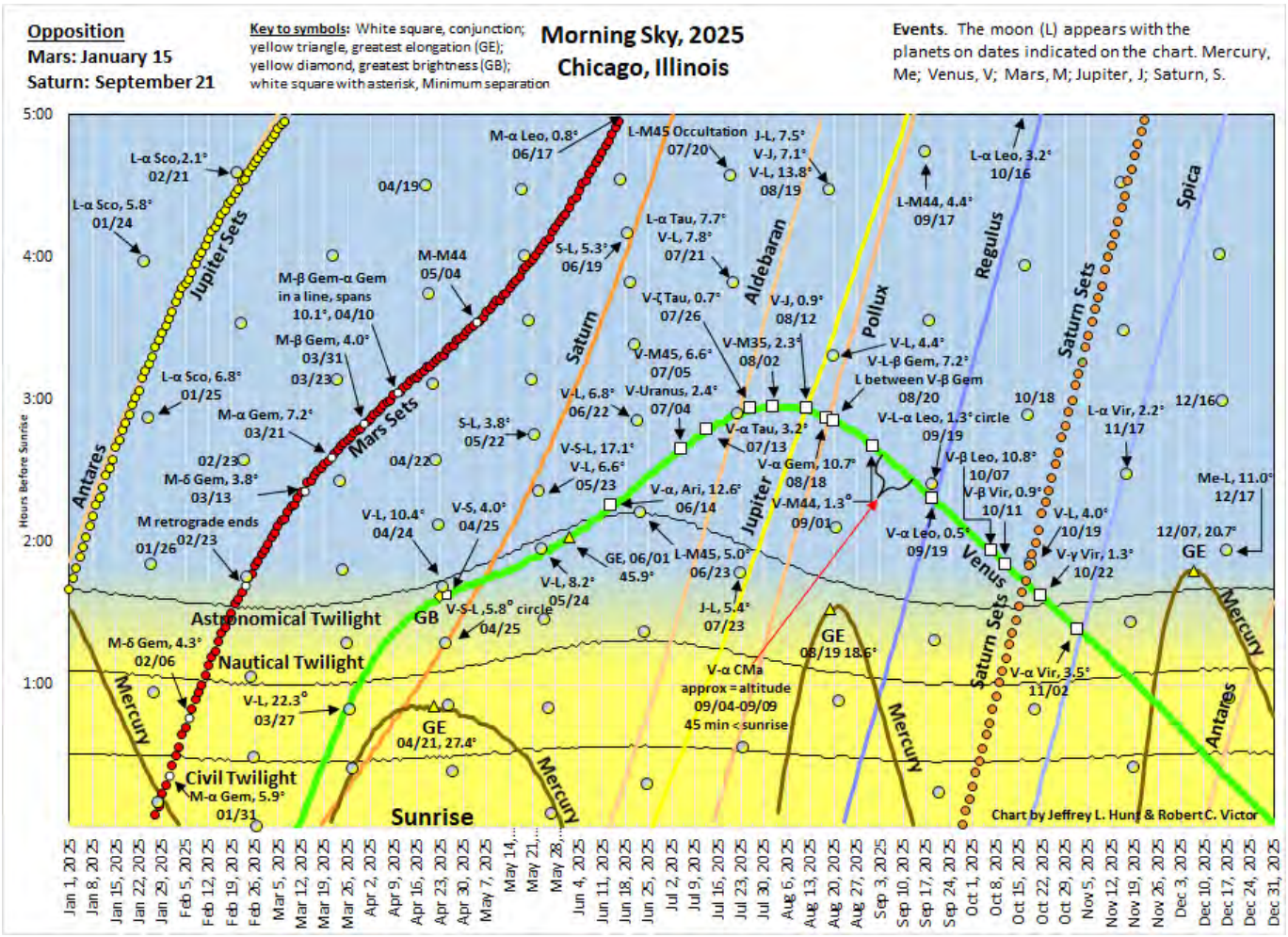
Remember, NCRAL has its own ***Convention Planning Guide***. To download the most recent version of the *Guide* (last updated November 30, 2023), visit the following URL: https://ncral.wordpress.com/conventions/. Look for the link at the bottom of the page. Please get in touch with the NCRAL Chair, Alan Sheidler, at adsheidler@gmail.com should you have any questions or wish to toss your affiliate's hat into the ring for hosting a future NCRAL convention.

Contributions to *Northern Lights* are Invited and Welcome!

Have you ever considered writing an article for this newsletter? The Region is vibrant, and many noteworthy local events are happening. Authors are encouraged to submit stories for inclusion in ***Northern Lights*** and news items for the NCRAL blotter. We are now looking for items to be included in the coming editions. Contact the editor, Carl Wenning, with your inquiries and submissions.

VENUS AS A MORNING STAR – 2025

~ by Jeffrey L. Hunt ~



After a spectacular evening appearance with the other bright planets during early 2025, Venus passes inferior conjunction on March 22nd. The planet passes 8.5° north of the sun, and sprints into the morning sky. On conjunction morning, the planet already rises 38 minutes before the sun. It rises with the sun on the 11th, when its eastern (evening) elongation is still 18° and it is about 10° up in the west during evening twilight. Look for the planet after sunset and before sunrise, near the horizon at both observations.

