THE VORTEX

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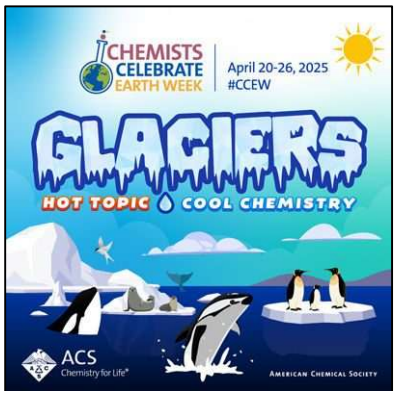

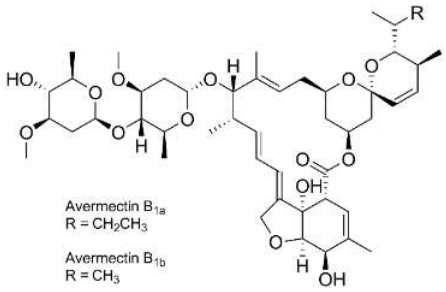

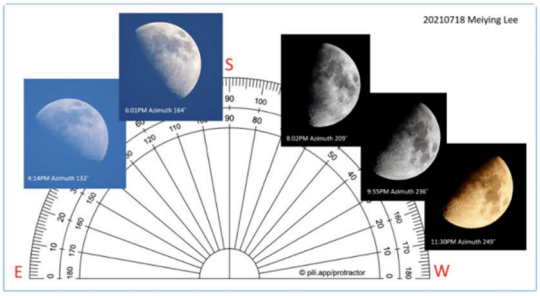

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Top: Image from event poster - ACS
Middle left: Ivermectin Chemical Structure - Wikipedia
Middle Right: Moon Terminator Line Change - https://earthsky.org/moon-phases/do-we-all-see-the-same-moon-phase/
Bottom: Science Night - Alex Madonik

Cal ACS Chair's Message
Alex Madonik

We have a busy month ahead, but first I want to get your thoughts about the "Stand Up for Science 2025" events that are happening on March 7th. We received the following instructions from LaTrease Garrison, ACS Chief Operating Officer:

"I am forwarding the message below from the ACS Secretary and ACS General Counsel as a reminder of our guidelines regarding political activities. The "Stand Up for Science 2025" events occurring across the country are examples of activities that we cannot participate in as an organization. Doing so could compromise ACS's nonprofit status. Therefore, individuals who wish to participate should do so in their personal capacity and not under the umbrella of ACS or the local section."

I had previously received requests from other local ACS leaders to promote "Stand Up for Science 2025," and after mulling this question over, I just sent the following response to LaTrease and other ACS leaders:

"I am astonished at this response to "Stand Up for Science." Eight years ago, the ACS had no difficulty endorsing the "March for Science." The stakes are even higher now. Either we stand for science, or we stand for nothing. This is not a partisan issue. It is fundamental to ACS values, including communicating the value of science to the public and supporting Diversity, Equity, and Inclusion." "I will inform members of the California Section that I have raised this issue with ACS leadership, and I intend to bring it up at Council in San Diego."

I expect there will be a lively debate.

Moving on to highlights of February and March, I want to start by congratulating Mariana Alves, the California Section 2024 Outreach Volunteer of the Year. The ACS Office of Science Outreach sponsors this award, and I was able to present it to Mariana in front of an appreciative Family Science Night audience at Bancroft Middle School in San Leandro on February 26th (see the report elsewhere in this issue).

We have another outreach event coming up on Saturday, March 8th, with North Bay Science Discovery Day in Santa Rosa. This is a FREE event, so if you're in the area, come join us at the Sonoma County Fairgrounds as we try out some new activities for CCEW 2025, with the theme, "Glaciers: Hot Topic, Cool Chemistry." On March 18th, we'll take some of the same activities to Glorietta Elementary School in Orinda. We'll continue to celebrate Earth Week with two more festival events in April and another Family Science Night in May.

The organizing committee for the 2025 Western Regional Meeting is hard at work putting together the program, inviting plenary speakers and soliciting symposium proposals. If you have an idea for a symposium, we need to hear from you by March 21st if possible. The WRM Board will meet in person at the San Diego National Meeting, and the organizing committee will finalize the overall program schedule in early April, in preparation for the Call for Abstracts that will be launched in early May.

It's also the season to nominate ACS Fellows. The deadline is April 1st, so if you know an outstanding colleague who has also done volunteer service with the ACS, please recommend them to the Executive Committee so that we can prepare a strong nomination.

The Cal ACS Executive Committee generally meets on the first Tuesday evening of the month, and any member is welcome to attend in-person or via Zoom. Please contact Julie Mason in the Cal ACS office for details. We look forward to hearing from you!

