

OBSERVER



Messier 41, a bright open cluster in Canis Major, and one of our targets in this month's "Skies" column. This cluster features several orange giants, stars that have used up their hydrogen fuel and are now fusing helium instead. *Image, shot for the Observer, © Ron Pearson, CosmicRock Observatory*

MARCH SKIES

by Zachary Singer

The Solar System

March promises to be at least as interesting for observing as last month, and it starts right off with **an occultation of Aldebaran on the 4th, at approximately 8:33 PM in Denver**. Unlike many other occultations covered here recently, this one is at a convenient time, and occurs with a Moon that's less than half-illuminated, so it should be easily witnessed naked-eye—and wonderful in a pair of binoculars. The occulting edge will be dark, which helps visibility but also makes it harder to gauge the exact moment it will touch Aldebaran, so start watching early. (Many stars in the Hyades cluster will also be occulted, but the Moon will pass through them in daylight, as seen from Colorado.)

At that point, it will have dimmed to -0.2 mag., and will show a more interesting phase (like a "1st-Quarter" Moon), lying some 19° from the Sun. Greatest elongation is April 1st.

Venus, in contrast, starts March with a Cheshire-Cat smile of a crescent about 47" across, glowing noticeably at sunset at -4.6 magnitude. As the days go by, the disk expands and the crescent narrows, and by mid-month, the Cheshire smile becomes more of a pencil line; it thins to almost nothing as Venus's March 25th solar conjunction approaches. By then, the planet's disk will span almost a full arc-minute, perhaps large enough to be seen with binoculars.

In this unusual conjunction, Venus passes some 8° north of the Sun. Technically, it's expected to remain visible, and around the time of conjunction, it could therefore be observed as both a morning object and an evening one. For *experienced* observers with proper skills and equipment, it could be a great opportunity to see an exceptionally thin disk and interesting effects from light scattering in the Venusian atmosphere—but for those who are inexperienced with *solar* observing,

Sky Calendar

- 4 Moon Occults Aldebaran
- 5 First-Quarter Moon
- 12 Full Moon
- 20 Last-Quarter Moon
- 27 New Moon

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Society Directory

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PRESIDENT'S MESSAGE

by Ron Hranac

DAS: Working to Do More for Our Members

Denver Astronomical Society's annual membership meeting took place on Friday, February 17th at the University of Denver's Olin Hall. Among the items on the agenda was election of E-Board officers and trustees. If you missed the February meeting, here's a recap of the election results: President—yours truly; Vice President—Lindsey Shaw; Secretary—Jeff Tropeano; and Treasurer—Mike Nowak. Trustees include Brent Blake, Julie Candia, Jack Eastman, Joe Gafford, Zach Gilbert, Ed Scholes, Sorin, and Dan Wray. Your newly elected E-Board will be seated at this month's spring banquet. A sincere thanks to outgoing E-Board members Johnny Barela, Chuck "Grumpy" Habenicht, Ron Pearson, Leo Sack, and Ken Sturrock.

Following a successful 2016 (see my President's Message in the January '17 *Denver Observer*, available on-line at http://www.denverastro.org/newsletters/january2017_denverobserver.pdf), what's in store for the remainder of 2017?

First and foremost, we're not going to rest on our laurels. A membership survey is planned for this year—our previous surveys have proved to be valuable tools, especially considering the excellent response rate we've enjoyed. When 2017's survey comes out, please take a few minutes to answer the questions and share your input. What do you think we did well? What can we do better? Surveys in the past have helped guide our programs and activities, and we'd like to continue that. Your voice is important.

Somewhat related to a membership survey is a SWOT Analysis ("SWOT" stands for strengths, weaknesses, opportunities, and threats). We did one of these during an E-Board meeting when I was first elected president four years ago, and are planning another one this year. What happens during a SWOT Analysis? A list of the aforementioned strengths, weaknesses, opportunities, and threats is compiled (the activity can be a real eye-opener), and from there, ideas to address the list are discussed. The results of a SWOT Analysis can be very helpful in guiding an organization's long-term direction, goals, and policies.

