



# Fort Wayne ENGINEERS' Club

Engineers' News

March 2025

Vol. 87 No. 6

[www.FortWayneEngineersClub.org](http://www.FortWayneEngineersClub.org)

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## March Tour



**When:** March 27, 2025 @ 4:30 P.M.

**Where:** 1010 Production Rd., Fort Wayne IN 46808

**Details:** A return to Raytheon to take a further step inside. This tour will go beyond the conference room and get a peak at the EMI lab and model shop.

\*Must be at least 18 years old.

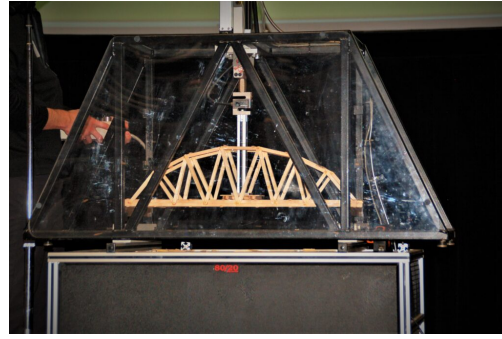
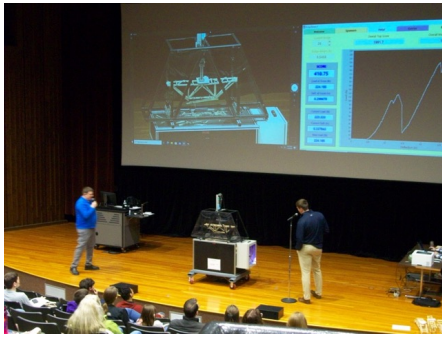
\*Must RSVP to [news@FortWayneEngineersClub.org](mailto:news@FortWayneEngineersClub.org) by Thursday 3/20/2025 to include your current employer name.

<https://www.rtx.com/>

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## Bridge Building Contest Recap





The middle school winning competitor wielded an outstanding 1,000 lbs. (will double check this number for final report)

The high school winning competitor survived up to 1,340 lbs. (will double check this number for final report)

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## February Tour Summary



Take a look at a recent newsletter from the FWAS. This includes some amazing events and information!

[Newsletter](#)

Meetings occur on the third Tuesday of the month and are open to the public.

The Society completed its Star\*Quest Observatory in 2017, which is designed to facilitate movement between as many as ten different “telescopes” for public gatherings and education. The Jefferson Township Park has custom built facilities for many clubs which are open to the public and well worth regular visits. The observatory has stargazing open houses every clear Saturday night starting 1 hour after sunset for 2 hours, April through November. There are also monthly presentations on specific topics such as black holes, gamma rays, and more at general meetings (see info elsewhere in this FWEC newsletter). Membership in the Society includes potential training on seven decades of visual, photographic, spectroscopic, cultural, and historical ways of engaging with the universe. We did not

anticipate the variety of interests among their members, often for most of their lives.

Your eyes can provide much fun with a little information about what they are seeing, especially in a relatively dark and sheltered setting such as the Observatory with seasoned stargazers.



The observatory has a chevron or winged shape when viewed from above. The left and right roof halves move outward on rails as much as needed for the numbers of participants and equipment being used. Or, the chevron shape can accommodate a continuous stream of public visitors from an entrance, then sequentially across as many as ten “telescope” stations, and out an exit path.

“Stellarium” software has many features and levels of complexity from free to expensive for a variety of devices. It can serve any level of astronomy, but turns any smartphone into an automatic sky map for wherever the phone is pointed.

Binoculars can be useful for closely monitoring relatively nearby objects, especially if the binocs are designed for celestial use and matched to an appropriate stand or tripod (of which several types exist). Minimum eyepiece size should be 6 mm to match a young person’s pupil size in the dark, but 7-10 mm is better. The minimum size of objective should be 40-50, but ever larger is ever better for gathering light. Specially designed binoculars can be 18” long, 14” wide, and weigh nearly 10 pounds. A stable viewing platform is essential. It quickly became obvious why various forms of “telescopes” are preferred.

An astonishing leap can be provided by small digital “telescopes” which are digital cameras which transmit extremely detailed pictures to a smartphone, pad, or other computer.



Very good simple units have become very inexpensive. Various software is available to find a specific object quickly, share the experiences, and provide many other features. As is normal with digital photography, images can be stabilized from vibration. Multiple images can be rapidly taken and then superimposed upon each other for more light collection, more detail, easier tracking of moving targets,

and other purposes. Glare from civilization's lights can be somewhat excluded. Digital "telescopes" are far smaller, lighter, and less expensive than a digital camera on a conventional telescope.

Observing the heavens by eye through traditional light telescopes is a different personal experience than through electronics. The most common conventional telescopes are "reflecting" designs, which have a concave mirror in the "bottom" of a long tube. The tube serves to largely exclude light waves which are not traveling parallel to each other. The concave mirror both reflects and concentrates the light into a receiving system (traditionally an eyepiece) which can be changed for various purposes. Reflecting designs have a shorter focal length which allow more magnification in a shorter tube, among many other advantages compared to refracting designs.

Star\*Quest Observatory has a reflector in use which was hand-assembled decades ago by a member using a heavy cardboard tube (normally used for casting concrete posts) in a heavy base (for stability and vibration dampening). Another homemade reflector from 1960

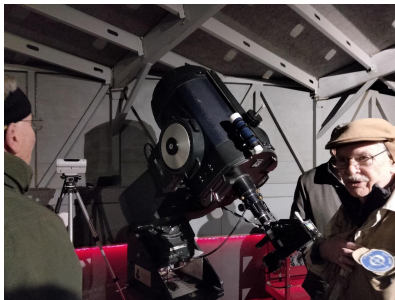


was a collaborative effort and one of the most capable units available to amateurs for many years. The concave mirror was 3-4 times more precisely ground than anything commonly available at the time, but required a year to develop the grinding machine and then grind the mirror. Both reflectors are still in use in the Observatory.