Alex Madonik

Upcoming Events

- **Topic:** North Bay Science Discovery Day
  Date: March 8, 2025
  Time: 10:00 am – 4:00 pm
  Location: Sonoma County Fairgrounds (Santa Rosa)
  Section Contact: Alex Madonik
  Cost: Admission and Parking Free

- **Topic:** Glorietta Elementary School Science Fair
  We put on displays / topics for the pupils
  Date: March 18, 2025
  Time: 5 pm – 7 pm
  Location: Glorietta Elementary School (Orinda)
  Contact Person: Alex Madonik
  Cost: Free

- **Topic**: 2025 Chemistry Olympiad National Exam
  Date: Sat. April 5, 2025
  Time: NA (by invitation and qualification exam)
  Location: Las Positas College (Livermore)
  Section Lead: Eileen Nottoli
  Cost: NA

- **Topic**: Tri-Valley Innovation Fair
  Date: Sat. April 12, 2025
  Time: 10:00 am – 5:00 pm
  Location: Alameda County Fair Grounds (Pleasanton)
  Section Lead: Charles Gluchowski
  Cost: $15

- **Topic**: Expanding Your Horizons Sonoma County
  STEM For 7th and 8th grade girls, boys welcome
  Date: Sat. April 12, 2025
  Time: 8:30 am – 2:00 pm
  Location: Sonoma State University (Rohnert Park)
  Register: http://www.eyh-soco.org/2025/about.html
  Section Lead: Elaine Yamaguchi
  Cost: suggested donation $20

- **Topic:** Celebrate Earth Day with Cal ACS at the John Muir Historical Site
  Date: April 26, 2025
  Time: 10:00 am – 4:00 pm
  Location: John Muir Historical Site, 4202 Alhambra Ave, Martinez CA 94553
  Contact Person: Sheila Kanodia at calacsearthweek@gmail.com
  Cost: Free

2025 CCEW Illustrated Poem Contest

Glaciers: Hot Topic, Cool Chemistry!

The California Local Section of the American Chemical Society (ACS) is sponsoring an illustrated poem contest for students in kindergarten through 12th grade.

Contest Deadline: April 20th, 2025

Prizes: 1st prize in each category is a $25 gift certificate

Contact: Sushila Kanodia at calacsearthweek@gmail.com

Winners of the California Local Section's Illustrated Poem Contest will advance to the National Illustrated Poem Contest for a chance to be featured on the ACS website and to win prizes!

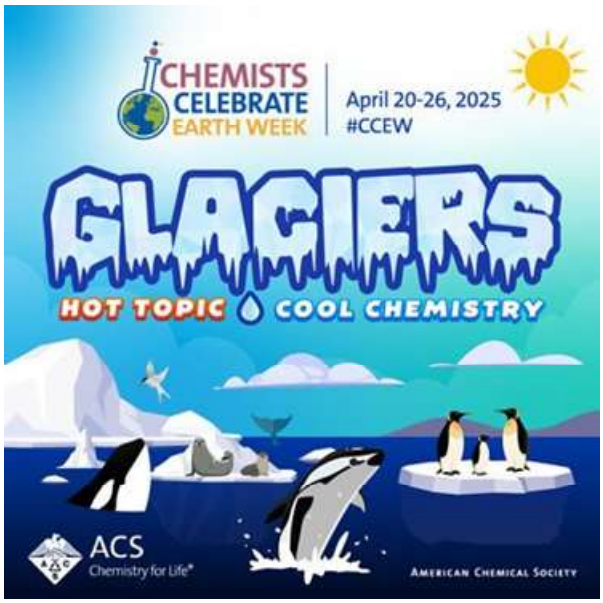
Write and illustrate a poem using the CCEW theme, **"Hot Topic, Cool Chemistry!"**

Your poem must be **no more** than 40 words and in the following styles to be considered:

HAIKU - LIMERICK - ODE - ABC POEM - FREE VERSE - END RHYME - BLANK VERSE

Possible topics related to the glacier theme include:

- Climate
- Drill
- Prism
- Ice Core
- Preservation
- Reservoir
- Fossil Fuels
- Drought



Entries will be judged based upon:

- Artistic Merit - use of color, quality of drawing, design, and layout
- Poem Message - fun, motivational and inspiring about the yearly theme
- Originality Creativity - unique, clever, and/or creative design
- Neatness - free of spelling and grammatical errors

Contest Rules

- All poems must be no more than 40 words, and in one of the following styles to be considered: Haiku, Limerick, Ode, ABC poem, Free verse, End rhyme, and Blank verse.
- Entries are judged based upon relevance to and incorporation of the CCEW theme, word choice and imagery, colorful artwork, adherence to poem style, originality and creativity, and overall presentation.
- All entries must be original works without aid from others. Poems may be submitted by hand on an unlined sheet of paper not larger than 11" by 14" or scanned and sent via email. Illustrations may be created using crayons, watercolors, other types of paint, colored pencils, or markers. The illustration may also be electronically created by using a digital painting and drawing app on a computer, tablet, or mobile device.
- The text of the poem should be easy-to-read and may be typed before the hand-drawn or digital illustration is added, or the poem may be written on lined paper, which is cut out and pasted onto the unlined paper with the illustration.
- No clipart or unoriginal images can be used.
- Only one entry per student will be accepted; all entries must include an entry form.
- If the illustration is created using a digital painting or drawing app, the name of the program must be included on the entry form (No AI).
- Acceptance of prizes constitutes consent to use winners' first name and last initial, along with the name of the ACS Local Section, on the ACS web pages and, in the magazine, Chemical & Engineering News

Join the California Section of the American Chemical Society for a free community event as Chemists Celebrate Earth Week

to mark the importance of chemistry in everyday life! Learn about this year's CCEW theme,

Glaciers: Hot topics, Cool Chemistry, with exciting hands-on activities based on the theme.