One of the things we do well is outreach, whether through our twice-weekly Public Nights, monthly Open Houses, or external programs at a variety of venues. Some of you who are active in outreach have commented that you're often so busy during those events that you don't have time to visit with other members, enjoy the day or night sky yourself, take a gander at other members' equipment, or

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DAS SCHEDULE

March 2017

- 4 Open House—DU's Historic Chamberlin Observatory—Starts at 6:00 PM
- 11 Spring Banquet—Starts at 6:00 PM (See Page 3.)
- 17 E-Board Meeting—At DU's Historic Chamberlin Observatory, 7:30 PM. All members welcome.
- 25 Dark Sky Weekend—EGK Dark Site & Brooks Observatory

(April 2017)

- 1 Open House—DU's Historic Chamberlin Observatory—Starts at 7:30 PM
- 7 General Meeting—DU's Olin Hall, Rm. 105—Starts at 7:30 PM

During Open House, volunteer members of the DAS bring their telescopes to the Chamberlin Observatory's front (south) lawn, so the public can enjoy views of the stars and planets, try out different telescope designs, and get advice from DAS members. The Observatory is open, too (costs listed below), and its historic 20-inch telescope is open for observing with no reservations necessary.

Open House costs (non-members): If the skies are clear, \$2/person (\$5/family), \$1/person in inclement weather. DU students with ID, and DAS members free.

Public Nights feature a presentation on astronomical subjects and a small-group observing session on the historic 20-inch telescope (weather permitting), at Chamberlin Observatory on Tuesday and Thursday evenings (except holidays), beginning at the following times:

March 10 - September 30 at 8:30 PM

October 1 - March 9 at 7:30 PM

Public Night costs (non-members): \$4/adult, \$3/child and students with ID. DAS members and DU students with ID: free.

Members of the public (non-DAS/DU, as above), please make reservations via our website (www.denverastro.org) or call (303) 871-5172.

DAS NEWS

Volunteer Opportunities

March 30, 2017, 7:00-9:00PM. *Homeschooled kids*—all ages, pre-school and up (~ 65 people, including some adults). Castle Rock, CO. Night observing.

April 9, 8:00AM-12:00PM. *8th Annual Race4Kids' Health*, 1st Bank Center, 11450 Broomfield Lane, Broomfield, CO. DAS table and solar telescopes.

April 25, 6:30 - 8:30PM. *Cub Scouts*, Littleton, CO (location to be determined). Night observing.

To volunteer, please contact Julie Candia at external@denverastro.org —and thanks!



DAS Leadership: New E-Board Elected

After the membership voted at February's General Meeting, a new E-Board for 2017 was elected; it has some new faces, and many familiar ones. Here's the new roster:

President: Ron Hranac

Vice-President: Lindsey Shaw

Secretary: Jeff Tropeano

Treasurer: Mike Nowak

Trustees: Brent Blake, Julie Candia, Jack Eastman, Joe Gafford, Zach Gilbert, Ed Scholes, Sorin, and Dan Wray

Thanks to all the hard-working volunteers on 2016's now outgoing Board!



Messier Marathon

The night of March 25th should be busy ones at the EG Kline Dark Site. The Moon is virtually new on that Saturday night, which means it's the official Messier Marathon night for 2017.

March–April is the only time during the year when observers at perfect dark sites at our latitude can hope to accomplish the feat of observing all of the 110 objects in the modern version of Charles Messier's famous catalog of non-comets. For a lot of reasons, however, it's probably better to have a goal of trying to observe as many as you can, not the entire list.

