THE VALLEY SKYWATCHER

The Official Publication of the Chagrin Valley Astronomical Society
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CVAS Officers

Connie Meier	President
Willie Stickley	Vice President
Eric Wright	Secretary
Patrick Sonday	Treasurer
Laszlo Ilyes	Director of Observations
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Chris Powell	Editor VSW

CVAS
PO Box 22
East Claridon, OH 44033
https://cvas.space

Editor's Note: The following proposal was presented by Eric Wright at the CVAS March 1st monthly meeting.

CVAS Timeline Project

Eric Wright, CVAS Secretary

Proposal:

Production of complete timeline of events for CVAS from as far back as we can muster to current events, to be updated regularly by the historian (or other party). Always keeping a historical record of passing events.

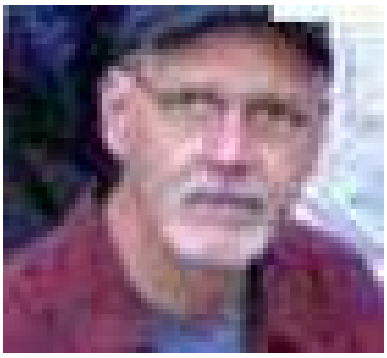
Purpose:

To provide a quick and modern way of discovering the historical nature of CVAS.

Details:

I would like to propose the creation of a timeline feature on our website where we can scroll through history and years, as well as search for events by keyword. Starting with the start of CVAS, moving right through history until we reach today with today's events. We need as many granular events as we can muster – pictures as well if we can. With the ability to add events and details to the timeline as well. I would like a robust search, for example, "All officer positions for Ian Cooper" and have a timeline showing only when Ian was elected as an officer, etc. I would like these events to be able to be referenced via hard-links (so we can embed them in documents like the Valley Skywatcher).

Observer's Log #1



Joe Petrick

Capella

Sent December 24th, 2025

Attached image of Capella, also known as the Christmas Star, shines as the brightest star in December skies. Image taken December 2023 with remote telescope in Rodeo, New Mexico. Wishing everyone Merry Xmas/Happy Holidays and Happy New Year !

Joe

Observer's Log #2

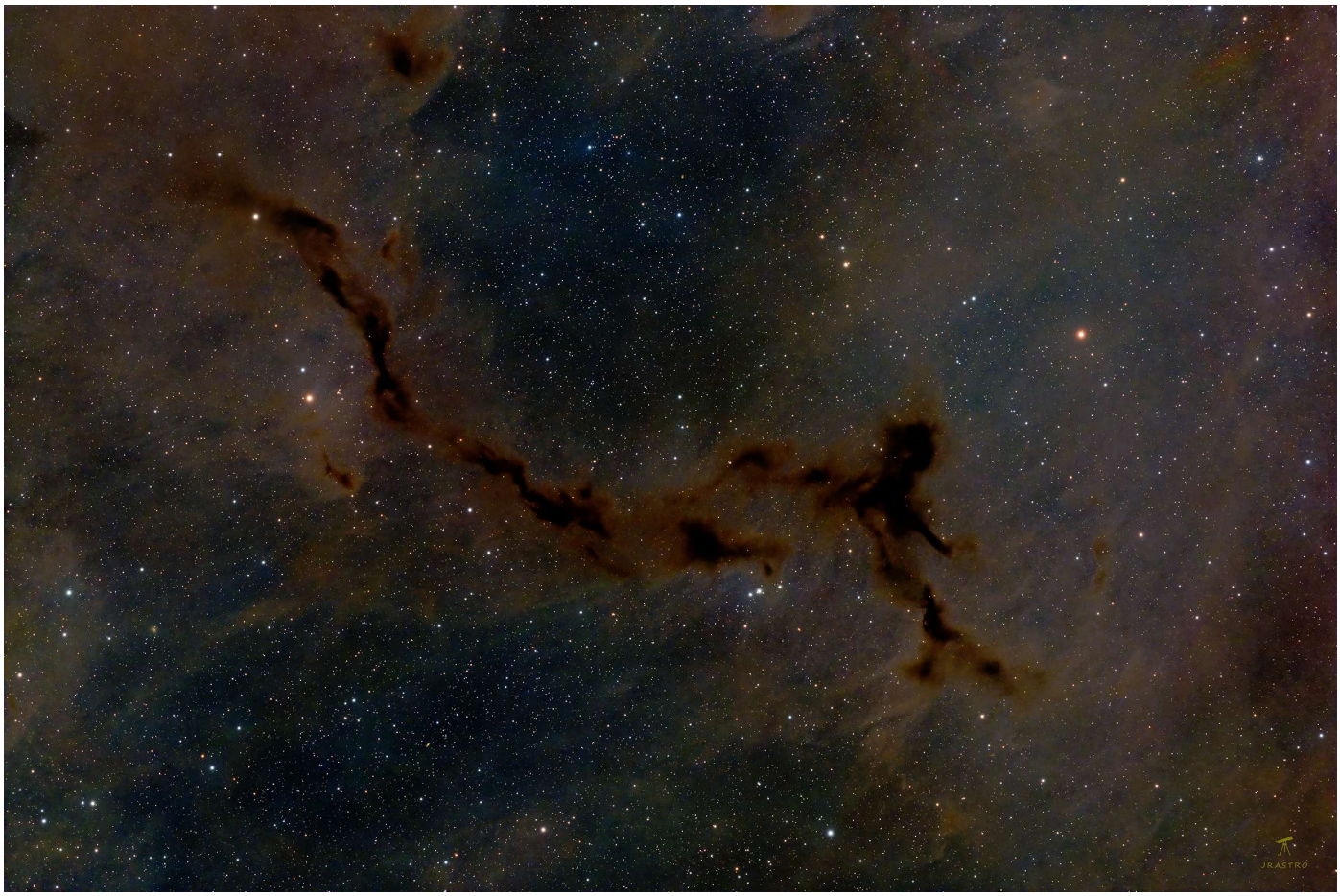
Jeff Ratino

Barnard 150, The Seahorse Nebula

Sent February 22nd, 2026

Barnard 150 or The Seahorse Nebula, about 1200 Light Years away from Earth, is a dark molecular cloud of dust in Cepheus constellation. It is almost exactly in the middle between the Flying Bat Nebula (Sh2-129) and the Fireworks Galaxy (NGC 6946).

The constellation Cepheus is circumpolar, but it is highest in the sky in the months of April to January and the nebula can therefore be observed best then.



Jeff Ratino

LDN 1622 - The Boogeyman Nebula

Sent February 22nd, 2026

LDN 1622 has been an object that I have wanted to capture since seeing it several years ago. Really don't think I could have done it justice from my Bortle 6 backyard.

LDN 1622 is a dense, dark cloud of interstellar dust and gas located in the constellation Orion. Situated roughly 500 light-years away, it appears as a silhouette against a backdrop of ionized hydrogen gas, often near the larger Barnard's Loop. Due to it's spooky shape, it has earned it the nickname Boogeyman Nebula.

The nebula spans about 10 light-years in diameter and contains young, hidden stars.

This is almost 45 hours of data.

Observer's Log #2 (cont)