When: April 26th, 2025 from 10 AM to 4 PM

Where: John Muir Historical Site, 4202 Alhambra Ave, Martinez CA 94553

https://johnmuirassociation.org/birthday-earth-day/

What: Cal ACS celebrates Earth Week https://calacs.org/outreach/earth-week/

Questions about the event, please contact Sushila Kanodia at calacsearthweek@gmail.com

We hope to see you there!

The Unique Dip Dosage Form

Donald MacLean

I watched the black and white TV show Rawhide “Incident at Dangerfield Dip” episode this past summer. In the episode, the cattle herd contracts a parasitic tick disease from infected cattle placed on the trail. The goal was to divert the herd to a chemical dipping station where they would have to pay a high fee for treatment. “Spanish Fever” (in real life it is Texas Fever or Texas Tick) acted with a 72 hour drop dead time. Ignoring the timeline issues, the interesting part was having the cattle funnel through a chute, forcing them to plunge and swim (the dip) through the chemical concoction (Figure 1). This dip caused the ticks to come off. The show did not mention the chemical mix but it most likely is some type of arsenic acaricide as arsenic was very popular at the time.

For humans the most likely tick disease that comes to mind is Lyme’s Disease. Other diseases are Rocky Mountain Spotted Fever and Tularemia.

A dosage form can be the physical state / form (i.e. gas, liquid, tablet) or the way it is used (i.e. shampoo, injection). The dip dosage (immersion) form is not seen too often with humans as we can selectively wash, shampoo, pick, and apply creams, lotions, gels, and sprays without running away from the treatment. This month’s pharmaceutical topic is the dip dosage form.

USP ⟨1151⟩ Pharmaceutical Dosage Forms, uses the word Immersion instead of dip as the preferred nomenclature.[1] It defines immersion as a veterinary route of administration via partial or complete submersion in a specified environment such as liquid or air.

Some human dip dosage form examples are walking through a tray / mat containing disinfectant (National Park fauna protection, biosafety rooms), oatmeal bath (for chickenpox), mineral bath, and hot spa - cold water plunge.

In animals, a diverse range of topical dosage forms and delivery systems are used to control external parasites. For example, pour-on formulations, plunge and shower dip concentrates, and jetting fluids are suspension concentrates or emulsifiable concentrates. In addition, many pour-on formulations display endectocidal (A drug effective against both endoparasites (lives inside the body of the host) and ectoparasites (infest the skin)) activity. The efficacious systemic concentrations attained with these preparations result from the animal's licking behavior and, to a lesser extent, percutaneous absorption (through the skin) of the active ingredient.[2]

Figure 1 Dipping Vat Use.[3]

Plunge Dipping

Plunge dipping of sheep and cattle for external parasites requires a dipping vat, which may be a portable unit or a permanent in-ground structure shielded from direct sunlight by roofing. A draining pen located at the exit of the vat allows dip wash that drains off treated animals to return to the vat. Locally this method is not a popular dosage form as the pour-on method has overtaken the dipping method mainly due to cost, smaller ranching scale. Also treatment infrequency makes dipping uneconomic compared to pour-on and shower alternatives. One thing that is unique with dipping compared to alternatives is the need to not feed the animals for a period prior to treatment to minimize poop in the bath.

Dip chemicals are usually formulated as aqueous solutions, emulsifiable concentrates, or suspension concentrates, all of which are diluted with water before use. The high costs associated with plunge dipping are due principally to the costs of chemicals for charging large vats, labor, and the hazardous waste disposal. Plunge dips must be managed properly, and the pesticide maintained at the concentration recommended by the manufacturer.

Sheep and cattle dipping suffers from dip wash active ingredient stripping (eg, pesticide being lost from the dip wash at a greater rate than water lost) and is categorized as mechanical or chemical. In the case of sheep, mechanical stripping results from the fleece acting as a sieve toward the active ingredient, and the extent of filtration is determined primarily by particle size. Chemical stripping is due to the preferential absorption of pesticide by the fleece. To counteract stripping, a complex dip management regimen that involves reinforcement and replenishment (or “topping-up”) is used. "Reinforcement" refers to the addition of undiluted chemical product to the dip without the addition of water; "replenishment" refers to the addition of water and undiluted chemical product to the dip vat to return the volume to the starting level.

In the TV show tick removal is the goal of the dip plunge. The treatment uses an acaricide, which is a pesticide that kills arachnid subclass Acari (ticks and mites). The most common acaricide that a household uses today is for fleas, permethrin, either as a flea collar, drop, or as a spray (structure shown in Figure 2). Table 1 has the pros and cons for the plunge dip.

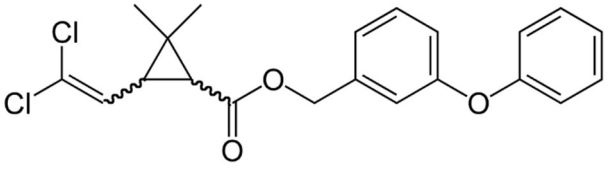


Figure 2. Chemical structure of Permethrin, an acaricide.[3]

Table 1. Plunge Dipping Pros and Cons	
Pro	Con
Adequate to control parasites that live more or less fixed to the host such as ticks, mites and lice.	Substantial upfront investment.
Easy to perform for large herds.	Changing the product is not easy.
Cost benefit comes with multiple administrations such as seen in the tropics.	Plunging is stressful to the animals.
Dose is more evenly delivered than many alternative delivery methods.	Separating adults from youths may be required.
Less physical contact by using a corral.	Less effective against flying parasites.
	Potential environmental contamination.