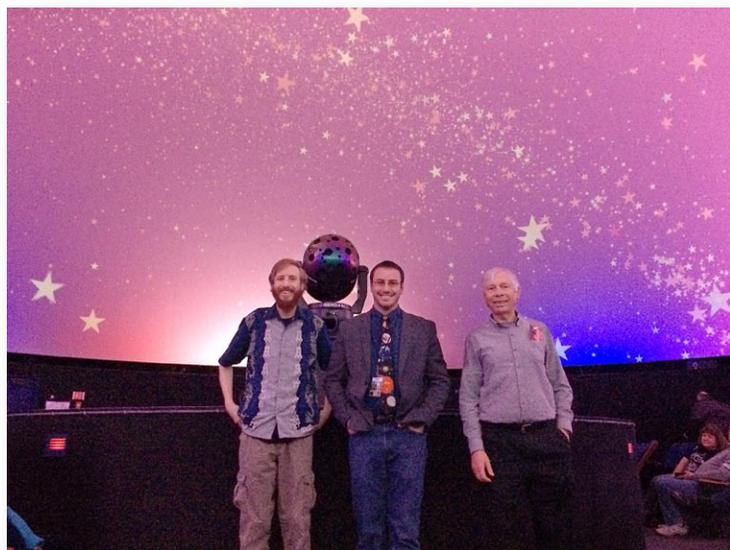
Because of the importance of starting to observe as soon as possible after sun-down, it's abso-

lutely imperative that participants arrive at the site early (5:30 PM or so). Late arrivers will not only imperil their own chances of seeing the early objects, but may also make it difficult for other observers. Arriving before dark is also a good idea because the site is often packed on Marathon nights. The 14 powered concrete observing pads usually fill up way before dark.

We will have Marathon forms at the site, which provide a check list of objects in one of the preferred orders for observing. And there will be a signup sheet for those wanting to make a competition out of it.



DAS Fiske "Field Trip"



(L to R:) Fiske Planetarium's Theater Manager Nick Conant, Leo Sack, and David Shouldice, all of whom helped make the Fiske trip possible.

Image © Carla Johns

Approximately 70 DASers and their guests attended the February 18th "Field Trip" to the Fiske Planetarium in Boulder. Members got a good look at the facility, and many stayed for astronomer Fran Bagenal's New Horizons-Pluto presentation afterward.



Spring Banquet

All DAS members and their guests are cordially invited to attend the 2017 DAS Spring Banquet on Saturday evening, March 11th at Embassy Suites-Denver Tech Center, approximately 1/2-mile east of I-25 and Arapahoe Rd.

The social gathering time starts at 6:00 PM, with a cash bar provided. The buffet dinner will be served at 7:00 PM, followed by the presentation of awards and the evening program.

Dr. Paul Hemenway, Associate Professor of Physics and Astronomy

at DU, will present "Robotic Exploration of the Solar System."

Tickets are \$25 per person, and must be purchased no later than Tuesday evening, March 7th. To get yours, or for more information about the program, menu, or presentation, please see <http://www.denverastro.org/banquet2017.html>.

We hope to see you there!



SOLAR ECLIPSE PROVIDES CORONAL GLIMPSE

NASA Space Place

By Marcus Woo

On August 21, 2017, North Americans will enjoy a rare treat: The first total solar eclipse visible from the continent since 1979. The sky will darken and the temperature will drop, in one of the most dramatic cosmic events on Earth. It could be a once-in-a-lifetime show indeed. But it will also be an opportunity to do some science.

Only during an eclipse, when the moon blocks the light from the sun's surface, does the sun's corona fully reveal itself. The corona is the hot and wispy atmosphere of the sun, extending far beyond the solar disk. But it's relatively dim, merely as bright as the full moon at night. The glaring sun, about a million times brighter, renders the corona invisible.

"The beauty of eclipse observations is that they are, at present, the only opportunity where one can observe the corona [in visible light] starting from the solar surface out to several solar radii," says Shadia Habbal, an astronomer at the University of Hawaii. To study the corona, she's traveled the world having experienced 14 total eclipses (she missed only five due to weather). This summer, she and her team will set up identical imaging systems and spectrometers at five locations along the path of totality, collecting data that's normally impossible to get.