Jeff Ratino

NGC 2170 - Angel Nebula

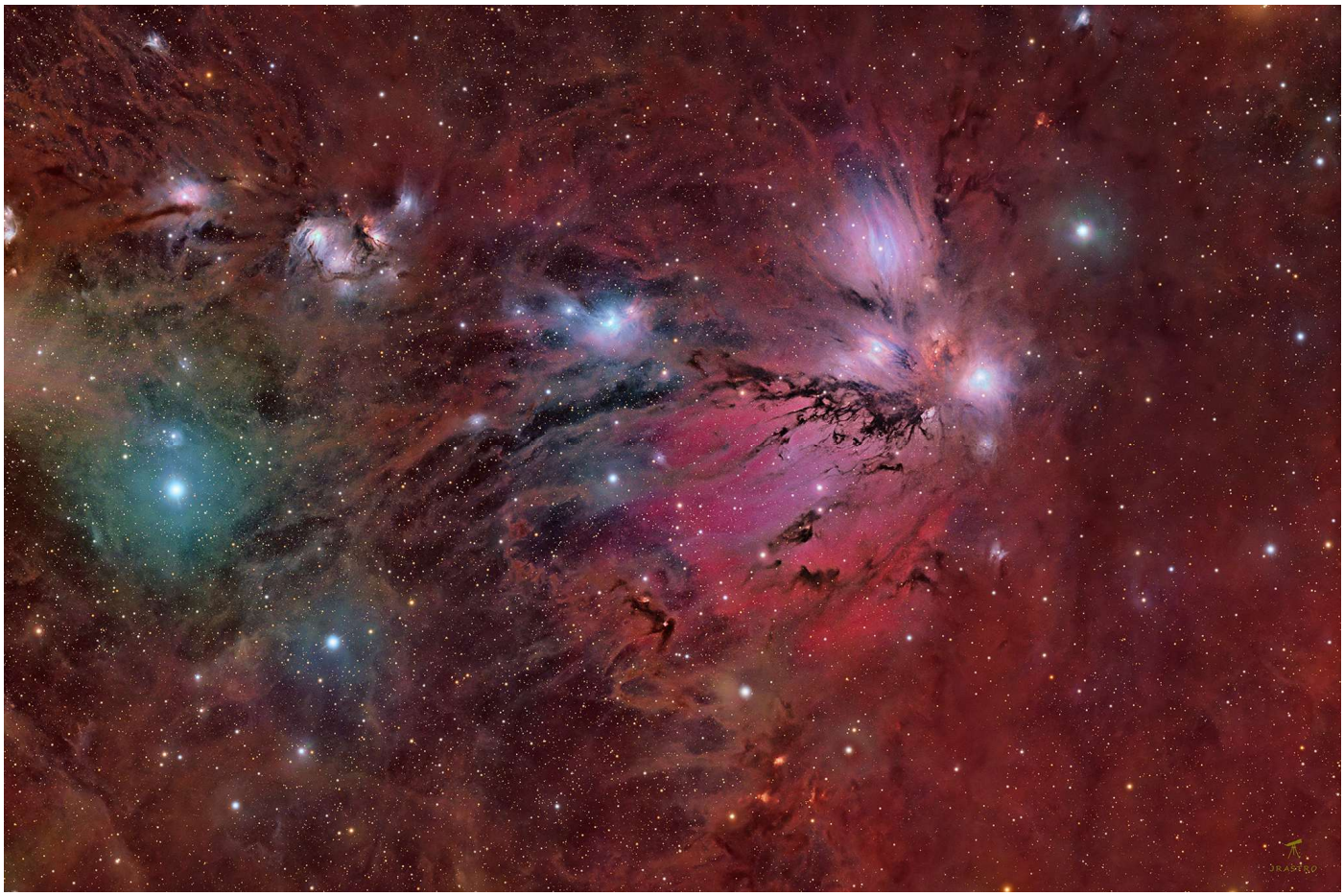
Sent February 22nd, 2026

Another object that I have wanted to image since starting this hobby. Thank goodness for a site like Starfront to be able to image at pristine skies.

NGC 2170 is a reflection nebula in the constellation Monoceros. It is part of a larger star-forming region and lies approximately 2,400 light-years away from Earth.

NGC 2170 is just the blue nebula below the orange-red nebula. It is joined by other bluish reflection nebulae, a red emission region, many dark absorption nebulae, and a backdrop of colorful stars.

Total Integration: 68 hours 7 mins; My highest integration to date.



Observer's Log #3

Steve Fishman

The Herschel 400/2500 Project

Sent February 25th, 2026

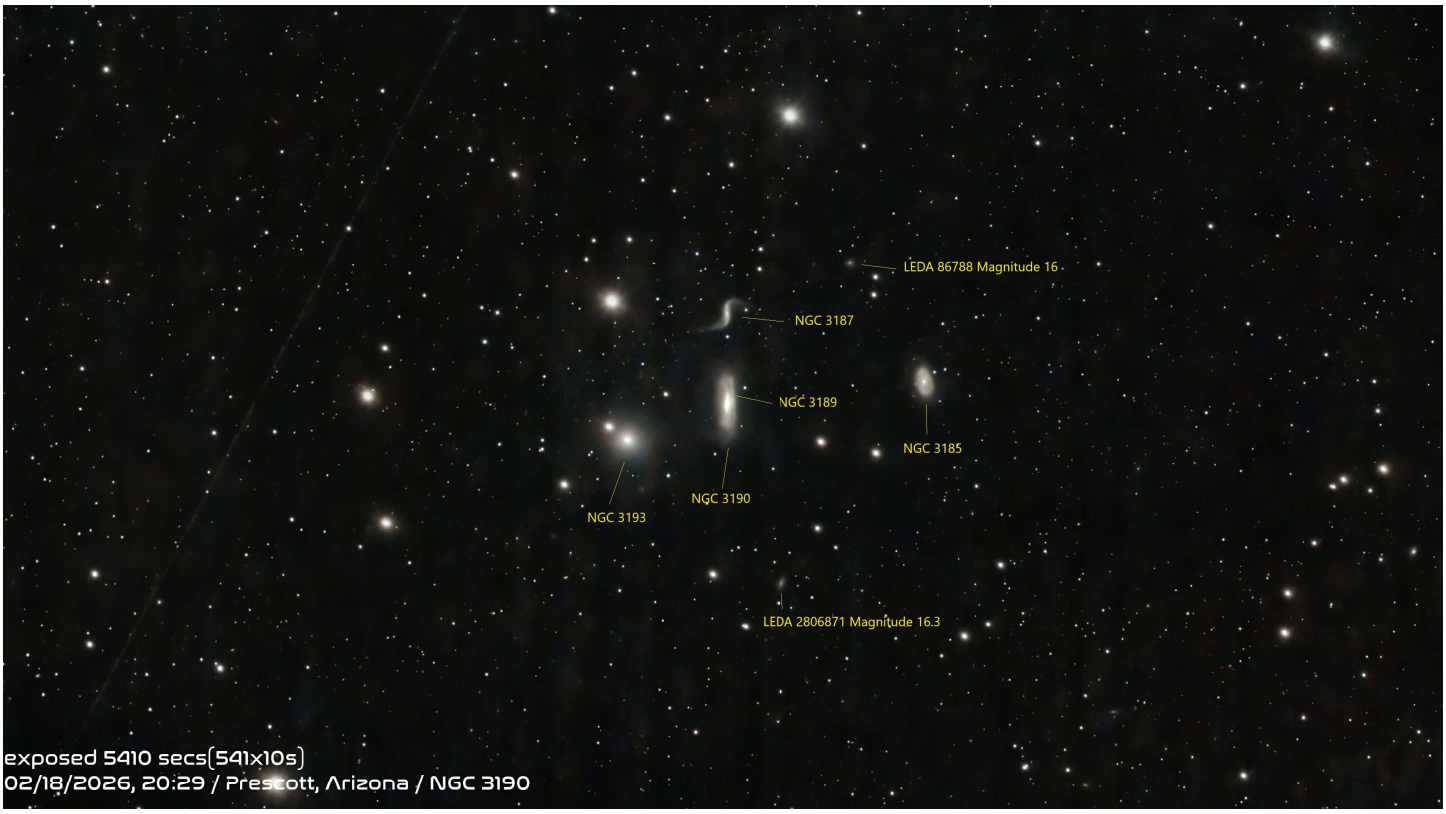
One of my projects is to visually observe or photograph objects in the Herschel 400 catalog and eventually a larger list of Herschel 2500 objects. A decent and free guide to the Herschel 400 history along with charts was published by Alvin Huey in 2007 and can be found at the link below. I'll also note that the Astronomical League has a Herschel 400 observing program. I'm also fascinated by galaxy groups, where multiple galaxies appear in a single image. Markarian's Chain and Stephan's Quintet are 2 well-known examples. Here's 3 images of other galaxy groups, taking in early to mid-February 2026 with the Celestron Origin. Minimal post-processing was done.

https://faintfuzzies.com/Files/Herschel%20400-I%20v3.pdf

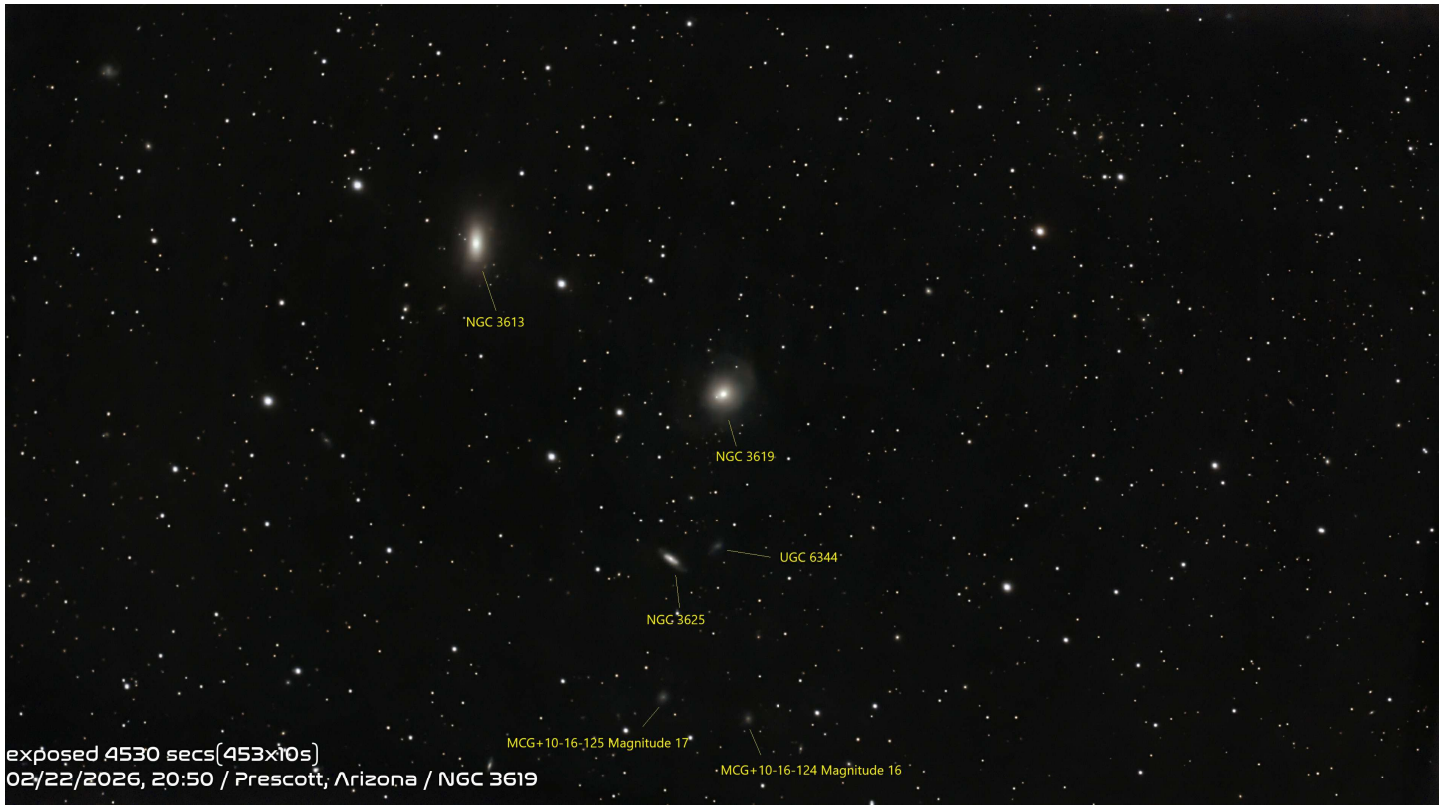
My 1st photo is of Hickson 44 galaxy group in Leo, about 80 million light years distant. A Hickson Compact Group is a list of 100 galaxy objects published by Paul Hickson in 1982. NGC 3190 is the largest at magnitude 11.2 with a size of 4.1 by 1.6 arc minutes. In the photo, I've also labeled NGC 3189, inside NGC 3190. According to the revised NGC catalog, NGC 3190 was discovered by William Herschel in 1784. NGC 3189, discovered by William Parsons in 1850, is classified as a galaxy cloud.