Alternative Dosage Forms to the Dip.

Locally alternatives are more common due to the infrequency of needing treatment, smaller herds, environmental concerns, and vet drug manufacturers who earn substantially more money with ready-to-use products such as pour-ons and injectables than with concentrates.

Pour-ons or backliners are ready-to-use liquid formulations containing one or more parasiticidal active ingredients that are applied to cattle, sheep, pigs or horses by pouring it along the backline, roughly from the neck to the tail. Sometimes they are also called "backline drenches". Pour-on products are formulated to spread without runoff when applied to the skin, and to be resistant to rain. The formulation also facilitates the partitioning of the drug out of the vehicle and into the skin and transport of the drug across the skin. The control of these processes is critical because some drug is required to remain on the skin if the drug is to act against external parasites that are not bloodsucking. In addition, too-rapid passage of the drug through the skin may result in unacceptable chemical residues in tissues or milk. Figure 3 shows the ready-to-use container with an in-built measuring compartment.

Table 2. Administration Methods with Comment.

Method	Administration	Comment
Back rubbers	Scratching and rubbing	Ad Lib
Drench	Oral	Catch and direct orally using tube or syringe.
Dust Bag	Powder from above	Direct animals to go under the bags either voluntarily or by directing.
Ear Tags	Coated tags	Catch or pin, apply, and release
Feed Additive	Add to feed	Ad Lib
Hand jetting	Spray at high pressure	Corral and apply
Injectables	Use of needle or air gun to inject drug into body	Catch or pin, inject, and release
Insecticidal collars	Collar	Catch or pin, apply, and release. Easy with dogs and cats, not so with larger less cooperative animals.
Oral (as liquid or paste)	Use of a tube or syringe	Catch, deliver, and release
Plunge	Dip	Corral and push through
Pour-On	Pour onto skin or hair	Catch or corral, apply then release
Shower	Shower	Corral and apply.

Table 3 shows the Ivermectin formulation for various dosage forms. Some of the formulations are not on the label or package inserts. Each manufacturer will have their own formulations for the same dosage form. The formations for extended-release formulations are omitted as there are lots of possible formulations to give extended release. The tablets may use entrapped or

coated microspheres and the injections use a suspension physical form. There are other forms of tablets such as chewable tables that require the tablet to be eaten and sometimes chewed. Ivermectin is highly lipophilic. Note Ivermectin is a chemical mixture (Table 4).

Table 3. The Dosage Form Formulation for Ivermectin. API = active pharmaceutical ingredient.

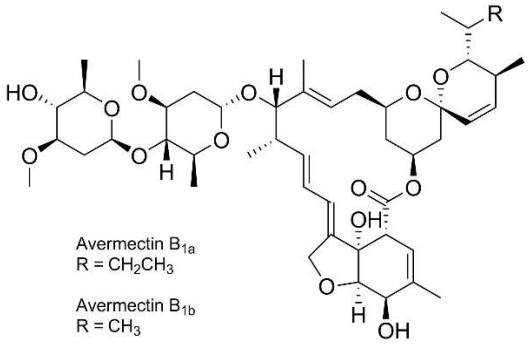
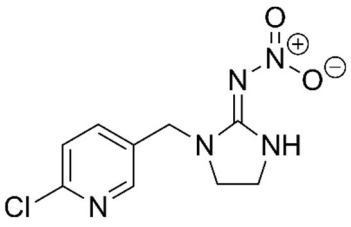
Dosage Form	Formulation for one example product	Purpose
Durvet Ivermectin Pour -on	Isopropyl alcohol	Solvent
	Triethanolamine	Emulsifier and pH adjuster
	Ivermectin	API
Durvet Ivermectin Injection, 1%	59% 1,2-Propylene glycol	Viscosity
	40% 1,3-Dioxolan-4-ylmethanol	Solubility enhancer?
	1% Ivermectin	API
Ivermectin paste (horse, oral)	2% Carbomer homopolymer type B	Thickening agent
	0.47% trolamine	pH adjuster and surfactant
	1.7% titanium dioxide	Pigment
	94% propylene glycol	Viscosity
	1.87% Ivermectin	API
Ivermectin sheep drench (forcing the drug orally)	0.08% Ivermectin Inactive ingredients are not identified.	API
Ivermectin cream (topical)	carbomer copolymer type B, cetyl alcohol, citric acid monohydrate, cocodiethanolamide, dimethicone, dimethyl isosorbide, edetate disodium, glycerin, isopropyl palmitate, methyl paraben, propyl paraben, purified water, sodium hydroxide, sodium lauryl sulfate, and stearyl alcohol.	
	1% Ivermectin	API
Ivermectin tablets (oral)	Microcrystalline Cellulose	Bulk
	Corn Starch	Disintegrant and binder
	Magnesium Stearate	Flow agent (prevents sticking)
	Butylated hydroxyanisole	Antioxidant
	Anhydrous citric acid	pH
	Ivermectin	API