Ground-based coronagraphs, instruments designed to study the corona by blocking the sun, can't view the full extent of the corona. Solar space-based telescopes don't have the spectrographs needed to measure how the temperatures vary throughout the corona. These temperature variations show how the sun's chemical composition is distributed—crucial information for solving one of long-standing mysteries about the corona: how it gets so hot.

While the sun's surface is ~9980 Fahrenheit (~5800 kelvin), the corona can reach several millions of degrees Fahrenheit. Researchers have proposed many explanations involving magneto-acoustic waves and the dissipation of magnetic fields, but none can account for the wide-ranging temperature distribution in the corona, Habbal says.

You too can contribute to science through one of several citizen science projects. For example, you can also help study the corona through the Citizen CATE experiment; help produce a high definition, time-expanded video of the eclipse; use your ham radio to probe how

an eclipse affects the propagation of radio waves in the ionosphere; or even observe how wildlife responds to such a unique event.

Otherwise, Habbal still encourages everyone to experience the eclipse. Never look directly at the sun, of course (find more safety guidelines here: <https://eclipse2017.nasa.gov/safety>). But during the approximately 2.5 minutes of totality, you may remove your safety glasses and watch the eclipse directly—only then can you

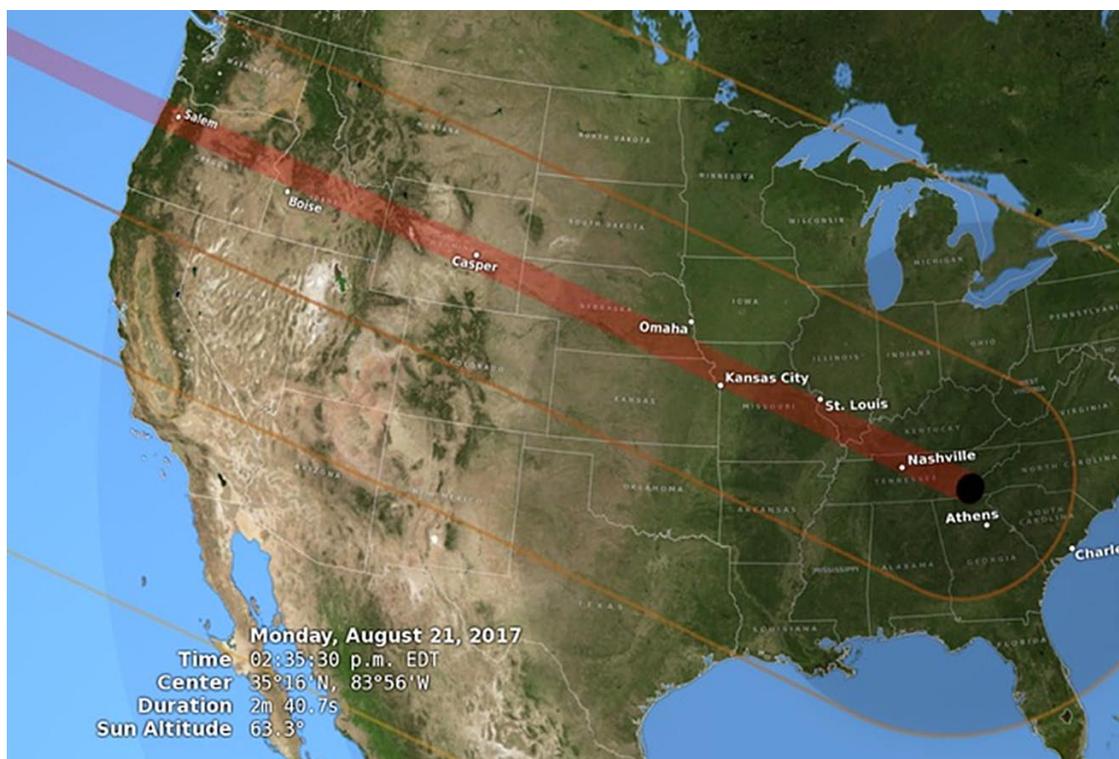


Illustration showing the United States during the total solar eclipse of August 21, 2017, with the umbra (black oval), penumbra (concentric shaded ovals), and path of totality (red) through or very near several major cities. Credit: Goddard Science Visualization Studio, NASA

see the glorious corona. So enjoy the show. The next one visible from North America won't be until 2024.