Reflector mirrors over 5 inches in diameter generate heat distortions.

The mounting of an optical device is as important as the device itself. There are a bewildering array of mount designs and names. The 1960 reflector is mounted on an old tractor flywheel for weight dampening and moved by a clockwork/fan belt.

Refracting binocular or telescope designs can be shortened by using mirror(s) and/or prism(s) to move the light across the usual distance within a shorter (usually fatter) tube.



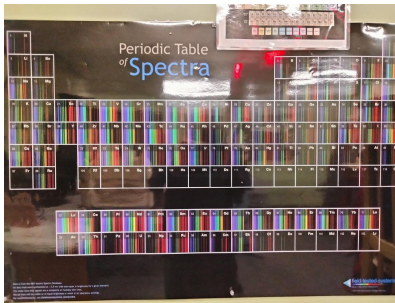
The mirrors may also be concave, providing a hybrid of refractor and reflector design. FWAS was fortunate to win bidding (\$17,000) on a unit designed for a major observatory but never used. It is



precise and complex enough to perform spectroscopic readings which are contributed to global research studies. Again, it is on a mount which could be a FWEC tour in itself.

As telescopes become more precise (not just higher in magnification), individual targets become more isolated in a background field (often evermore pitch black). Our hosts also spoke of visiting large observatories or occasionally experiencing time on massive telescopes. Someone described targets as "diamonds on black velvet, almost three dimensional."

Some members of FWAS are highly involved in spectroscopy.



Incoming electromagnetic "light" is typically separated into its various wavelengths using diffraction gratings etched or "printed" on glass. Slit plates or prisms can be used. This can also be done digitally.

Jefferson Township Park also hosts Fort Wayne Flying Circuits (clubhouse and airfield for radio controlled flying), Maumee Valley Blacksmiths (with buildings), an annual Maumee Valley Antique Steam & Gas Engine event (August 14-17, 2025), horse gatherings (and bridle trails), tractor pulls, RV camping, and other public opportunities. Fort Wayne Railroad Historical Society facilities adjoin the Park. These border a larger piece of Federal land once used as a munitions depot and now technically owned by the National Park Service for educational purposes, but managed by the Township.

[Ed.: There were multiple discussions of atmospheric limitations. A huge concern was ever increasing light pollution due to recent economic development. A casino is proposed nearby. Time of year also introduces large differences in atmospheric currents and distortion. Objects directly overhead tend to have the fewest aberrations. Online sources relate that some very large observatories aim a laser beam along their line of sight and use the returning light to adjust a telescope's reflector mirrors over a thousand times per second. My professional background has followed massive ongoing increases over eight decades in reflectance (visual and retained infrared heat/moisture) at night from aviation contrails. Contrails spread into an unrecognized blanket over huge geographic areas.]

FWEC was hosted by far too many FWAS members to thank individually. Their range of interests was startling and are a huge resource available to anyone. THANK YOU to the Fort Wayne Astronomical Society.

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## FWEC Communications Coordinator Opening

FWEC has created a role of Communications Coordinator to be paid \$500/year. This would be to check the Club's e-mail once a week, assemble the newsletter 8-9 months per year using items provided by other people, and change the website to be current with the newsletter. No experience necessary. We have quickly trained each other as needed over the years, and the abilities could be useful for other associations or purposes. Please contact Ryan Stark at [info@FortWayneEngineersClub.org](mailto:info@FortWayneEngineersClub.org).

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## Interested in Hosting a Tour?

Contact us today!

**Host a Tour**

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## Items of Note

FWEC member Rod Vargo is Chair of the 30 year-old and all-volunteer [Utility Advisory Group](#), which formally advises Fort Wayne City Utilities and often City Council. Your comments are welcome at [rodvargo@comcast.net](mailto:rodvargo@comcast.net)

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## General Club Info

Fort Wayne Engineers Club dues are \$0. Donations are welcome but strictly voluntary. In recent years, club funds have helped support Discover-E, the Regional Science and Engineering Fair, annual bridge building contests in schools, academic awards, networking events, mentoring, our website, and facilitating free tours.

Please see [FortWayneEngineersClub.org](http://FortWayneEngineersClub.org) for updates on current Club activities, other news, and past newsletters.

Those participating in activities or hosting tours through FWEC do so strictly at their own risk, including disease exposures. Participation in club events is voluntary, free, nonprofit, and solely for the benefit of participants and the community at large. Anyone with an interest may participate unless restrictions are specified for specific events, such as minimum age or minimum safety attire.

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## FWEC Roster for FY2024-2025

President: Nathaniel Wisel  
Vice President: Mindy Robinson  
Secretary: Rod Vargo  
Treasurer: John Magsam  
First-year Board Members: Marna Renteria, Mike Magsam  
Second-year Board Member: Dave Gordon, Bert Spellman  
Third-year Board Member: Ryan Stark, *Open*  
Editor of Engineer News: Nathaniel Wisel  
Membership and Contact Chair: *Open*  
Northeast Indiana DiscoverE Chair: *Open*

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## Job Posting and Resumes Listed

The club accepts both job openings from around the area, as well as resumes from those seeking employment. Please submit these to the following email address:

[Info@FortWayneEngineersClub.org](mailto:Info@FortWayneEngineersClub.org)

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## Advertise in the Engineers' News

The FWEC provides advertising space within the Engineers' News.  
Advertisements are only \$10 per issue and limited to ½ page of content.

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## Advertise Your Business

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