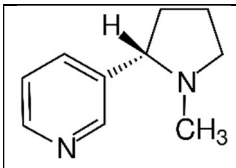
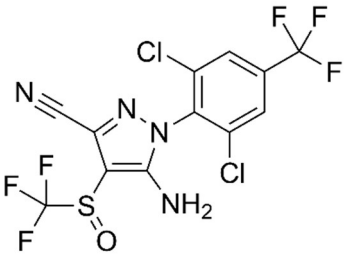
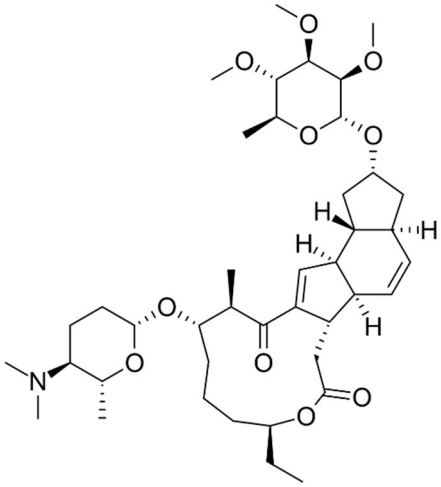
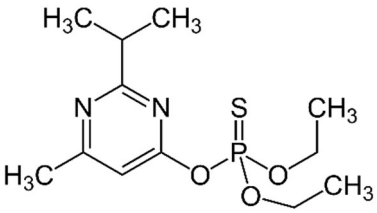
Pharm Eur has only 1 example of dip, Amitraz Concentrate for Dip (Concentrate means the material must be diluted prior to use, for dip means how the material is to be used). How the

material is to be used changes the formulation (the chemistry) and the delivery device. See Table 4 for a series of drugs (the active pharmaceutical ingredient, API) and their known mechanism.

Figure 3. Example of the Pour-on Ready-To-Use. Note in the upper right the proper volume dispensed is built into the container.

Table 4. Some Endectocides with their Mechanism of Action. These are drugs with endoparsitocidal and ectoparasitocidal activity.

Class or Description	Structure
Macrocycliclactones. Example shown on the right is Ivermectin. [6] The drug binds to glutamate-gated chloride channels common to invertebrate nerve and muscle cells (neuromuscular action).	
Neonicotinoids – are drugs central nervous system of insects similar to nicotine structure. It targets non discriminatory as it also kills non-target insects.[7]	Imidacloprid [8] 

	
Phenylpyrazoles - are characterized by a central pyrazole ring with a phenyl group attached to one of the nitrogen atoms of the pyrazole. Mechanism is by blocking GABA-gated chloride channels in insects (mammals do not have this type of chloride channel). [9] Example shown on the right is Fipronil.	
Spinosyn family – an insecticide based on chemical compounds found in the bacterial species *Saccharopolyspora spinosa*. Primarily targeting binding sites on nicotinic acetylcholine receptors (nAChRs) [10]. Example shown on the right is Spinosad, a chemical compound mixture. [11]	
Organophosphate – acetylcholinesterase inhibitors (AchE) [12]	Diazinon (sheep dip) [13] 

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March Activity Recommendation: Sky Gazing

Donald MacLean

This month's science activity recommendation is sky gazing. This topic was picked due to parade of planets alignment. The parade of planets happens when many planets are on one side of the sun and appear to be in a line. Sky gazing is an activity that can be done in an urban environment but is good in a semi dark area like Cabot Space and Science Center (Oakland) or the countryside. A good clear sky is needed so the coast is not an idea place.

- The four planets were aligned in January and February that can be seen with a low power telescope: Venus, Mars, Jupiter, and Saturn.
- The end of February Mercury, Uranius and Neptune are also part of the parade.
- In March the planet alignment will change. See some references for details on what is available.[1, 2]

The Moon:

The most obvious object to view is the moon. The moon's bright appearance is constantly changing, but the viewable surface feature is always the same due to its rotation synchronized with its orbit. The moon's brightness phase repeats every 28 days. One interesting aspect of the moon's appearance depends upon where you view the moon. In the northern hemisphere the appearance is mirror imaged flipped from the view seen in the southern hemisphere (Figure 1). Another interesting appearance change is terminator line angle changes throughout night (or day) (Figure 2).