During the morning elongation, it passes Saturn, Uranus, Jupiter, and Mercury, as well as Aldebaran, Castor, Pollux, Regulus, and Spica. It passes the Pleiades in a wide conjunction, though it nicely fits into the same binocular field with the Beehive star cluster. During early July, Venus makes a pretty view through a binocular with the "V" of Taurus, which includes Aldebaran and the checkmark shape of the Hyades.

It should be noted that Venus passes Neptune (m = 7.9) on May 2nd, but the sky overwhelms the dimmer planet and its altitude is only 5°.

The moon overtakes the Venus each lunation. The separations vary from 0.5° to 22.3°, when Venus first emerges from morning twilight. The prettiest occurs on September 19th, when Venus, Moon, and Regulus fit into a circle 1.3° in diameter. This is a rare event. The next close gathering occurs October 10, 2047 when they fit into a circle 5.3° in diameter. Of the 19 gatherings that occur in the interim, seven occur when Regulus is near

conjunction and not visible, while the other 12 have an average separation of over 10°.

For about five days during early September Venus and Sirius are about the same altitude during morning twilight, though they are nearly 50° apart in the sky.

The accompanying chart shows the rising time of the bright planets, moon (circles), and bright stars compared to sunrise. The setting times of Mars, Jupiter, and Saturn are included compared to sunrise as well.

In the notes that follow, each date shows the planet's magnitude, diameter in arc seconds, phase - expressed as a percentage, distance from Earth in astronomical units, and rising time interval compared to sunrise.)

- **March 27**: (−4.2, 59", 2%, 0.28 A.U., 53m) (For March, observation times are 30 minutes before sunrise.) Try the challenging view of Venus (V) and the thin crescent moon (27 days after New Moon, 6% illuminated). V is over 6° above the east horizon and 22° to the left of the lunar crescent, 3° up in the east-southeast.
- **March 30**: (−4.2, 58", 3%, 0.29 A.U., 61m) V rises at Nautical Twilight when the sun is 12° below the horizon. V is over 6° above the eastern horizon.
- **April 13**: (−4.7, 49", 13%, 0.34 A.U., 87m) (For April, observation times are 45 minutes before sunrise.) V's retrograde ends, 29° west of the sun. Look for it about 7° up in the east.
- **April 16 – June 8**: V rises within 10 minutes of Astronomical Twilight, when the sun is 18° below the horizon. The beginning of morning twilight increases from 90 minutes to 130 minutes during these 54 mornings.
- **April 22**: (−4.8, 42", 22%, 0.40 A.U., 95m) V at greatest brilliancy. It is nearly 10° above the eastern horizon and 4.7° to Saturn's (m = 1.2) upper left.
- **April 25**: (−4.8, 40", 24%, 0.42 A.U., 90m) V is nearly 10° up in the east, 4.0° to Saturn's upper left, and 5.4° to the moon's (27d, 8%) upper right. The Saturn-Moon gap is 5.1°. V-Saturn-Moon fit into a circle 5.8° in diameter. While the V-S conjunction occurs today in ecliptic longitude, their separation closes to 3.8° on the mornings of April 27 and Apr 28. V crosses the ecliptic on May 7 allowing the small separations after the conjunction.
- **April 27**: (−4.7, 39", 26%, 0.43 A.U., 99m) V is at greatest illuminated extent. Its crescent covers the largest area of the sky. Nearly 10° up in the east, V is 3.8° to Saturn's upper left.
- **May 23**: (−4.5, 26", 45%, 0.63 A.U., 114m) (Until September, observation times are at one hour before sunrise.) V, nearly 10° up in the east, is 6.6° to the moon's (25d, 19%) lower left. Venus, Moon, and Saturn span 17.1°.
- **May 24**: (−4.5, 26", 45%, 0.64 A.U. 115m) Again, nearly 10° above the eastern horizon, V is 8.2° to the left of the moon (26d, 11%).
- **June 1**: (−4.4, 24", 50%, 0.70 A.U., 122m) V is at greatest elongation (45.9°). Find it over 10° above the horizon.
- **June 9**: (−4.4, 22", 54%, 0.77 A.U., 130m) Venus rises at the beginning of morning twilight when the sun is 18° below the horizon. V is 12° up in the east.
- **June 14**: (−4.3, 21", 56%, 0.81 A.U., 135m) V, nearly 15° up in the east, passes 12.6° to the lower right of Hamal (α Ari, m = 2.0).
- **June 22**: (−4.2, 19", 60%, 0.81 A.U., 144m) Almost 15° above the east horizon, Venus is 6.8° to the lower right of the crescent moon (26d, 13%).
- **July 4**: (−4.1, 17", 65%, 0.96 A.U., 158m) V, 17.0° above the east horizon, passes 2.4° to the lower right of Uranus (m = 5.8). On this morning, V is 6.6° to the lower right of Alcyone (η Tau, m = 2.8), the brightest star in the Pleiades. It is 10.8° to Aldebaran's upper right (α Tau, m = 0.8).
- **July 5**: (−4.1, 17", 66%, 0.97 A.U., 159m) Over 17° above the east horizon, V passes 6.6° to Alcyone's lower right. The Venus-Aldebaran gap is 9.7°.
- **July 12**: (−4.1, 16", 68%, 1.02 A.U., 166m) Nearly 20° up in the east, V passes 0.3° to the upper right of Epsilon Tauri (ε Tau, m=3.5).
- **July 8-July 14**: Venus and the "V" of Taurus (Aldebaran and the Hyades' checkmark shape) are in the same binocular field.