For more information about the upcoming eclipse, please see: **NASA Eclipse Citizen Science page:** <https://eclipse2017.nasa.gov/citizen-science>; **NASA Eclipse Safety Guidelines:** <https://eclipse2017.nasa.gov/safety>.

Want to teach kids about eclipses? Go to the NASA Space Place and see our article on solar and lunar eclipses! <http://spaceplace.nasa.gov/eclipses/>

This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!

ABOUT THE DAS

Membership in the Denver Astronomical Society is open to anyone wishing to join. The DAS provides trained volunteers who host educational and public outreach events at the University of Denver's Historic Chamberlin Observatory, which the DAS helped place on the National Register of Historic Places. First light at Chamberlin in 1894 was a public night of viewing, a tradition the DAS has helped maintain since its founding in 1952.

The DAS's mission is to provide its members a forum for increasing and sharing their knowledge of astronomy, to promote astronomical education to the public, and to preserve DU's Historic Chamberlin Observatory

and its telescope in cooperation with the University of Denver. The DAS is a long-time member in good standing of the Astronomical League and the International Dark Sky Association.

The DAS is a 501 (c)(3) tax-exempt corporation and has established three tax-deductible funds: the Van Nattan-Hansen Scholarship Fund, the DAS General Fund, and the Edmund G. Kline Dark Site Fund.

*****JOIN US!** More information about DAS activities and membership benefits is available on the DAS website at www.denverastro.org.



President's Message

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get more familiar with a new 'scope or accessory that you just added to your own setup. To address that, we're sorting out the nuts and bolts of a regular *inreach* program—February's field trip to the Fiske Planetarium was the first in that effort—just for us. Stay tuned for more information.

Something else in the works for DAS members—beginner and experienced alike—is a new educational addition to our monthly membership meetings. Right now we're planning on calling it "Astronomy Minute," even though it will really be three to five minutes. Astronomy Minute will be scheduled in between the business and announcements part of our meetings and the formal lecture. During Astronomy Minute, someone will briefly cover a specific topic such as "What are the three main types of telescopes?" "What is sidereal time?" "How can one safely observe the Sun?" and "What's an angular degree in the sky?"—those sorts of things.