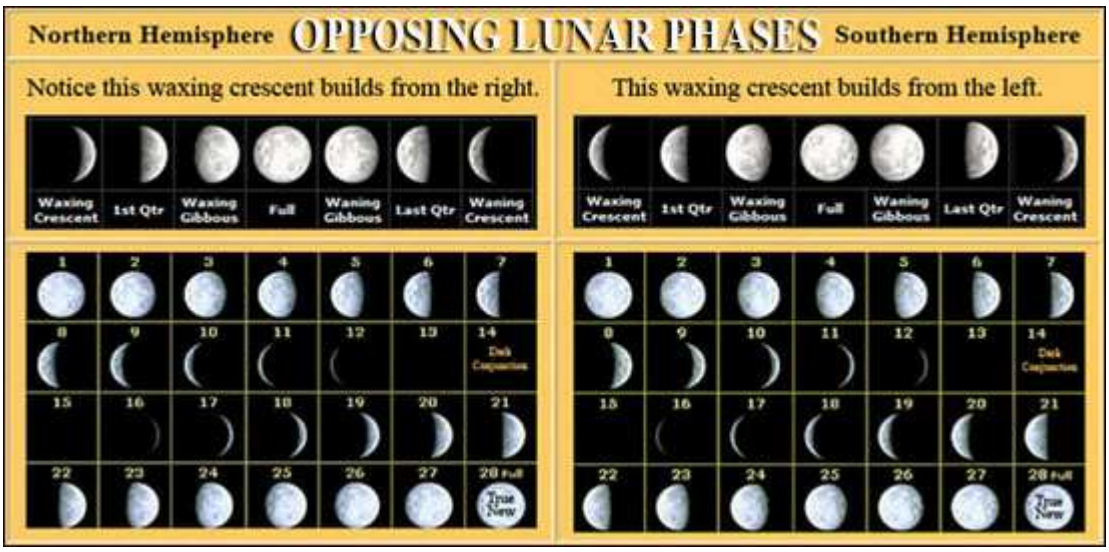

Figure 1. Diagram Show How the Moon Appears in the Northern Hemisphere and Southern Hemisphere on the Same Day.[3] Full moon (bright) and new moon (dark) are the only times that the brightness appearance is the same in both hemisphere.

Another thing that is noticeable is the moon's color can change. Normally the moon appears gray – white. When there is dust / smoke in the earth's atmosphere, the moon will appear yellow, red-orange, red, and if you are lucky or unlucky green. This phenomenon is from Rayleigh light scatter. Another color phenomenon is when the moon first appears on the horizon, the moon may appear to be red to yellow and a bit bigger. The bigger appearance is due to background comparison illusion. This color is due to light scatter (Rayleigh scatter) as the light traverses through more atmosphere, the shorter wavelengths are scattered at a greater rate than the longer wavelengths. As the moon ascends, the moon appears whiter as there is less light scatter. There are other instances where the moon color appearance is not the standard gray-white or yellow such as during eclipses, and unique air particulates presence.[5]

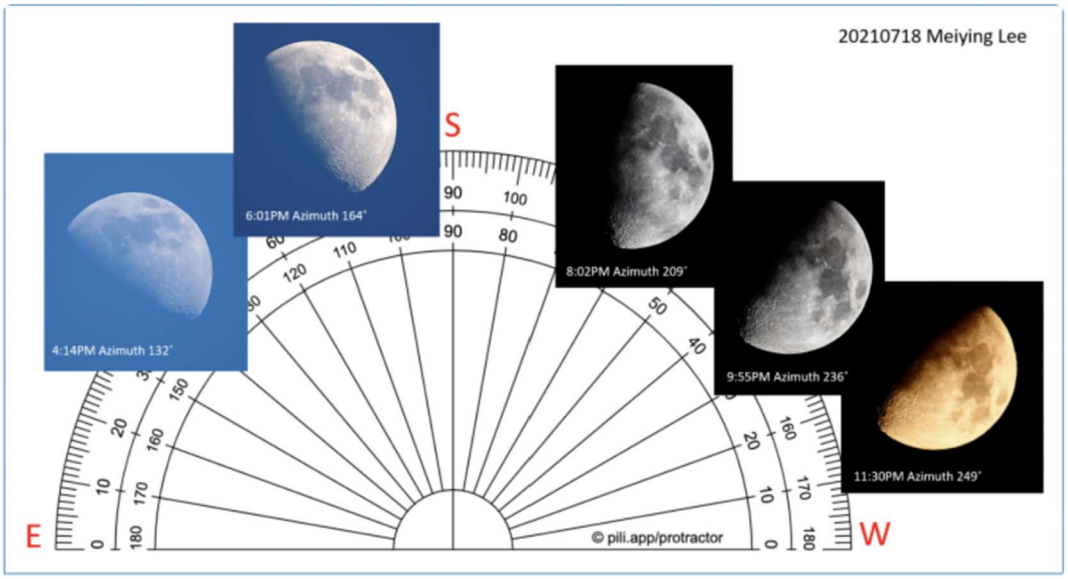

Figure 2. Composite chart of the moon over a single evening. The terminator line (where the dark and light meet) changes as the moon moves around the earth, about 15 degrees per hour.[4]

The Big Five:

Mercury, Venus, Mars, Jupiter, and Saturn are the big five planets that are visible with the naked eye. For an amateur, use the telephone app or a newspaper article to get an idea where to see the planets. Mars has a red tint, and Jupiter and Versus are the brightest points. The two most interesting planets are Jupiter and Saturn. When viewing Jupiter via a telescope you may see three to four moons orbiting the planet.[6] When viewing Saturn, its rings may or may not be seen as its tilt changes so you may see the ring edge or some percentage of the full disk. In March 2025 the ring's edge is viewed rather than the tilted full view. In the future the bottom of the ring (North hemisphere side) will be more prominent.[7,8]

Viewing Conditions:

Go out in the right conditions to view the Milky Way

- Check the weather for a clear sky night. I just used the Weather Underground app and looked a few days out to plan ahead. A nonwindy clear sky is best. On a windy day, there are some challenges like telescope stability, dust, and feeling the wind's bite. Weather conditions can also cause blurry images due to the change in index of refraction with temperature leads.