NGC 3193, an elliptical, is the brightest at magnitude 10.8 and a size of 2 arc minutes. The remaining 2 of the group are barred spiral NGC 3185 at magnitude 12 and spiral NGC 3187 at magnitude 12.9.

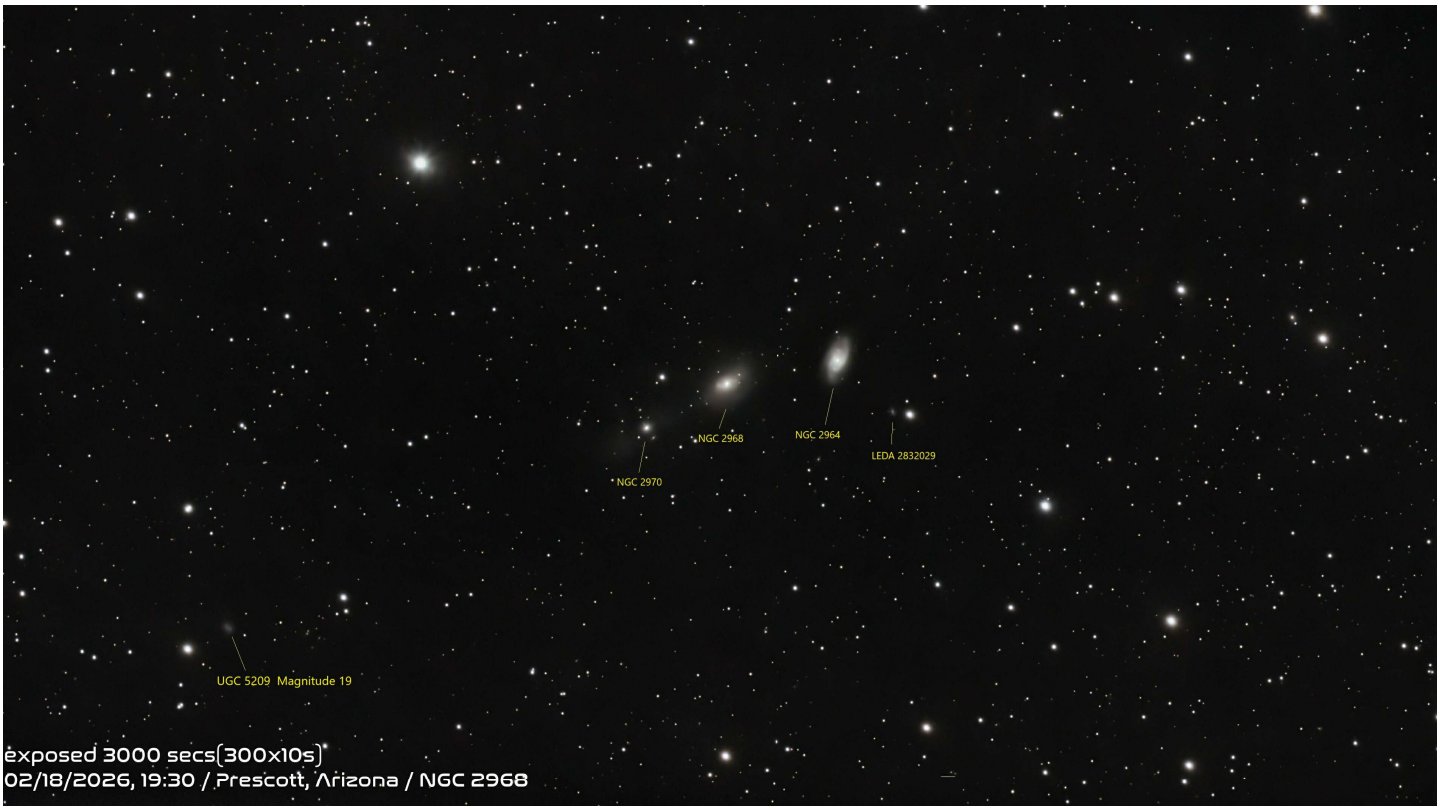
Also, in this 90-minute photo are 2 other galaxies not associated with Hickson 44; LEDA 2806871 at magnitude 16.3 and LEDA 86788 at magnitude 16. LEDA (Lyon-Meudon Extragalactic Database) galaxies are a database of galaxies created in 1983 at the Lyon Observatory.



The 2nd photo with a 75-minute exposure shows another galaxy group comprised of lenticular NGC 3619 (visual magnitude 11.5, distance 87 million light years), spiral NGC 3625 (visual magnitude 13.3, distance 123 million light years) and elliptical NGC 3613(visual magnitude 10.7, distance 98 million light years). NGCs 3613 and 3619 belong to the Herschel 400 catalog, while NGC 3625 is in the Herschel 2500 catalog. In this image are 3 other galaxies. UGC 6344 is a dwarf galaxy at magnitude 17. UGC is the Uppsala General Catalog. Two other dwarf galaxies at magnitudes 16 and 17 are in the lower portion of the photo.



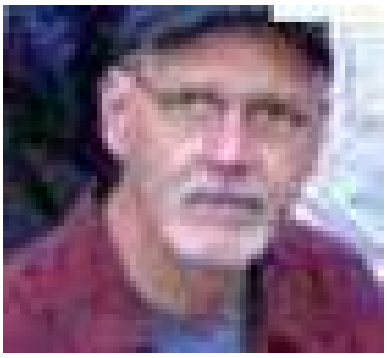
A 3rd photo with a 45-minute exposure is another galaxy group comprised of spiral NGC 2964 (visual magnitude 11.2, distance 60 million light years), barred spiral NGC 2968 (visual magnitude 12.9, distance about 45-58 million light years), and elliptical NGC 2970 (visual magnitude 14, distance about 45-58 million light years). NGC 2964 is in the Herschel 400 catalog, while the 2 others are in the Herschel 2500. Longer exposures show a faint tidal stream between NGC 2968 and 2970. This image also captured a couple of fainter dwarf galaxies, LEDA 2832029 (can't find magnitude) and dwarf galaxy UGC 5209 at magnitude 19.



Observer's Log #3 (cont) Steve Fishman

The last photo is Comet C_2024 E1 (Wierzchos). I had a narrow window before it set on February 18 to capture this 8th magnitude object as it sat in the constellation Fornax at minus 22 declination. Not as spectacular as last November's Comet Lemmon, but it does have a colorful coma and tail.