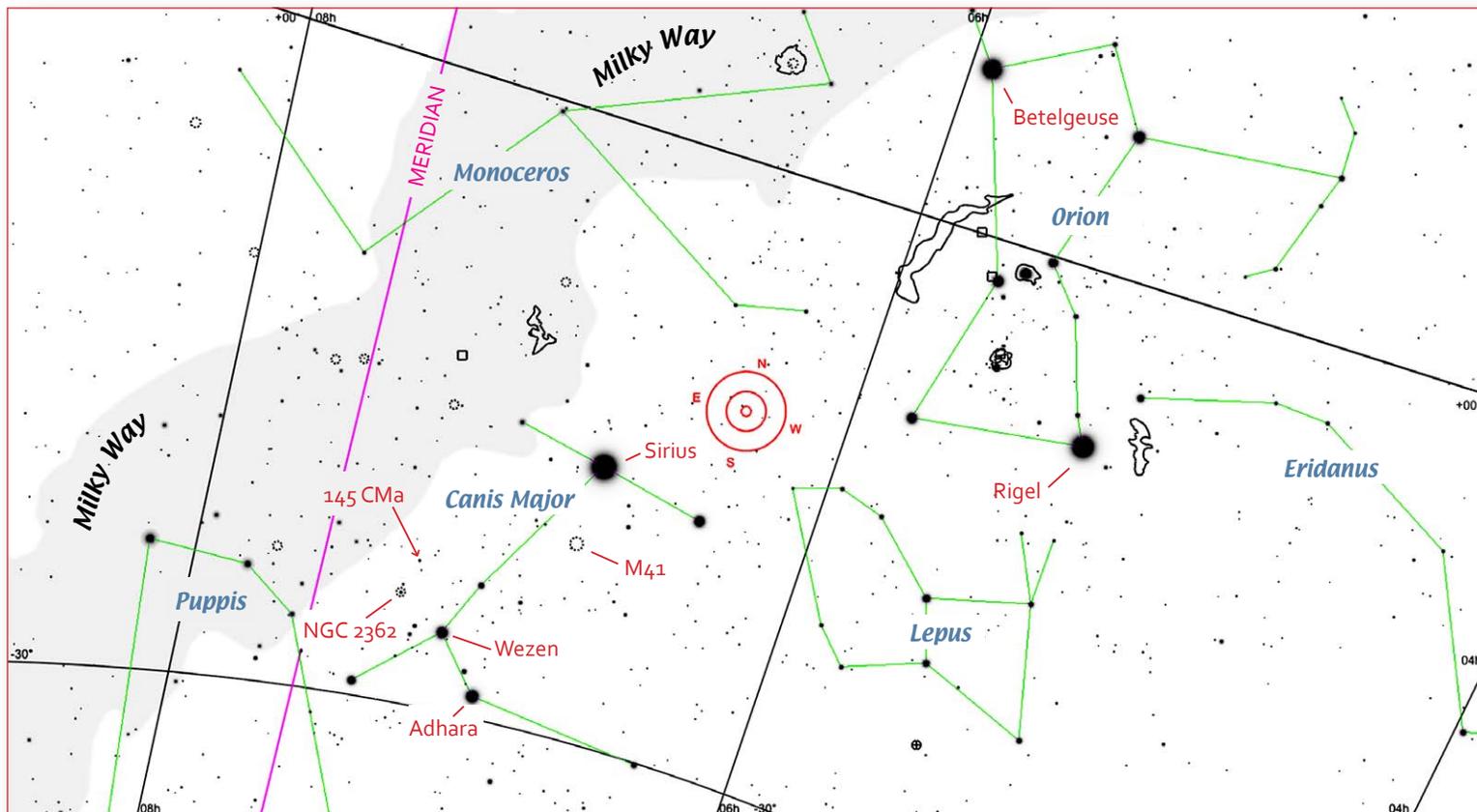
In January, I had an opportunity to help with "meet and greet" at CBS4's Mobile Weather Lab (I'm one of the station's volunteer weather watchers) during the International Sportsmen's Exposition at the Colorado Convention Center. While there, I spent some time chatting with a couple of the station's meteorologists about DAS possibly becoming an astronomy resource for them. They expressed interest, so an *ad hoc* subcommittee has started working on a high-level astronomy overview program (think Astronomy 101 in 60 to 90 minutes) for local broadcast

media staff, in particular the TV stations' meteorologists, who are often the go-to on-air personalities for astronomy-related information. The program will share details about topics that are likely to be of interest to the viewing public, such as meteor showers, comets (including a reminder that they don't "fly by"), eclipses, the International Space Station, and so on.

The August 21st total solar eclipse is arguably going to be the number-one astronomy event of 2017, and we anticipate a fair amount of public interest over the next few months. DAS isn't planning a formal observing event—the path of totality misses Colorado—but Coloradans will be able to drive just a few hours to see the first total solar eclipse to grace the continental United States since February of 1979. Look for more information about the eclipse in this newsletter later this year. Some of our Public Night speakers are already including a quick overview of the eclipse along with their regular presentations, and we're planning on an in-depth eclipse lecture as part of the July general membership meeting. Other eclipse-related ideas are being considered, too, and as they come together, you'll be among the first to know.

As you can see, 2017 looks to be a busy year for DAS. Thanks for helping to make us the best at what we do!