- **July 13**: (−4.1, 16”, 69%, 1.03 A.U., 167m) Approaching an altitude of 20°, V passes 3.2° Aldebaran’s upper left.
- **July 21**: (−4.0, 15”, 72%, 1.09 A.U., 173m) About 20° up in the east-northeast, V is 7.7° to the lower right of the moon (26d, 14%). The moon is 10.9° to Aldebaran’s upper left.
- **July 26**: (−4.0, 15”, 73%, 1.12 A.U., 176m) V, nearly 20° above the east-northeast horizon, passes 0.7° above Zeta Tauri (ζ Tau, m = 3.0).
- **July 26-August 7**: Venus and Messier 35 are in the same binocular field.
- **August 2**: (−4.0, 14”, 76%, 1.16 A.U., 177m) V, almost 20° up in the east-northeast, passes 2.3° to the lower right of Messier 35 (M 35, NGC 2168). The Venus-Jupiter (m = −1.9) gap is 9.5°. Venus is to Jupiter’s upper right. Until the conjunction on August 12, the gap each morning: 08/03, 8.6°; 08/04, 7.6°; 08/05, 6.7°; 08/06, 5.7°; 08/07, 4.8°; 08/08, 3.7°; 08/09, 2.8°; 08/10, 1.9°; 08/11, 1.2°.
- **August 12**: (−4.0, 13”, 79%, 1.24 A.U., 176m) Over 20° above the east-northeast horizon, V passes 0.9° to Jupiter’s lower right. After the conjunction the gap between the planets opens: 08/13, 1.2°; 08/14, 2.2°; 08/15, 3.2°; 08/16, 4.1°; 08/17, 5.1°; 08/18, 6.1°; 08/19, 7.0°; 08/20, 8.0°; 08/21, 9/0°; 08/22, 10.0°.
- **August 18**: (−3.9, 13”, 80%, 1.28 A.U., 172m) Less than 20° up in the east-northeast, V passes 10.7° to the lower right of Castor (α Gem, m = 1.6).
- **August 20**: (−3.9, 13”, 81%, 1.29 A.U., 171m) Nearly 20° up in the east, V passes 7.2°
- **August 27-September 6**: V and the Beehive star cluster (M 44, NGC 2632) are in the same binocular field.
- **September 1**: (−3.9, 12”, 84%, 1.36 A.U., 160m) (Until November 2nd, the observation time shifts to 45 minutes before sunrise.) V passes 1.3° to the lower right of Beehive star cluster.
- **September 4-September 9**: V and Sirius (α CMa, m = −1.5) are approximately at the same altitude in the eastern sky.
- **September 19**: (−3.9, 11”, 89%, 1.45 A.U.,138m) V, 16° above the eastern horizon, passes 0.5° to the upper left of Regulus (α Leo, m = 1.3). The planet is 0.5° to the right of the crescent moon (27d, 5%). V, Moon, and Regulus fit into a circle 1.3° in diameter.
- **October 7**: (−3.9, 11”, 92%, 1.53 A.U., 116m) Nearly 13° up in the east, V passes widely (10.8°) to Denebola’s lower right (β Leo, m = 2.1).
- **October 11**: (−3.9, 11”, 93%, 1.55 A.U., 110m) V, over 10° up in the east, passes 0.9° to the upper left of Zavijava (β Vir, m = 3.6).
- **October 19**: (−3.9, 11”, 94%, 1.58 A.U., 100m) Less than 10° in altitude, V is 4.0° to the moon’s lower left (28d, 4%).
- **October 22**: (−3.9, 10”, 95%, 1.59 A.U., 97m) V, less than 10° up in the east-southeast, passes 1.3° to the lower right of Porrima (γ Vir, m = 3.4°).
- **October 25**: (−3.9, 10”, 98%, 1.66 A.U., 64m) V rises at Astronomical Twilight when the sun’s altitude is −18°.
- **November 2**: (−3.9, 10”, 96%, 1.62 A.U., 83m) Only 5° up in the east-southeast, V passes 3.5° to the upper left of Spica (α Vir, m = 1.0). Use a binocular.
- **November 17**: V rises at Nautical Twilight when the sun is 12° below the horizon. At 30 minutes before sunrise is 5° about the east-southeast horizon.
- **November 18**: (−3.9, 10”, 98%, 1.66 A.U., 62m) At 30 minutes before sunrise, V is 5° above the east-southeast horizon. The crescent moon (28d, 3%) is 8.5° to Venus’ upper right.
- **December 10**: V rises at Civil Twilight when the sun’s altitude is −6°.
- **January 6, 2026**: Venus is at superior conjunction, 0.7° south of the sun.

During the morning apparition, Venus passes bright stars near the ecliptic, Saturn, and Jupiter. The Venus-Jupiter conjunction occurs August 12th in an easily observed event. The appearance’s highlight is the rare gathering of Venus, Moon, and Regulus in a tight circle on September 19th.