Observer's Log #4



Joe Petrick & Rick Shaw

M61 - The Andromeda Galaxy

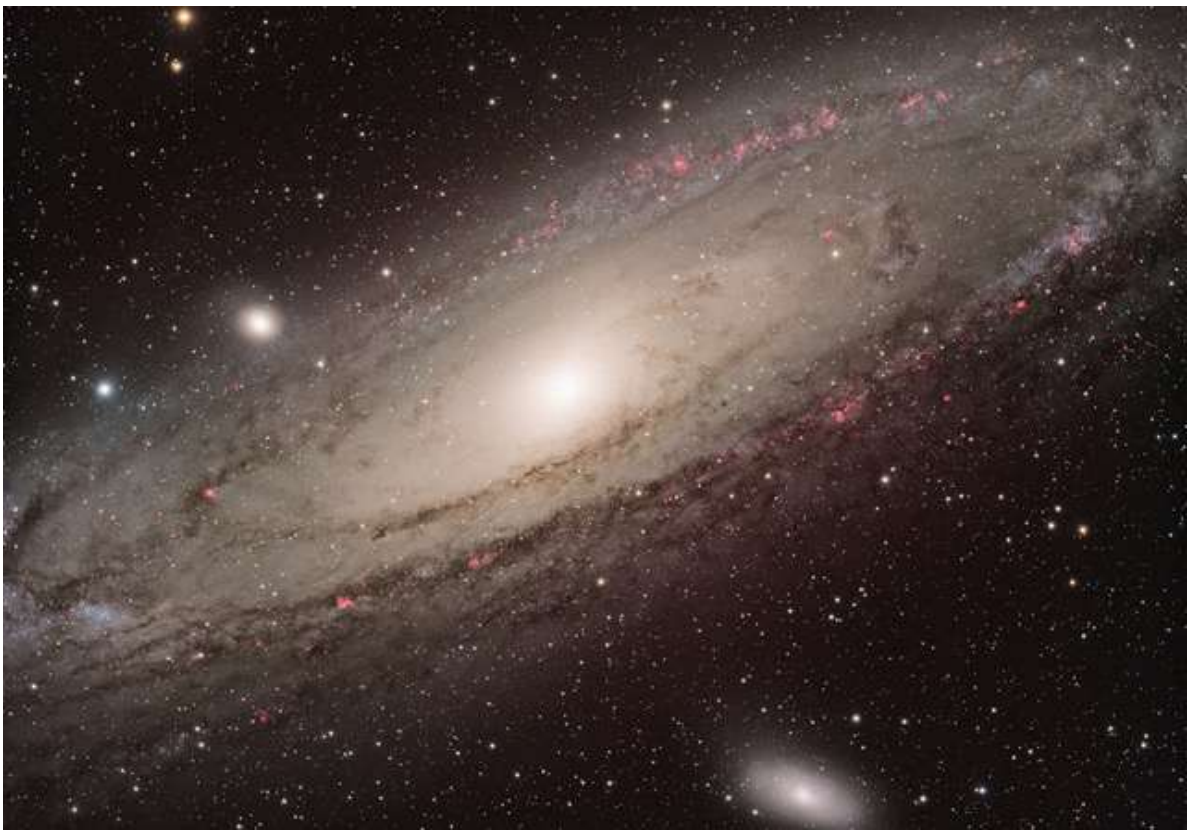
Sent February 25th, 2026

This image of Andromeda was captured in December using a Takahashi FSQ 106N with a SBIG STC 7 CMOS mono camera located in Rodeo, New Mexico. The image was built using RGB and Luminance from 900 minutes of data.

This image was processed solely using PixInsight using its new Multiscale Adaptive Stretch (MAS) process. It appears to be a fast and easy replacement for Histogram Transformation. The new process helps highlight Hydrogen and the galaxy's dust lanes and gives the user good control of the final result.

The Andromeda Galaxy, located about 2.5 million light years from Earth, is the largest member of the Local Group. It is classified as a barred spiral galaxy, although it is hard to discern the bar which is formed from the stars in the galaxy center. Its diameter of 150,000 to 220,000 ly easily fills the sensor chip on the camera, and in many eyepieces as well. It can be seen naked eye as a fuzzy patch under dark sky conditions like those of Cherry Springs State Park in Pennsylvania.

Andromeda is more active than the milky way in star formation as indicated by the red knots in this image. The companion elliptical galaxies of M32 and M110 are clearly seen at the 10 o'clock and 5 o'clock positions. Andromeda is approaching the Milky Way at a speed of 110-140 km/s. An incredible speed for an object this large!



Jones-Emberson 1 - The Headphone Nebula

Sent February 25th, 2026

Jones-Emberson 1 (or PK 164+31.1) is a very faint planetary nebula located in the constellation Lynx at a distance of 1600 light years from Earth. This was shot in February using the 17 inch PlaneWave telescope and the SBIG 8300 3 CCD Camera collecting 870 minutes of RGB, Luminance and Hydrogen Alpha data.

This was processed solely with PixInsight and used Histogram Transformation (HT) for the permanent stretch. For this particular image, HT worked better than any of the other stretch processes (Multiscale Adaptive Stretch, Statistical Stretch, Veralux, and Generalized Hyperbolic Stretch being the others). Maybe it was because this object is so very faint.

Similar to the Ring Nebula (M57), the Headphone Nebula was formed when a star entered the last stage of its life cycle, shedding heavier elements like Carbon, Nitrogen, Oxygen and more. That shedding forms a ring that lasts for about 20,000 years. Natures way of distributing heavier elements out into the Universe. The remains of the mother star, now a White Dwarf, can clearly be seen in the center of the ring. The stars share their beauty with their births in places like Orion's Trapezium, and with their deaths in places like the Headphone Nebula.

And we get to capture it all!

- **Astronomical League: An Announcement About Recent and Ongoing Spam**

This message is being sent to all club presidents and ALCors. We ask that you make the following public announcement at one of your upcoming meetings. It relates to ongoing scam attempts that could be directed at your officers and, possibly, some of your members. I referenced this in my recent President's Column, but additional verbal communication would be appreciated.

Thanks, Chuck

Charles E. Allen III
President, Astronomical League
president@astroleague.org

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ANNOUNCEMENT

League President Chuck Allen has received reports from a number of people who have received emails sent over his signature or that of other League officers asking for help with things like a Venmo payment of a gift card purchase or asking for a call to chat. The email addresses from which these come are not those of any League officer. This has been an ongoing problem for a number of years and seems to come in waves...and a rather strong wave recently.

Please understand that personal email accounts of League officers have not been hacked. Many members who receive these scam emails are not even in League officers' contact lists. What the scammers do is find your email address somewhere, perhaps on your club website, look at the League website to learn about the League so they can sound legitimate, and then send you an email, ostensibly from a League officer whose name is public, hoping you'll help them by arranging a gift card or other payment on behalf of a League program or activity. Sometimes they just ask you to write or call a certain phone number. Never respond to such emails. Delete them. There is no effective way to stop these scams, and they are affecting countless organizations these days.

The bottom line is this: NO OFFICER OF THE ASTRONOMICAL LEAGUE WILL EVER SEND YOU A REQUEST FOR ASSISTANCE IN MAKING A PAYMENT, PURCHASING A GIFT CARD, OR ENGAGING IN ANY FINANCIAL TRANSACTION.

Thank you.

Mitch Glaze
Astronomical League Office Manager
rosters@astroleague.org
(on behalf of AL President Chuck Allen)

• Invitation to Astrospherics from Connie Meier on February 3rd

The information below provides direction on how to join our club page on "Astrospheric". You can download the app on your phone or go to the website on your computer. Either way works. Once we have 20 people joined in our club page on the site, we will gain access to the premium features for free. If you were to subscribe to the premium version individually, it would cost you $30. For more information on the premium features, we will send an email detailing those features that are specifically useful to us as a group once we have gained access to them. We currently have 13 people signed up.

This is the website address: astrospheric.com

Here are the steps to join our group once you have registered/signed in:

1. Go to Astrospheric.com or install the app on your phone.
2. Click on the Subspace tab on the right.
3. Click on the Join Group button
4. Use this code: S_f83fdd4f

If you have any questions relating to the joining process, please contact us.

• Followup from Laszlo Illyes

Astrosperic is a great tooling for helping you plan your Astronomical observations and/or astrophotography sessions by providing up-to-date forecasts regarding clouds, sky transparency, "seeing", visibility of the moon, planets, and ISS, and strength (and potential visibilty) of the aurora.

For clarification, you need not have a smartphone to use the app. You can go to the astrospheric.com website and use the web-based app on your computer as well. You, of course, will still need to register an account, just the same as the smartphone app. And then follow steps 2 through 4 of the instructions provided.

• Request to Participate in an Astrophotography Survey by Steven Burr (Post-Grad)

This document is a request for your thoughts on the meaning and motivational aspects of astrophotography. It is an academic survey conducted by Steven Burr, a student from the University Of Wales Trinity Saint David (UWTSD) studying Cultural Astronomy and Astrology. This survey will take approximately 10 minutes to complete. Please note, all information collected will remain securely stored and anonymized.

https://docs.google.com/forms/d/e/1FAIpQLScHsBRNAsRvQV07JLGiaSAP4VFYHfzL6JZK4XpGJXdIUG_eyw/viewform?usp=sharing&ouid=111078962912152802620

You have the right to withdraw from this survey at any time up to submission. By submitting this form you agree that the info supplied will be used in my research. Findings of this research will be utilized in my MA Dissertation.

For those interested in being interviewed on the topic of the astrophotography please contact Steven at 2206586@student.uwtsd.ac.uk. Thank you!

• Seestar Presentation by Russ Swaney

At the March 1st meeting, Russ Swaney gave a great presentation on *"Setting up your Seestar at Starfront"*. If you missed it, you can see his PowerPoint under at the CVAS website (see first page of the Valley Skywatcher), under the Members Section and then Member's Presentations folder.