Viewing south and up in Denver at 9:00 PM in mid-March. (Telrad included for reference.) The wide field here shows locations relative to other areas, like Orion, in the southern sky; for a detailed view of the Telrad / finderscope view around 145 CMA, Tau (τ) CMA, and NGC 2362, please see page 8.

Object positions, constellation and meridian lines charted in SkySafari, and then enhanced.

March Skies

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you should skip it: At its closest, Venus will be less than the width of an outstretched hand from the Sun, a *very* narrow margin for safety, and one that would be all too easy to exceed accidentally while pursuing the planet (internally reflected sunlight could be a problem, too). **Viewing the Sun at any time in binoculars or a telescope without special filters or equipment can immediately and irreparably damage your vision.**

Mars remains a pretty, orange dot; its disk shrinks to just over 4" by the end of the month.

Jupiter is looking good! It's already a large 42" disk as March begins, but gains about 5% apparent diameter by the end of the month, maintaining that well through its opposition on April 7th. Of more practical interest is that the great planet rises at better and better times through the month, breaking the horizon just after 9 PM (Standard Time) at the beginning of March and just before 8 PM (Mountain Time) at month's end. The *transit* time improves even more, coming more than 90 minutes earlier (about 1:30 AM) by month's end. Convenience, though, isn't the whole story—because Jupiter will be up almost all night this month, there will be more observing opportunity, and so a better chance of seeing phenomena like transits of Jupiter's moons or those of their shadows.

Saturn remains an early-morning object, but it's an increasingly good one— in early March, the ringed planet sits about 20° above the horizon 45 minutes before sunrise, and almost 30° up, near its zenith, at month's end. Observing conditions will continue to improve for Saturn as it makes its way to a June opposition.

Uranus is the same as ever, a ghostly pale-blue dot—it sinks into the western twilight by mid-month.

Neptune has its superior conjunction this month, and is lost in solar glare.

Deep Sky

All three targets for this month lie in the constellation Canis Major, the larger of Orion's two hunting dogs. (This region of sky lies southeast of Orion, and just south of Monoceros, which we toured last month.) Our first object is unabashedly for newbies, though it's lovely enough for experienced folks to come back to it. Conversely, though the other two objects were chosen partly for being less well-known (for our more experienced members), they won't be difficult for beginners to locate, and they're easy to view.

These past few months, we've toured a fair number of open star clusters—some very young or old, some very big or small, many of them were unusual in some way. In contrast, **M41**, at **6h 47m, -20° 46'**, is simply a pleasure to observe and very easily found. With an age estimated at about 200 million years, M41 has left the "childhood" of its life behind: The very hottest stars, the class Os and the class Bs, have already gone (they burn so brightly that they don't last long). Still, M41 is far from middle age, and its bright class A stars remain (they're like Sirius and Vega). The cluster also has a noticeable scattering of orange giants; with their greatly expanded atmospheres, these dying stars glow brightly, too—for us, they make a beautiful contrast with the class A's.

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March Skies

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M41 spans about $2/3^\circ$, or a little more than our Moon, so wide fields work very well, and small telescopes will show off this cluster to good advantage—my 6-inch gives a great view, even in suburban Denver (love it with a moderate eyepiece, giving about 60x and a 1° field). At the same time, larger apertures bring out the star colors here, and a 1° view in my 12-inch under dark skies is a guilty pleasure. (For those with 'scopes that can't manage a wide field, don't worry; even a $1/2^\circ$ view will look great—you'll lose some outlying stars along the fringes of the cluster, but you'll still take in most of it, and the extra magnification will help you see more detail in the center.)