TCAA Hosts Weekly Book Discussions

~ by Carl J. Wenning ~

The Twin City Amateur Astronomers have conducted successful book discussions via Zoom on *Astronomy Thursdays* for the past year. Starting in April 2024, about six to ten members regularly read and discuss a variety of readings. The first was a college-level open-source textbook of 30 chapters completed over nine months.

Recently, the club has been discussing two to five chapters per week of *Archives of the Universe: 100 Discoveries that Transformed Our Understanding of the Cosmos* by Marcia Bartusiak. During February, the members discussed a chapter dealing with the Mayan Venus Tables.

The Mayan Venus Tables are found in the Dresden Codex, an ancient Mayan manuscript dating to the 13th or 14th century. However, they are believed to be based on much older astronomical records, possibly from the 9th century or earlier. The Venus Table specifically tracks Venus's synodic cycle (approximately 584 days) and covers 104 years (two Calendar Rounds of 52 years each).

The Venus Table's key date is November 7, 934 CE, which is the base date for calculating Venus' appearances. However, the tables were likely compiled much earlier, possibly based on observations dating back to the Classic Period (circa 250–900 CE).

One of the interesting things discovered by the Mayans and brought up in the discussion by the club members was the orbital resonance of Venus' synodic period and Earth's orbital period. The Mayans discovered that five synodic periods of Venus equal eight sidereal periods of Earth (2,920 days approximately) to within about 2.5 days.

This resonance produces a curious set of morning and evening apparitions that repeat an almost identical pattern eight years apart. Because the discussants were unfamiliar with this phenomenon, I generated two apparitional nomographs for Venus eight years apart. I compared the recent 2024-25 and 2032-33 evening apparitions with the following results.

Another interesting aspect of this resonance is that Venus can be observed from Earth every eight years before sunrise and after sunset on the same day for several days, when Venus passes north of the sun at the time of superior conjunction.

Images: Venus is shown at 15-day intervals just above the bright, nearly closed loop above the SW-to-W horizon. The moon and several planets complement each scene.

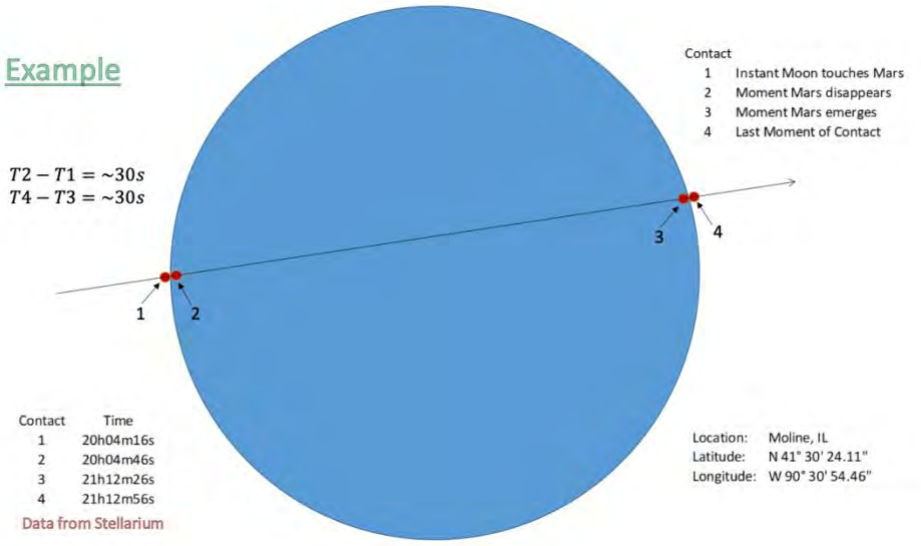
OBSERVATIONS OF THE LUNAR OCCULTATION OF MARS, JANUARY 13TH, 2025

~ by Alan Sheidler, Popular Astronomy Club ~

As you know, there was an occultation of the planet Mars on Monday evening, January 13th. At the suggestion of Drew Sorenson (Ames Area Amateur Astronomers), members of the Quad Cities Astronomical Society participated in an attempt to observe the event and to record the moments of contact of the Moon with Mars and Mars' reemergence. Drew asked a simple question: can we observe the occultation from different locations and use the observed contact times to estimate the moon's speed in its orbit around the Earth?

It turns out this effort was more challenging than expected due to cloudy weather. We had hoped to get members of QCAS, Ames Area Amateur Astronomers, Cedar Amateur Astronomers, the Popular Astronomy Club, and friends at various locations around the country to perform the observations and contact timings. In addition to observers within Iowa-Illinois region, we had also hoped to get observations from Arizona, Oregon, Florida, and Nova Scotia. Unfortunately, many observers reported cloudy skies. But fortunately, observers in the Quad City area had clear skies, and a friend of mine from Arizona (Ted Berenyi), were able to make observations of the event.

The occultation timing data is compiled in Figure 1. Computing the moon's speed in its orbit around the earth from observational data is not trivial. Figure 2 shows the average speeds with which the earth and Mars circle the sun and how fast the moon orbits the earth. In addition, observers on the Earth's surface are moving too—780mph at mid-latitudes as the Earth spins on its axis. All these speeds need to be reckoned with as well as the distances and positions of these objects during the occultation.