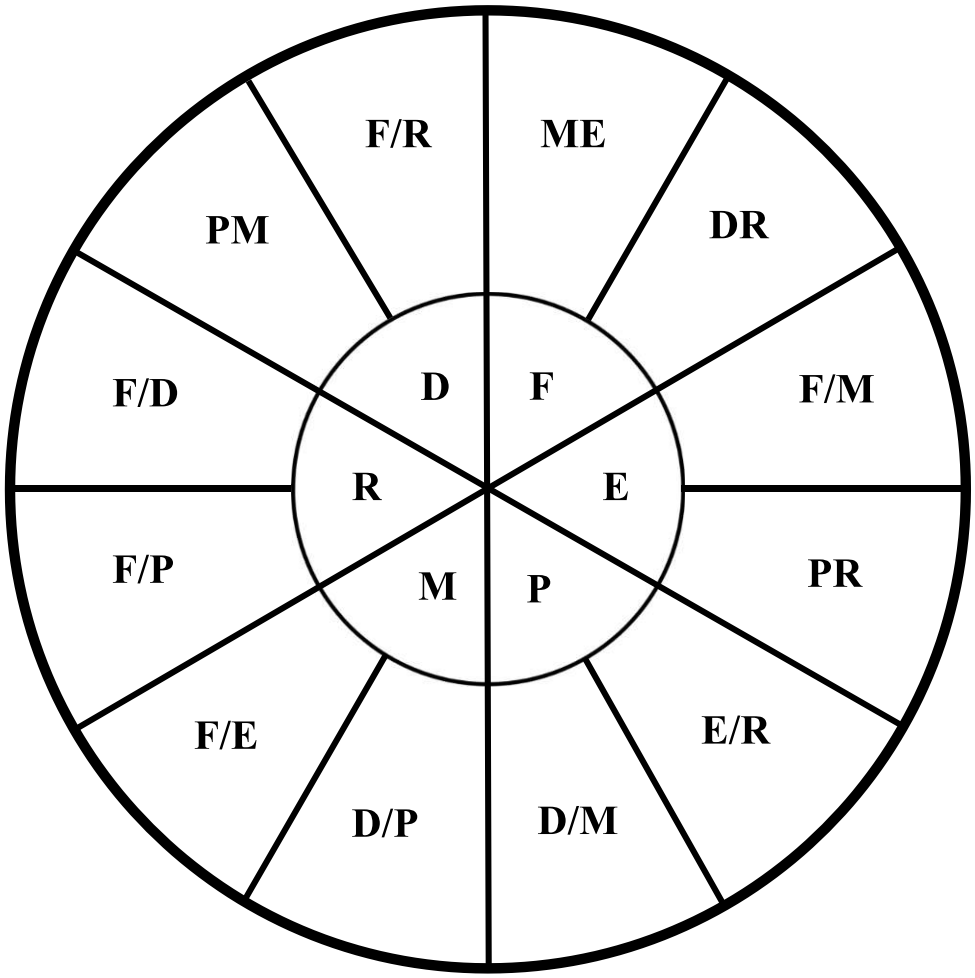
Determining Unknown Factors of a Telescope Eyepiece

by Russ Swaney

With the formulas below you can determine unknown factors of a telescope/eyepiece combination by using factors that are known.

- **D** is the **D**iameter of the objective lens (or mirror),
- **F** is the **F**ocal length of the objective lens,
- **R** is the focal **R**atio of the objective,
- **E** is the **E**yepiece focal length,
- **M** is the **M**agnification, and
- **P** is the exit **P**upil diameter.

The unknowns are at the center of the wheel. The outer part of the wheel provides two equations that can be used to find the associated unknowns. For instance, **F = M * E**, and **P = D / M**.

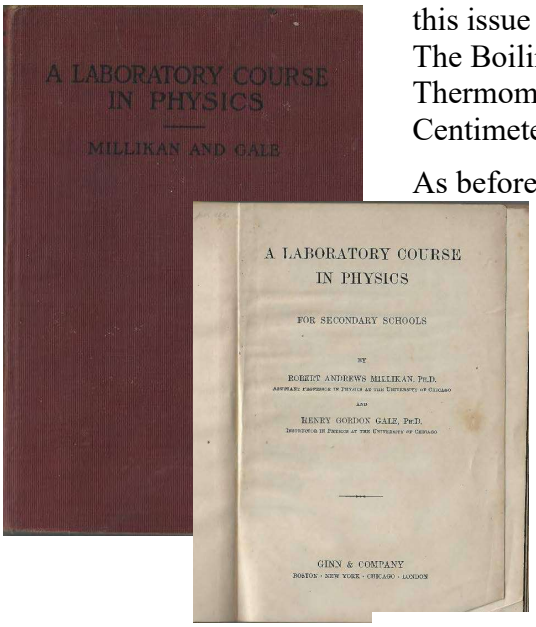


A Laboratory Course in Physics (circa 1906)

Chris Powell

As mentioned in the fall 2022 issue of the VSW, I picked up a battered copy of "A Laboratory Course in Physics" by Robert Andrew Millikan, PhD (Noble Prize for Physics in 1923) and Henry Gordon Gale, PhD, published in 1906 (cover and title page below). This work was selected by scholars as being culturally important, and part of the knowledge base of civilization as we know it. The work is in the public domain in the United States, and it was encouraged to be freely copied and distributed. The book includes fifty-one experiments starting with the determination of Π (pi) and ending with an experiment on photometry. This series of excerpts started with the ten experiments on optics which I thought might be of the most interest to our members. Having concluded these in past issues, we proceeded to the earlier experiments. In this issue we have Experiments No. 22, The Heat of Fusion of Ice; No. 23, The Boiling Point of Alcohol; and No. 24, To Test the Fixed Points of a Thermometer, and to Find the Change in the Boiling Point of Water per Centimeter Change in the Barometric Pressure

As before, homework will be left as an exercise for our members.



EXPERIMENT 22

THE HEAT OF FUSION OF ICE

The heat of fusion of ice, i.e. the number of calories of heat required to change a gram of ice at 0° C. into water at 0° C., or the number given up when a gram of water changes to ice, may be determined experimentally as follows.

Weigh the inner vessel of a calorimeter of about 300 cc. capacity first when empty, and then after it has been filled about two thirds full of water.[2]

Heat this water to a temperature of about 25° C. above that of the room; then replace the inner vessel in its jacket (Fig. 31).

[1] Naphthaline can be obtained at any drug store. Acetamide will have to be purchased at a chemical supply house.

[2] If you use the small cylinders of Experiment 3 for the calorimeters, take just half of the amounts of ice and water indicated.

Prepare a lump of clear ice of about the size of a hen's egg, and perform the following operations in quick succession.

While one student is drying the ice upon a towel let another stir the water in the calorimeter thoroughly. If its temperature is less than 15° C. above that of the room, heat it up again until it is between 15° C. and 25° C. above. Again check the weight, for the loss by evaporation may not have been inappreciable. Stir vigorously; then quickly take a careful reading of the temperature, keeping the thermometer bulb all the time immersed, and not more than a second or two after the reading let the first student drop the dry ice into the water, being very careful not to spill a drop. The splash may often be avoided by letting the ice slide along the thermometer into the water.

Stir continuously while the ice is melting and read the temperature of the water just after the ice has all disappeared. This temperature should be from 2° C. to 10° C. below the temperature of the room. If it should happen to be above the room temperature, try again with a slightly larger piece of ice. The limits here given are chosen so as to make it legitimate to assume that the heat exchanges which take place between the calorimeter and the room are, on the whole, negligible.

Again weigh the inner vessel of the calorimeter, with its contained water, and take the difference between this weighing and the last as the weight of the ice.

Let x represent the heat of fusion of ice and w the weight in grams of the ice melted. Then the number of calories expended in melting the ice is wx. After the ice is melted it becomes w grams of water at 0° C. This water is then raised to the final temperature t of the mixture. The number of calories required for this operation is wt. All of this heat has come from the cooling of the water and the calorimeter. If the weight of the water cooled is W and its initial temperature t_1, while the water equivalent of the calorimeter is e, then the

total number of calories given up by the water and calorimeter is $(W + e)\ (t_1 - t)$. Hence, by equating "heat lost" and "heat gained," it is easy to obtain x, the only unknown quantity of the equation. Tabulate as follows:

Weight of calorimeter	= ——
Weight of calorimeter + water	= ——
∴ Weight of water	= ——
Temperature of room	= ——
Initial temperature of water	= ——
Final temperature of water	= ——
∴ Fall in temperature of water	= ——
Weight of calorimeter + water + ice	= ——
∴ Weight of ice	= ——
Water equivalent of calorimeter (Experiment 18)	= ——
∴ Heat of fusion of ice	= ——
Accepted value is 80.	
∴ Per cent of error	= ——

State in your notebook the meaning of the "latent heat of water," the quantity which has been found above.[1]

EXPERIMENT 23

THE BOILING POINT OF ALCOHOL

The boiling point of a liquid is defined as the temperature at which the pressure of its saturated vapor becomes equal to the atmospheric pressure. There are, therefore, two ways in which the boiling point of alcohol may be obtained, and these

[1] A further experiment on latent heat, which may be introduced for the benefit of those who have time and inclination for extra work, is the following.