- Check driving routes to places with the least amount of light pollution. Dark Sky Finder recommends "look for a place that is dark to the south with no major cities in that direction." (Figures 3 and 4).

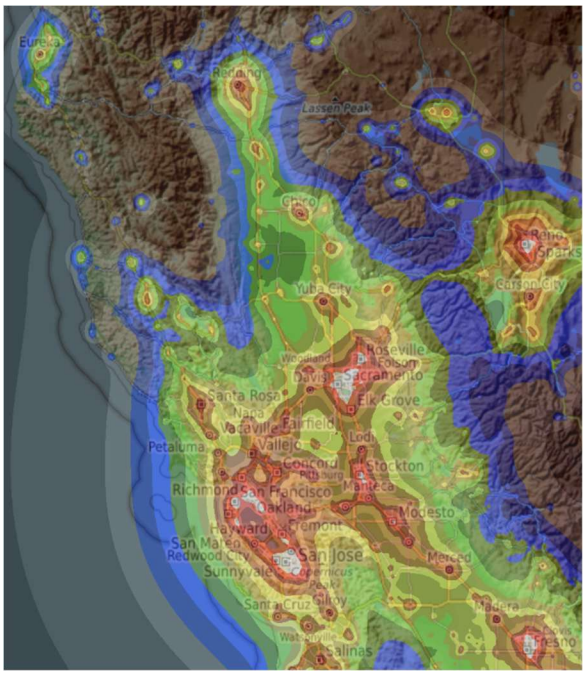

Figure 3. Light Pollution in 2022 with half intensity overlayed on map.[9] The Bay Area is not sky viewing friendly but dim objects.

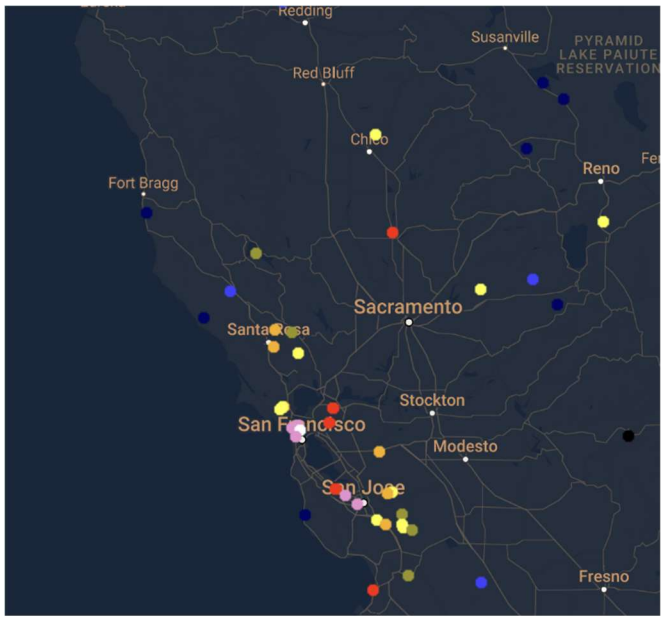

Figure 4. Darkssky.com shows USA – Canada-Western Europe with observatory locations with colored dots indication their light brightness.[10]

Telescope Types and Size Considerations:

Magnification and light gathering are the two important items in judging a telescope. A 4-inch-diameter mirror has four times the light-gathering area of a 2-inch-diameter mirror based on Area = πr^2 formula. A larger scope gathers more light, so you can observe fainter objects. The magnification is determined by the telescope focal lengths and eyepiece focal length or the objective diameter and exit pupil diameter. Table 1 shows sample magnification calculations based on focal lengths.

Table 1. Magnification Determination. There are 2 methods for determining magnification.

$$M = \frac{\text{Telescope focal length}}{\text{Eyepiece focal length}} = \frac{\text{Objective Diamter}}{\text{Exit Pupil Diameter}}$$

Magnification	Telescope focal length (mm)	Eyepiece focal length (mm)
100	1000	10
200	1000	5
200	2000	10
400	2000	5

The faintest star you can see through your telescope is the "limiting magnitude" which depends on the size of the objective.[11] The brightest stars are known as first-magnitude. The faintest unaided eye object is known as sixth-magnitude. With a larger aperture than the human eye, a telescope will see fainter objects. The formula for limiting magnitude is
Mag. Lim = 9.0 + 5 log Diameter (in).
For a 4" telescope, Mag Lim = 9.0 + 5 (0.602) = 9.0 + 3.0 = 12.0.

For comparison assume a 7 mm diameter pupil in darkness, the Mag Lim = 9.0 + 5 log (0.276) = 6.2.