Observations of the Occulation of Mars, evening of January 13th, 2025										
					Contact Times					
Observer	location	N Latitude	W Longitude	equpment	T1	T2	T3	T4	T2-T1	T4-T5
Ted Berenyi	Chandler, Arizona	33.243°	111.8127°	binoculars, cell phone	6:47:22 MST		7:52:00 MST			
Jim Bonser				8" RC f/8 ASI071, Losmandy G11	8:04:12	8:04:40	9:09:52	9:10:20	28.00	28.00
Rick Beckley and Students	Wilton Observatory	41.4875°	90.5558°	10" SCT LX850	8:04:51	8:05:17			26.00	
Luke Christen	Ely, Iowa	41.8919°	91.5786°		8:04:52	8:05:12			20.00	
Al Sheidler	Deere-Wiman House, Moline, Illinois	41.5019°	90.5249°	10" SCT LX200, Nikon D7500	8:05:00	8:05:27			27.00	
Ken Boquist	Rock Island, Illinois			130mm APO f/8 at f/20	8:05:02			~9:12 AM		
John Baker	Menke Observatory	41.7719°	90.7942°	14" SCT Celestron	8:05:12	8:04:41	9:12:07	9:12:38	31.00	31.00

Figure 1: *Occultation timing data with results from Arizona, Iowa and Illinois.*

A simple first approximation for the moon's orbital speed could be made by taking the distance between two locations divided by the difference in time between occultation contacts. This can lead to significant errors depending on the latitude of the observers. Since the track of the moon on the evening of this most recent occultation was mostly west to east, if the observers were to be positioned North and South from each other, then the computed orbital speed could be overestimated. Also, the curvature of the moon's limb could also lead to timing differences.

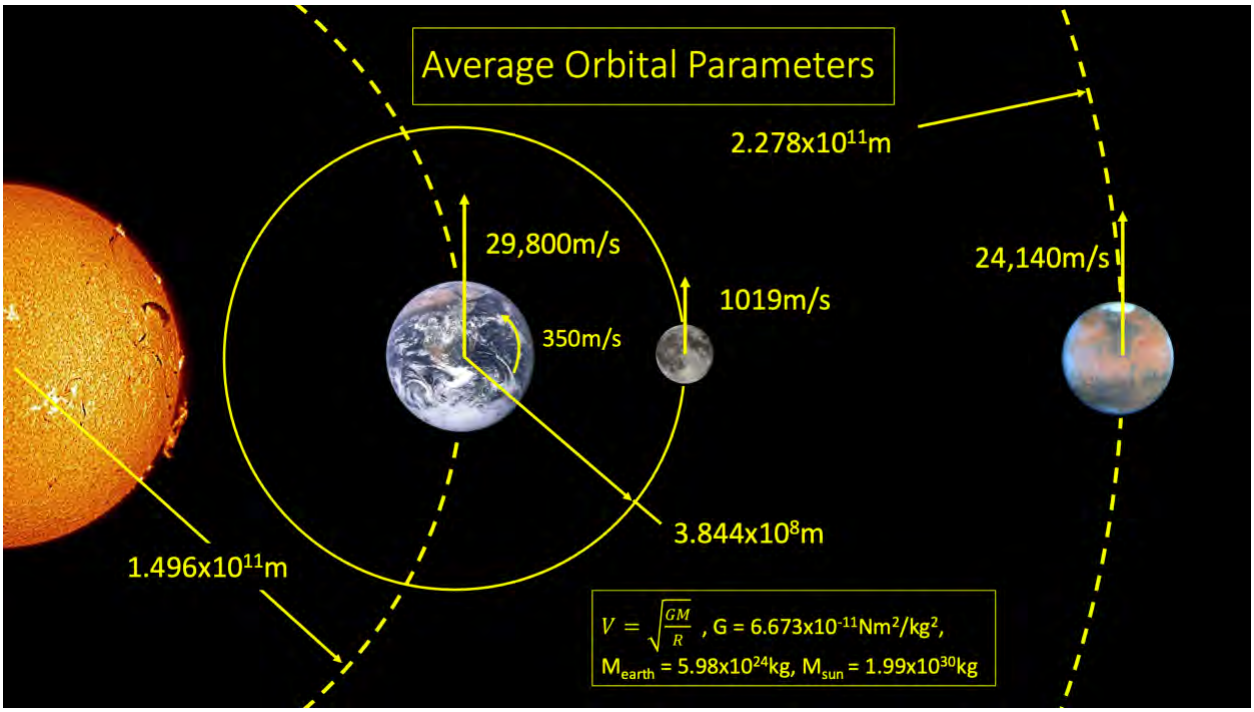


Figure 2. *The above diagram though not to scale, shows the motions of the earth, moon and Mars. The speeds shown here are averages. Trying to figure the speed of the moon from the surface of the earth, which itself is moving is a challenge. Based on Newtonian physics, it is interesting to note that the moon in its orbit around the earth moves approximately its own diameter (3477km or 2160mi) approximately every hour. The average speed of the moon is 0.63miles/sec. On the evening of January 13th, the moon would have been approaching perigee and therefore moving 1035m/s, slightly faster than average.*

Even if observers are located along the path of the moon, there could be errors in the speed computation. For example, if we take the observations from Chandler, AZ and Moline, IL we get a time difference of approximately 1060 seconds. The geographical distance between these locations is about 1300 miles. These values result in an estimated orbital speed of 1.23 miles/second, which is about double the speed we get from Newtonian physics.