To find the heat of condensation of steam. Pass dry steam into say 250 g. of cold water, the temperature of which is 10° C. below that of the room, until the temperature is 10° above that of the room. Weigh again to find the weight of the steam, and then calculate as above how many calories of heat have been given up by each gram of steam in condensing.

two ways should give identical results. The first is to confine the liquid and its vapor alone in a closed vessel, and then to measure the pressure exerted by the vapor at different temperatures. That temperature at which the pressure becomes equal to atmospheric pressure will then be the boiling temperature. The second and more direct way consists in simply boiling the liquid in an open vessel and observing the temperature indicated by a thermometer held in the vapor rising from the liquid.

I. Temperature at which pressure of saturated vapor becomes equal to atmospheric pressure. A glass tube *A* (Fig. 35) is closed at one end, and is then bent into the U-shape and partially filled with mercury. Some alcohol is then poured in, which by careful tilting is worked around into the closed arm, while the air is altogether worked out of this arm. With this arrangement proceed as follows.

FIG. 35

Immerse the tube and a thermometer together in a vessel of water, and, keeping the short arm completely immersed, heat slowly, stirring continually. As the temperature increases a point is reached at which alcohol vapor begins to form in the closed tube. Still further increase in temperature causes the mercury to sink farther and farther in the closed end. When the levels of the mercury in the two arms are the same, it is clear that the pressure of the alcohol vapor is just equal to the atmospheric pressure.

Raise the temperature of the water gradually and stir thoroughly until this condition is reached; then read and record the temperature.

Continue heating until the level in the short arm is 5 cm. lower than that in the long one. Then again read the thermometer and compute how much the boiling point of alcohol increases per centimeter increase in the barometric pressure.

II. Temperature of vapor rising from boiling liquid. Place a little alcohol in a large test tube; put a few tacks in the bottom

of the tube in order to assure smooth boiling; then immerse the lower end of the tube in a vessel of water and heat the water until the alcohol boils vigorously. Hold the bulb of a thermometer in the tube a little distance above the surface of the boiling liquid. As soon as the thermometer reading becomes stationary, take the temperature and compare with that obtained in I. Record thus:

I. Temperature at which alcohol vapor exerts pressure of 1 atmosphere = ——° C.
Temperature at which alcohol vapor exerts pressure of 1 atmosphere + 5 cm. of mercury = ——° C.
Rise in boiling point of alcohol per cm. increase in pressure = ——° C.
II. Temperature of vapor rising from boiling alcohol = ——° C.
Difference between results of I and II = ——.

State in your notebook what you consider to have been proved in this experiment.

EXPERIMENT 24

TO TEST THE FIXED POINTS OF A THERMOMETER, AND TO FIND THE CHANGE IN THE BOILING POINT OF WATER PER CENTIMETER CHANGE IN THE BAROMETRIC PRESSURE

Fill the boiler of Fig. 36 half full of water, and thrust the thermometer through a tightly fitting cork in the top until the 100° point is only 2 mm. or 3 mm. above the cork.

Attach an open-arm manometer *u* (Fig. 36) to the exit *o*, and then boil, regulating the flame until the mercury stands at the same height in both arms of the manometer.

After the water has been boiling steadily for two or three minutes, read the thermometer *very carefully*. Then take the barometer reading. Next place a piece of tightly fitting rubber tubing over the escape tube *e* and partly close the free end of it with a pinchcock until the difference in the levels in the

manometer arms, due to the partial closing of the vent for the steam, amounts to 2 cm. or 3 cm. Read the thermometer and (with a meter stick) the difference in the levels in the manometer arms.

Close the pinchcock still further, until the difference in level amounts to 4 cm. or 5 cm.; then read again.

Continue thus, taking readings at intervals of about 2 cm., until the difference in level amounts to 8 cm. or 10 cm. It may be necessary to use several burners in order to obtain the last readings, for the steam must be generated very rapidly in order to compensate for the inevitable leakage.

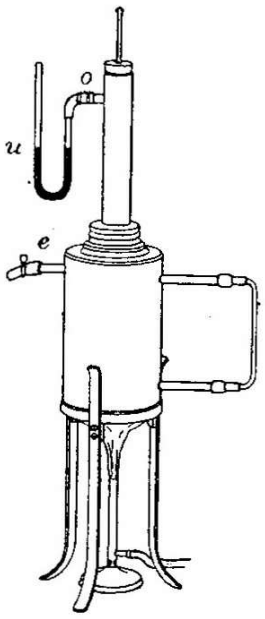


FIG. 36

From each of these readings calculate the changes produced in the boiling point by a change of 1 mm. in the barometric height. Take a mean of all these calculations as the correct value of this quantity.

From this result and the barometer reading calculate what your thermometer would read under a pressure of 76 cm. The error in the graduation of the thermometer is the difference between this result and 100.

Test the zero point of the same thermometer by sinking it up to the zero mark in a funnel filled with melting snow or finely chopped ice over which a little water has been poured, and allowing it to remain there until the thread is stationary. Tabulate results thus:

	First	*Second*	*Third*
Difference in levels in gauge	= ——	——	——
Corresponding boiling-point readings	= ——	——	——
Change in boiling point per millimeter	= ——	——	——
Mean change per millimeter	= ——	Barometer height	= ——
∴ Reading of thermometer at 76 cm.	= ——	Error	= ——
∴ Reading of thermometer at 0° cm.	= ——	Error	= ——

2008 – Looking Back at 30 Years of Indian Hill Construction

Steve Fishman

When I started writing about Indian Hill History 5 years ago, my objective was to primarily document activity at our Huntsburg observatory site through words and photos. Summarizing the major events on Indian Hill:

1978-1979. Founding and pre-construction. Thanks to land owner Keith Richards offering the use of his property. During these 2 years, members cleared and leveled the top of the hill, put in the driveway and parking lot and did major wood cutting to raise funds. We also purchased the 16-inch scope from Art Stokes, a Hudson resident.

1980-1983. Observatory Construction and Dedication. The pier was installed in 1980, the foundation in 1981, then finally building construction started on a hot early September day in 1982. Smaller projects continued in 1983 with a dedication that September.

1987-1990. Electricity and Shed. We ran 700+ foot of electric cable from Keith's basement to Indian Hill. A shed along with an attached potty was installed at the west side of the hill to store a tractor and tools. And, we continued to harvest wood from the south end of Keith's property to raise funds.

2002. Warm Room reconstruction. Led by Marty Neimi, the warm room was completely redone.

2003. Our 2nd Observatory. On a July day-trip, Larry Boros and I drove to Maryland to pick up the Home Dome. Many club members then constructed the building in August, which we dedicated to Keith and Shirley Richards that November.

2005-2007. The North Observatory and Electric Upgrade. Installed a foundation and dropped a large shed on it in 2005, calling it the North Observatory. Electric from Keith's house was unreliable, so we went on the grid with First Energy. FE installed a pole in our parking lot and we trenched a line to the North Observatory, then tied in to the existing line up to Indian Hill.

In this and future years, there was not much major construction at Indian Hill. The 16-inch drive system was periodically improved, new telescopes installed in the dome and North Observatory, roof repairs and general maintenance on the property continues up to today. I will continue to write articles along with photos expanding on other activities, including public star parties at various Geauga, Lake and Cuyahoga locations along with consulting with the Geauga Park District's creation of Observatory Park.

Searching thru the 2008 secretary minutes, rubber mud flaps were installed on the rear wall of the North Observatory to weather seal the areas by the roof tracks. On January 3, Marty Neimi reported that he and Russ Swaney cleared 8-10 inches of snow from the driveway, then remotely controlled the scope in the dome and the scope in the North Observatory from the warm room in near shirt sleeve comfort. In May, 15 tons of gravel was spread on the driveway up to the lower parking lot. A telephone was installed in the North Observatory. The Geauga Park District purchased the Nassau property ½ mile north of Observatory Park, eventually upgrading that observatory and telescope where CVAS now conducts monthly star parties. And, Nassau Observatory with surrounding park lands received provisional status as a Silver Tier International Dark Sky Park by the International Dark-Sky Association.

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John Gorka continued his efforts to educate local Geauga communities about light pollution. In March, he appeared before the Munson Township Zoning Commission about proper outdoor lighting shielding methods. The members of the Commission were interested in shielding the Township's outdoor fixtures so light does not illuminate the sky unnecessarily. The Commission hoped to finalize the modification to the zoning resolution by the end of the summer.