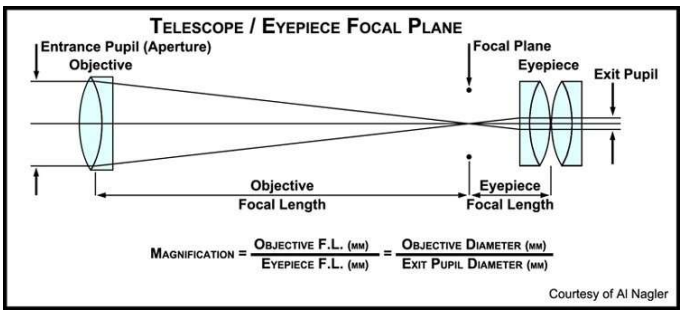

Figure 5. Magnification and Limiting Magnitude. Larger entrance aperture means fainter objects can be detected.[12]

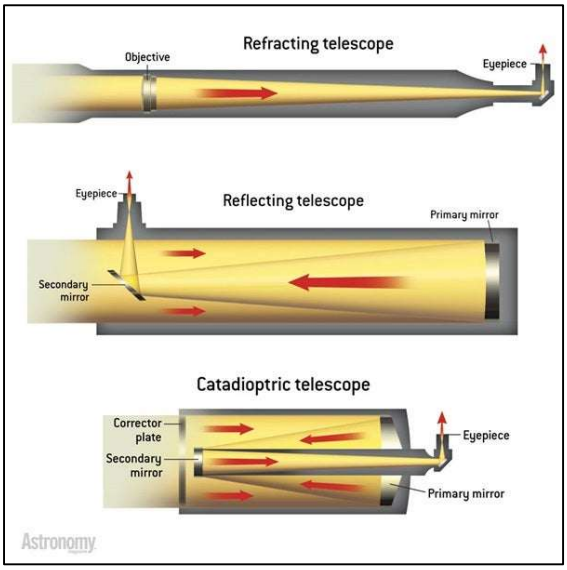

Figure 6. Three Telescope Types.[11]

The three main types of telescopes use lenses, mirrors, or a combination of both.[11]

- Refracting telescopes use lenses — combining at least two, and as many as four, pieces of glass — as their objective (the primary light-gathering device).
- Reflecting telescopes use mirrors to gather and focus light. In a Newtonian reflector — the most common type — light reflects from the primary mirror (whose surface is ground into a parabola so light comes to a common focus). The light strikes a smaller, flat secondary mirror near the top of the tube. The light then is bent 90° and enters the eyepiece through a small hole in the tube.
- Catadioptric, or compound, telescopes incorporate a primary mirror coupled with a corrector lens placed at the front of the tube. The primary mirror's curve is ground to a simple shape, usually a sphere. Ordinarily, a spherical mirror would introduce aberrations in the viewed image, but the corrector of a catadioptric scope "pre-bends" the light before it strikes the

mirror. Two popular catadioptric telescopes are the Schmidt-Cassegrain and Maksutov-Cassegrain designs.

Apps for Star and Planet Location:

As an amateur, I need help with the star identification and location. There are number of apps out there. Try Sky Tonight or other app to assist in identifying lights and where the planets are located, even below the horizon. If you are the paper type, you can use a paper star chart. With the app you need to state your location and time or have the telephone determine the location and time. Move the telephone around to match the sky with what the telephone screen is showing. I have noticed with my iPhone and Android that the stars / moon / sun are offset a bit, but the star pattern is correct. The easiest way to tell if the images are offset is to align the moon with the image on the screen or using the big dipper. What I like is the having constellations outline setting on so the constellations are shown with the stars connected. With the paper star chart you hold the paper up to the stars to identify, or look down at it then match it up to the light in the sky as the chart. In one case the chart may be view as the mirror image.

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Science Night at Bancroft Middle School Report

Alex Madonik

Bancroft Middle School in San Leandro is one of our favorite Family Science Night venues, so it's hard to believe it's been six years since our last visit! Clinton Huey, former Science Department Chair, has retired, and it's the new Chair, Evan Burgess, invited us back on Wednesday, February 26th.

Mariana Alves and Michael Cheng set up the Chemistry Show in the cafeteria, and the Lawrence Hall of Science set up their physics activities, while visitors gathered to enjoy dinner from the Mexican-style food vendors,. Mariana astonished the audience with "Disappearing Water" and then showed them how sodium polyacrylate ("baby diaper polymer") had transformed liquid water into sticky "snow."

Next up was the ever-popular Elephant's Toothpaste:

The Big Flame in a Bottle wasn't quite as big as some hoped, but the acrylic-oxygen rocket never disappoints:

California Section Chair Alex Madonik then had the great pleasure of presenting Mariana with her official ACS award recognizing as the Local Section Outreach Volunteer of the Year for 2024:

It was time for some hands-on chemistry. The Chevron Slime team in science classroom S-2 was ready help kids formulate their favorite color of cross-linked polyvinyl alcohol. Next door in S-1, copies of Celebrating Chemistry and other National Chemistry Week souvenirs were waiting, along with a chance to discover cyanotype printing (using Starlight® paper and UV light), or to explore the statistics of Candy Sampling:

Alex was there along with Cal ACS volunteers Chimara Stancill and Alice Rico; we made sure kids donned safety goggles before adding acid or base to the Chemistry Rainbow demonstration:

Alice and Chimara supervised small-scale versions of Elephant's Toothpaste, and helped visitors explore the iodine clock reaction:

Before we knew it, it was time to pack up while enjoy the liquid nitrogen ice cream that Mariana and Michael prepared in the cafeteria (thank you, Air Gas - San Leandro, for liquid nitrogen!) Principle Jeff Sloane was there with his children, and he assured us that they will advertise the next event more widely so that the pre-pandemic crowds return.