A more detailed analysis (a second approximation, if you will) is shown in Figure 3, where we have taken into account the spin speed of the earth as well as the elevation of the moon/Mars in the observer's sky at the time of observation. Here we can see that the lines of sight for Chandler, AZ and Moline, IL are much closer (622 miles or so) rather than 1300 miles. The calculated orbital speed from these values is 0.59 miles/second. This is a much better estimate of the moon's orbital speed, agreeing to within about 6-7% of the actual average orbital speed of the moon of 0.63 miles/second.

Drew suggested another method to compute the moon's orbital speed, which was suggested to him by his friend Jerry Oltion, from Oregon. This was to use each observer's measured time required for the moon to sweep across Mars's disk. Looking at the data in Figure 1, however, we see considerable variability in these timings. The equipment used, the atmospheric seeing and judgment of the observer as to when Mars was "gone" from view was somewhat subjective. At my scope at the Deere-Wiman House in Moline, we had several folks gathered at the video screen watching as the occultation progressed. I was surprised at the total lack of agreement as to when first contact occurred and when Mars was gone.

However, I was particularly impressed with the images taken by John Baker at Menke Observatory using a 14" SCT, one of which can be seen in Figure 4. The images taken by John show a highly magnified image of Mars enabling fairly accurate timing of the event. His data shows the moon taking 31 seconds to fully cover and uncover Mars. Using John's observation and allowing

for the rotational speed of the earth and line-of-sight geometry as described in Figure 3, the computed orbital speed of the moon comes to 0.65 miles/sec. This number agrees very well with the expected speed of the moon at the time of the observations. *The moon's orbit is elliptical, and at the time of the occultation, it would have been approximately 6000 miles closer than average and moving slightly faster than average at 0.64 miles/sec.* Our computed orbital speed was nearly spot on!