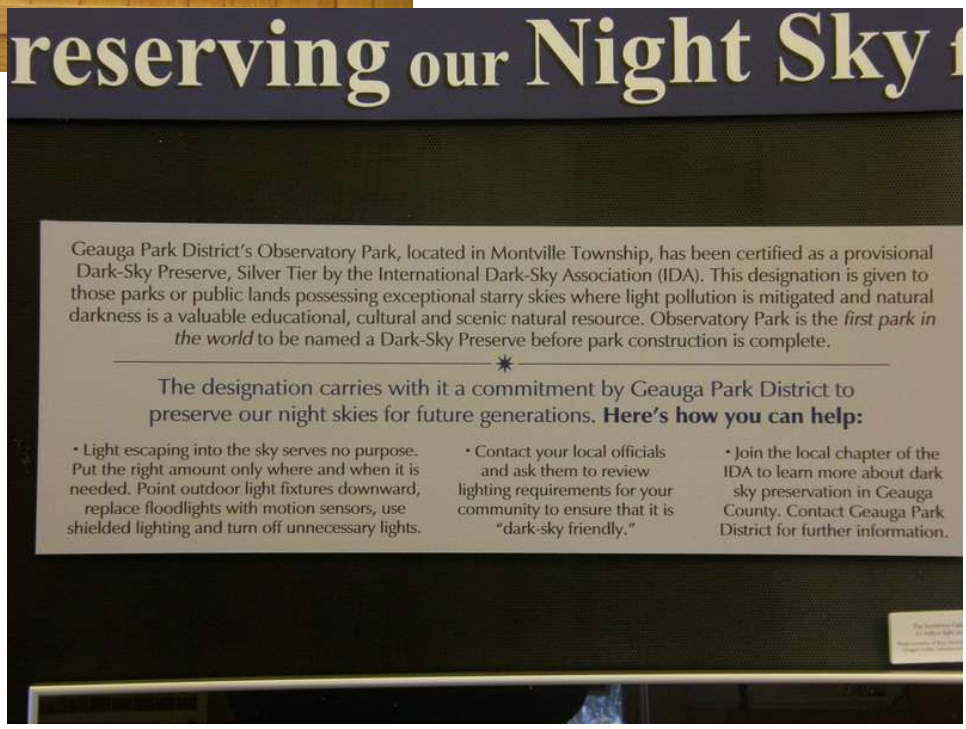
A little-known fact about Indian Hill North Observatory. It is listed as Observatory code H75 in the International Astronomical Union Minor Planet Center.

https://www.minorplanetcenter.net/iau/lists/ObsCodesF.html

And, a final fact for 2008 is that the remaining balance owed to Keith for the land contract was $3,000 at the end of the year.

Left: CVAS photo display at Geauga's West Woods Park

Below: Geauga Park District noting IDA gave Observatory Park Silver Tier Status



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Left: Observatory needing repair to south wall flap.

Right: Dan Rothstein working to replace the pull bar on the south wall flap.

Below: Dan with the new pull bar.

Right: Marty Neimi working on the south flaps while Dan Rothstein looks on.

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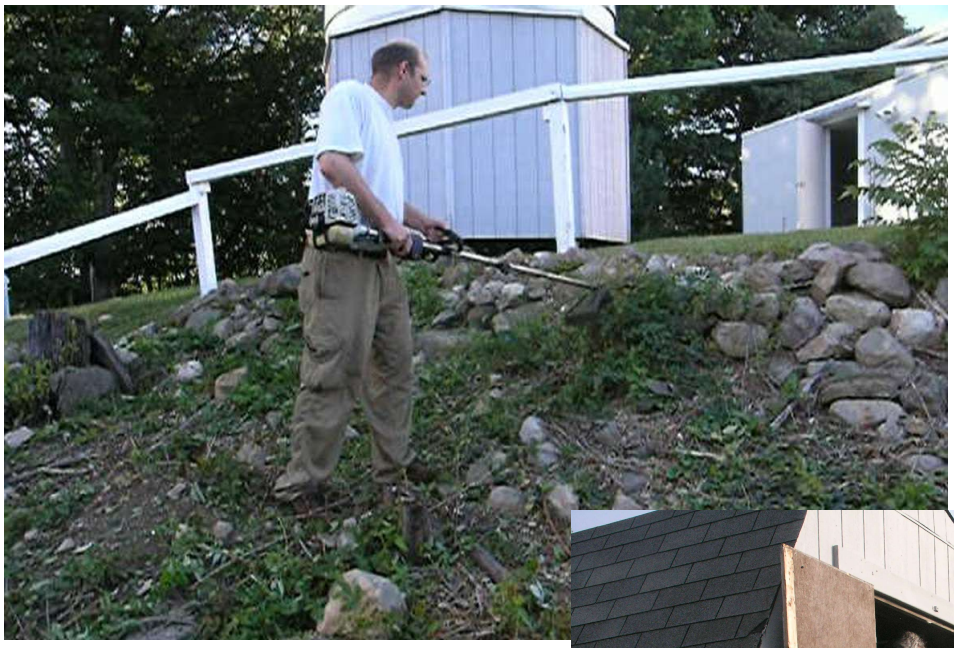

Left: Ken Fisher cleaning up the weeds on the slope below the Observatory.

Right: The OTAA at Indian Hill. Russ Swaney checks out Sam Benicci's dinner donation along with Bob Modic, Marty Neimi, and Dan Rothstein.

Left: The August Super Star Party at Penitentiary Glen. Bob Modic with his Dob and Dan Rothstein with tripod mounted binoculars. Tom Quisenberry in the back setting up a tripod. Marty Mullet at the far right with a small refractor.

2008 – Looking Back at 30 Years of Indian Hill Construction

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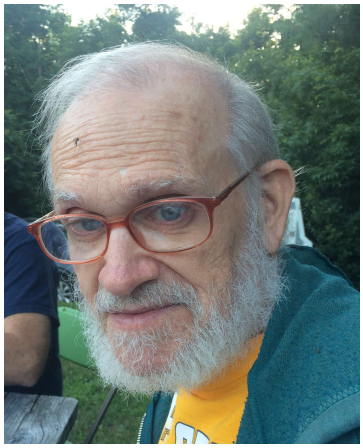
Left: Ron Baker, Bob Modic, and Sam Bennici with the 16 inch.

Below: Total Lunar Eclipse in 2008.

Editor's Note: This photo was added by Steve as an incentive for CVAS members to watch the lunar eclipse on March 3rd this year. Hope I issue this edition of the VSW in time.

Constellation Quiz

Dan Rothstein



This month's questions

1. Find the Sailboat Nebula, also known as the Broken Heart Nebula.
2. What star was known as the Footstool by the Arabs?
3. Where is the Triple Cave (different from the Cave Nebula)?
4. Locate the asterism called the Golf Club and Golf Ball.

Answers to last issue's questions:

1. Locate Iwa Keli'i, the Hawaian asterism known as Chief Frigate Bird, whose shape is similar to one of our major groupings.

   Iwa Keli'i, Chief Frigate Bird, is the Hawaiian name for the W (or M) of Cassiopeia. The frigate bird soars with its wings in an M or W shape. The Iwa or Man-of-War Birds, like terns, were helpful in locating islands while at sea, since they fly out to fish in the morning and return to their home island in the evening. However, the Iwa was less reliable than the terns, since Frigate Bird is capable of soaring for several days.

   Hawaiian Star Lines, Net

2. Find Al-Sufi's Nebula, described by a modern author as a "snail-like" asterism.

   With the naked-eye it's a 3rd magnitude mottled haze, but its stellar nature is obvious with binoculars or a small telescope. Al-Sufi's "Nebula" is now known as the Coathanger, or Brocchi's Cluster. It was first singled out by the Persian astronomer Al-Sufi in his *Book of the Fixed Stars* (Circa 964). Later, the first viewing was also claimed by Giovanni Batista Hodierna in his 1651 book *De Admirandi Coeli Caracteribus*, a catalog of 40 "nebula". He split these objects into 3 catagories: those consisting of stars only, those nebulae resolvable into stars, and those not resolvable. Burnham called it a "snail-shaped asterism" which seemed to him to be on the move.

   Steven James O'Meara; *Hidden Treasures*; Cambridge University Press; 2007; pp. 478-481.

3. Identify the Southern Albireo.

   The Winter Albireo, which I mistakenly called the Southern Albireo is the double star h3945, the h referring to John Herschel. It lies 3 degrees southeast of Sirius, slightly north of east of o^2 Canis Majoris and north of τ. The 4.8 magnitude primary is a ruddy orange and the 6.0 secondary is greenish-blue. They are separated by 27 seconds. The pair is fainter than Albireo, but with stronger tints.

   James Mullany; My 10 Favorite Deep-Sky Wonders; *Sky and Telescope;* Dec. 2000.

(Continued on the following page)

Constellation Quiz (cont)

Dan Rothstein

4. Where is the Japanese asterism composed of Gin-boshi (Silver Star) and Kin-boshi (Golden Star)?

   Silver Star and Golden Star, Gin Boshi and Kin Boshi in Japanese, are Castor and Pollux,. When located in the west they form the top of The Gate (a Quiz from about 15 years ago), with the bodies of the twins standing upward forming its sides. Another name for this pair was the Cat's Eyes, looking down from the west.

   George Lovi; Rambling through March Skies*; Sky and Telescope*; Mar. 80.

5. Bonus: What is the only M object not in the NGC Catalog? This is less about the constellations as it is about nomenclature, since you don't need to observe anything to solve it. It is in all of the subsequent enlargements of the NGC, such as the IC. There are other M objects which were broken up into multiple NGC objects, that are not listed as a single NGC object.