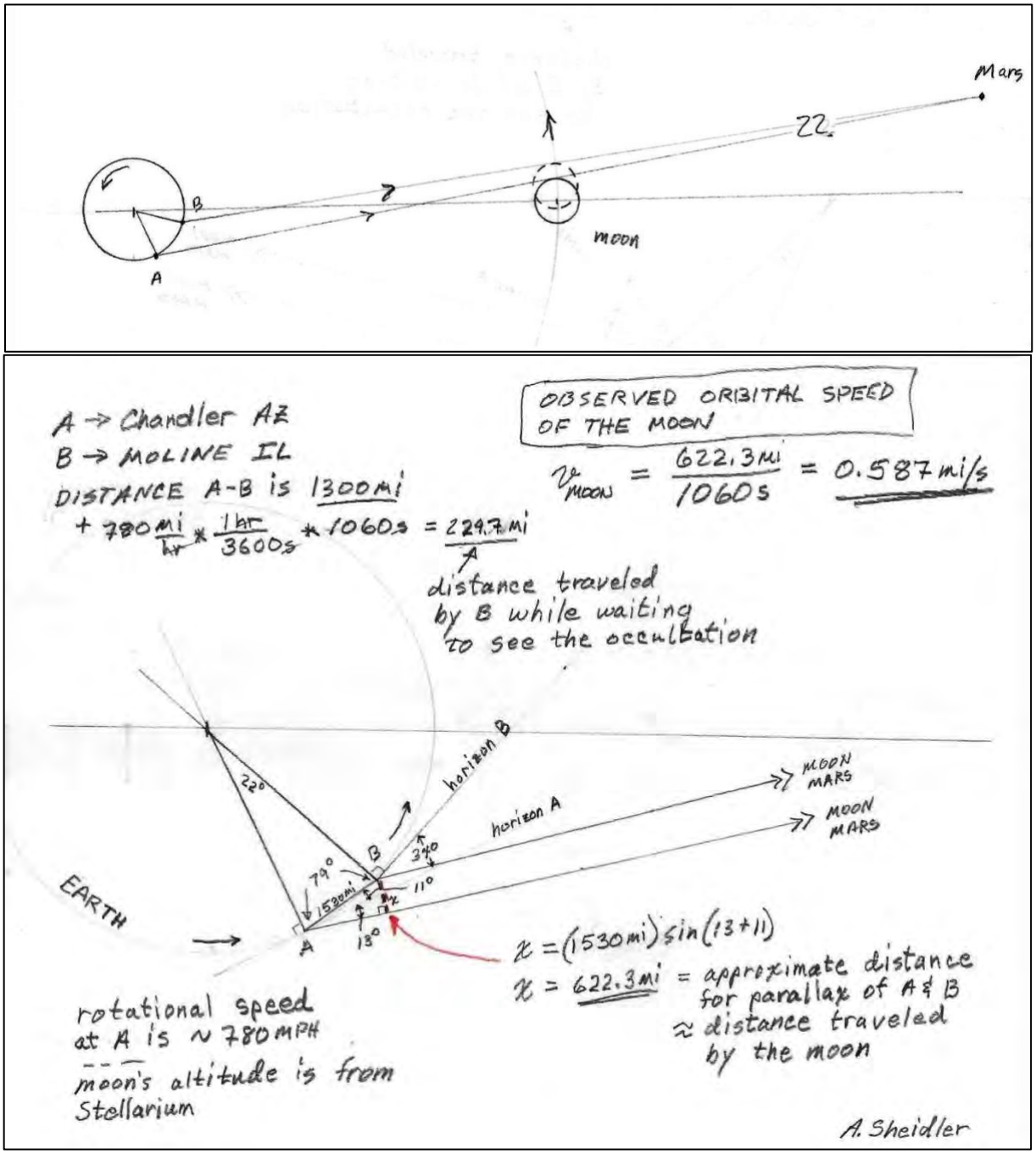


Figure 3. *Using the observations reported from Chandler, AZ and Moline, IL, we can attempt to compute the speed of the moon based on the distance between these locations. "As the crow flies" we estimate this physical distance is about 1300 miles. The contact times between these two locations was approximately 1060 seconds. Taking into account the rotation of the earth and Moline's latitude, we note an additional 230 miles of separation has to be accounted for. Also, because the moon and Mars were low in the east at the time of observation, the actual distance traveled by the moon was only about 622 miles. The resulting observed orbital speed of the moon was 0.59miles/sec.*

More accurate computations can be made but are beyond the scope of what I would be able to compute using simple geometrical techniques. Looking at software programs such as Stellarium and SkySafari can give reasonably good timings of occultations accounting for all of the orbital motions, the Earth's spin and axis tilt, and the effects of the moon's limb curvature. The values reported by Stellarium for occultation contacts were within 44 seconds for my location, which I think is pretty good. Stellarium's estimate for the time it would take to pass over Mars and for its reemergence was about 30 seconds, which agreed pretty well with what our group reported in Figure 1.

Another high precision occultation data source can be obtained from the International Occultation Timing Association. This link shows timing data for numerous worldwide locations: http://www.lunar-occultations.com/iota/planets/0114mars.htm

If you missed the January 13th occultation, here is a recording of the event recorded during the Popular Astronomy Club's regular monthly meeting from the Deere-Wiman House in Moline, Illinois: https://youtu.be/wiZAdVF8_2I

In summary, our observing team had fun making the observations, collecting the data and then trying to figure out how to answer Drew's question of how fast the moon orbits the earth. I think we succeeded in fine fashion.

Figure 4: *Observations from the Deere-Wiman House in Moline, IL approximately 1 minute before contact. This image was taken from a video of the event using a 10" LX200 at f6.3 using a Nikon D7500 camera.*

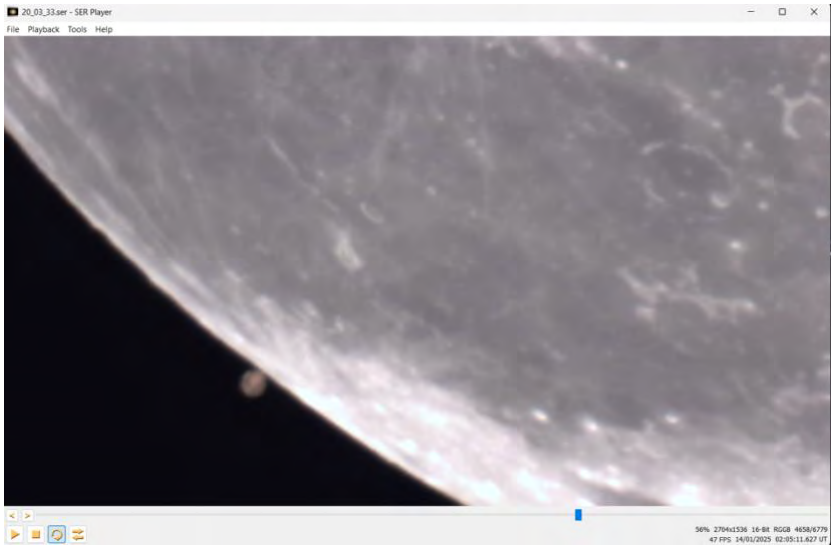


Figure 5: *First Contact image taken by John Baker at Menke Observatory. The time required for the moon to pass over Mars's disk was 31 seconds. Mars's disk was 14.6 arc-seconds in diameter on the evening of the occultation. This results in a calculated orbital speed of approximately 0.65 miles/sec.*

ASTROCON 2025

BRYCE CANYON NATIONAL PARK

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Sponsored by the MARS Region of the Astronomical League

This year, we will be under the stars for our conference!

- The Astronomical League is pleased to announce that **ASTROCON 2025** will be held during the new moon June 25-28 2025, at **Ruby's Inn**, near the entrance to **Bryce Canyon National Park**. Along with talks and workshops given during the day, nightly dark-sky observing will be offered at **Rainbow Point**.

- Bryce Canyon National Park features some of the darkest skies in the United States. Naturally, the National Park Service will hold a nightly public star gaze across the street from the **Bryce Canyon Visitor's Center** for both park visitors and ASTROCON attendees. **Ruby's Inn** is family-oriented with many options for fun and adventures. The area is full of possibilities.

- **Ebenezer's Barn and Grill** will host the **Star-B-Que** Friday at Noon to 2:00 PM and the **Gala Banquet** Saturday night from 5:00 PM to 8:00 PM. A room and/or RV Park/ tent camping site reservation link will be provided via email after registration to the conference has been confirmed. Lodging is available at a reduced rate, and will fill up fast.