   Five M Objects don't appear in the NGC Catalog (1888), but only one is a single object recognized as a genuine M object. M24, the Small Sagittarius Star Cloud is very large, but it has two NGC objects in it: in the northern part NGC 6603 is a small cluster occupying only a small part of the entire cloud and NGC 6567 is a planetary nebula at the opposite end of the cloud. Most of the remainder of the cloud is not contained in any other NGC objects. M 40 is a double star. M 45, the Pleiades, is broken up into 4 NGC objects. M 97 still is unidentified. M 102 is a repetition of M 101. The only complete deep-sky object on the Messier list without an NGC (or earlier GC) number is M 25. It is in the later supplement, the IC catalog as IC 4725.

   Robert Burnham Jr.; *Burnham's Celestial Handbook*; Dover, 1978; p. 1606.

   The Messier Objects; Card from *Sky and Telescope*.

Deep Thoughts on Engineering and Physics

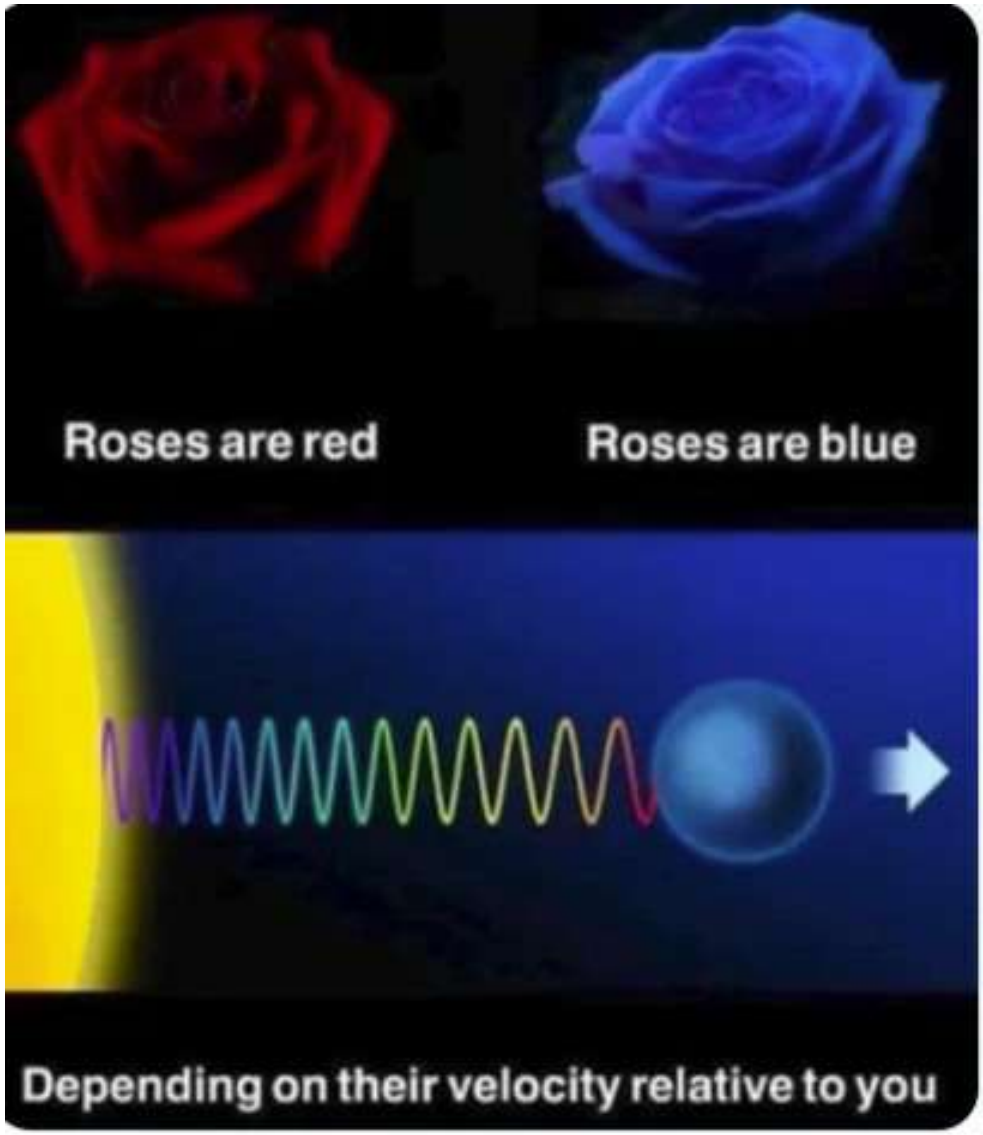
Chris Powell

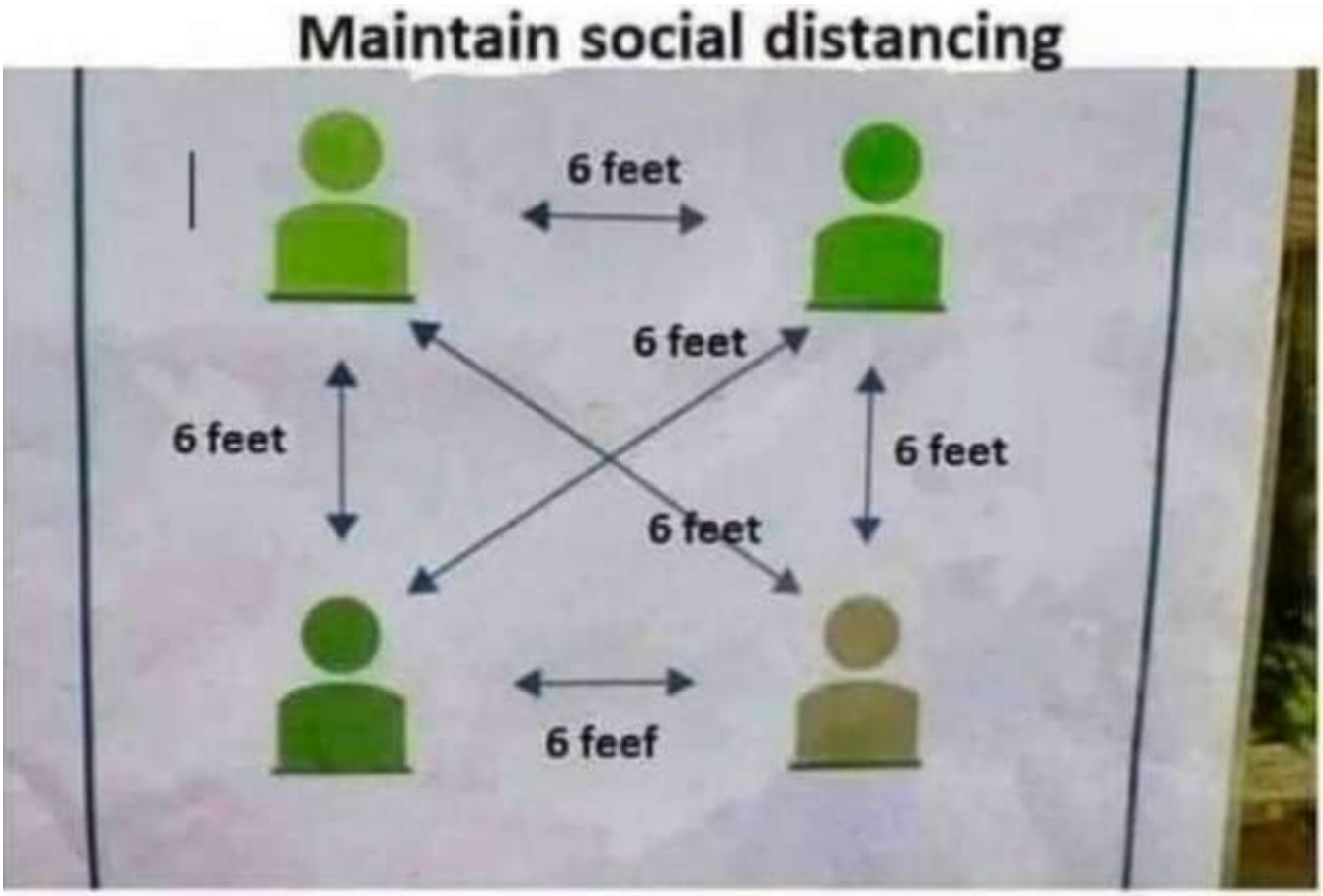
The following four items are an addition to our continued collection of "Physics and Engineering Folklore". As the term folklore implies, often the original author or source are not clear or known, and multiple and differing versions can be found. All of these have, at least, a bare minimum necessary content of physics or astronomy. And anyway, I thought all of them amusing.

As it turns out, memes are this generation's version of Folklore. They generally meet all the requirements.

As always, I welcome submittals for inclusion in future issues, which could be passed to me at any of our CVAS monthly meetings or directly to my email at **christopher.powell@earthlink.net**.

These two entrees are in celebration of Valentines Day and Social Distancing, two very diametrically opposed concepts in human interaction.




Maintain social distancing
6 feet
6 feet
6 feet
6 feet
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Calm down, Pythagoras, calm down.