- **Speakers and Workshops** will utilize the lecture hall at **Ruby's Inn** and **Ebenezer's Barn and Grill**.

- Reserved rooms with the ASTROCON rates are available the nights of June 24th through the 28th. This also includes the RV Park and Campground. If you want to come earlier or stay later, you will be charged the normal rate for those extra nights.

- Enjoy a **vacation extravaganza** to other National Parks and National Monuments within a days drive.

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REGIONAL OFFICER & LEADER CONTACT INFORMATION

Chair: Alan Sheidler

Bio: Alan has been an active member of the Popular Astronomy Club in the Quad Cities for 30 years and has held the offices of vice president and president. He is currently serving as the director of observing. Alan has been very involved in public outreach activities and, in 2022, received the Master Level Astronomical League Outreach Award. He has also completed several AL observing programs for Double Stars, Globular Clusters, Planetary Nebulae, Venus & Mercury transits, and all four NCRAL Seasonal Messier Observing Awards. (Two-year term as Chair; currently in his first term, 2023-2025.)

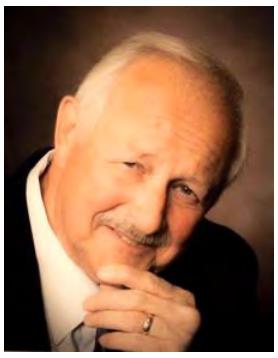
Contact: Adsheidler@gmail.com

Vice Chair: Bill Davidson

Bio: In the days of the Apollo missions, Bill first observed the moon (and sunspots!) with a 50x, 60mm JCPenney's refractor telescope. Not discouraged, 40 years later, he built and observed with a 6.25-inch achromatic doublet objective, f/10, 1600mm focal length refracting telescope. He recently retired as a college mathematics instructor, has been a *Rochester Astronomy Club* (Minnesota) member for more than 20 years, and serves as editor of the club's award-winning newsletter, ***Rochester Skies***. Bill manages the Region's membership awards and grants program as Vice Chair. (Two-year term as Vice Chair; currently in his third term, 2023-2025.)

Contact: rochesterskies@outlook.com

Secretary-Treasurer: Roy Gustafson



Bio: Roy, a member of the *Popular Astronomy Club* (Quad Cities), got interested in astronomy when visiting the Adler Planetarium in Chicago in 2nd Grade. The star projected by the Zeiss Projector hooked him and started him on the path of astronomy. He has been active in outreach and has presented astronomy programs to over 20,000 people. He was awarded the ***Master Outreach Award*** from the Astronomical League. Roy travels with his telescopes and has observed both Transits of Venus and total solar eclipses in 2017 and 2019. Roy also taught astronomy at Black Hawk Junior College in Moline, IL. Roy retired from John Deere & Company after 32 years of service. As Secretary-Treasurer, Roy manages the Region's observing awards program. (Two-year term as Secretary-Treasurer; currently in his fourth term, 2018-2026.)

Contact: astroroy46@gmail.com

Regional Representative: John Attewell

Bio: John's interest in astronomy was kindled during two great comet events – comets Hyakutake (1996) and Hale–Bopp (1997). He used a 2½-inch refractor borrowed from his brother for the next ten years, which he mounted on a rickety camera tripod. It wasn't until 2009 that he acquired a serious telescope as a gift from his family. He started attending the Rochester Astronomy Club meetings in 2002, becoming a member in 2006 and Vice President in 2019. In 2017, he chaired the NCRAL annual conference held at Eagle Bluff Environmental Center in Lanesboro, Minnesota, and served as NCRAL Vice Chair from 2017-2019. John's particular interest is the history of astronomy. (Three-year term as Regional Representative; currently in the first term, 2022-2025)

Contact: john_attewell@hotmail.com

Webmaster: Jeff Setzer (appointed)

Bio: Jeff has been an amateur astronomer since 1984 and has been part of the *Northern Cross Science Foundation* (Wisconsin). He is a longtime member of their Board of Directors, has held several office positions, and is their President. He has completed several Astronomical League observing programs, made his telescopes and optics, and is a self-described telescope nut. You often find him at star parties with his 22" Starmaster and TeleVue 85 telescopes. Jeff is the webmaster of the NCRAL website, which can be found at https://ncral.wordpress.com/.

Contact: astrosetz@hotmail.com

Newsletter Editor: Carl J. Wenning (appointed)

Bio: Carl has been an avid amateur astronomer since being introduced to the sky by his grandfather in July 1957. He has been involved with the *Twin City Amateur Astronomers* (Illinois) since September 1978, where he served as president as recently at 2024-2025. He is also an ***Astronomical League Master Observer*** who spends most of his free time introducing nascent amateur astronomers to observing using his club's Celestron 11", iOptron 14", and PlaneWave 20" telescopes. Carl served three consecutive two-year terms as NCRAL Regional Chair from 2017 to 2023. He also has served as the Region's ***Northern Lights*** newsletter editor for nearly 10 years now. He originated the ***NCRAL blotter***, a monthly newsletter for affiliate leadership (2023-present). He was recognized for his Regional education and outreach efforts in 2007 when he received the ***NCRAL Region Award***. Carl will be speaking at the ASTRON 2025 convention at Bryce Canyon in Utah in June. Carl resides in Normal, Illinois.

Contact: carlwenning@gmail.com