M41 lies just 4° due south of Sirius (the brightest star in our sky). Under *ideal* dark, country skies, you might well see a subtle, moon-sized "haze" in the general area with your naked eyes. If you can't see it directly (which will be the case in suburban/urban areas), finding the cluster is still a snap—imagine a line from Sirius to Adhara, the bright star in the "dog's rear leg." Slide the center of your Telrad down that line from Sirius until the northernmost part of your Telrad's outer (4°) ring touches it, and you're in—a look in your finderscope will show Sirius at one edge and the cluster along the opposite one. For a more refined approach that places M41 close to the middle of your finderscope's field, slide the Telrad further down the line to Adhara, until its center is about 4° from Sirius (the edge of the Telrad's outermost circle will lie halfway between Sirius and the center of the Telrad). Since all you really need to do is get the cluster somewhere in your finderscope field, great precision isn't required with the Telrad, so don't make yourself crazy on this one—rough estimates of position will work just fine.

Next up, the "Winter Albireo," **145 Canis Majoris**, at **7h 17m, -23° 21'**. Though it's unofficial, the star's nickname is apt—this is a beautiful, easy-to-split pair with colors somewhat reminiscent of its bright summertime namesake. In many ways, I like this star better, both for the science and the aesthetics: Unlike Albireo, it's known to be a true binary, and an interesting one at that, with a separation between the pair of at least 11,000 astronomical units (AU), or about a sixth of a light-year—a radio message sent from one of the pair's stars to the other would take *two months* to get there.

The primary is a 5^{th} -magnitude orange giant, with a white, 7^{th} -magnitude companion in orbit around it—because of the contrast in color and brightness, observers most often perceive this pair as being "orange and blue," and I usually see it as a *deep* creamsicle-orange and purplish-blue—a very beautiful pair, and one of my favorites. With its wide separation of 27 arc-seconds, it's easily split by all 'scopes, and shows well, even in my 6-inch at just 30x. Since the perception of the stars' colors is tied to magnification (and aperture) try this with as many different eyepieces (or 'scopes!) as you can—with that 6-inch at 30x, for example, the pair appears chrome-orange and white. (At low powers, you'll also get wide fields that show a rich background in dark skies....)

One special note about this star, before we get into finding it: Like many stars, it has multiple official designations (along with the nickname), but none of the names seems to be in predominant use—145 Canis Majoris, properly abbreviated as 145 CMA, shows up in Orion Intelliscope hand-controllers, for example, but the star is listed as "HR 2764" in SkySafari (and searches for "145 CMA" return no results); other sources refer to this star as Herschel 3945 (probably the first designation I ever saw for it, but one I use rarely now) and abbreviate it as

"h 3945" or "HJ 3945," with the capitalization as shown.... If you're planning to use a go-to computer, software, or a star-chart to find this star, it's a good idea to check which name is used ahead of time, before you get frustrated in the dark!

The Winter Albireo makes up for the name confusion by being reasonably easy to find, and good practice for folks learning to star-hop. Look for Adhara, the bright star we used to find M41, and Wezen, the 2^{nd} -magnitude star at the dog's "rear hip," and imagine a line running from Adhara to Wezen and extending the same distance to 145 CMA, so that Wezen is smack in the middle. In very dark skies, you should be able to see 145 CMA directly, but it's not necessary—if you aim your 'scope's Telrad to 145's expected position, you'll see the star within your finderscope. While perfect precision isn't necessary, *some* care in aim is a good idea here—the area is crowded with other objects which could be mistaken for the target, and taking a few seconds to aim carefully will help avoid trial-and-error ("Is *that* it?") in the finderscope. If you're on target, the inverted view in your straight-through finderscope will show an orange-tinted star reasonably close to the center of the field, and a pair of white (or even pale blue) stars near the top edge (somewhere between the "10" and the "2 o'clock" position, when looking within an hour or two of 9 PM mid-month). That orange star is 145 CMA.

Our last target, the cluster **NGC 2362**, will be very easy to find—it surrounds the outer, or topmost of those two stars that shared the finderscope's inverted field when 145 CMA was centered! Just over $1/2^\circ$ south of 145, at **7h 19m, -24° 59'**, the cluster appears close-by to that star—but lies more than 3000 light-years beyond it, and almost 5000 light-years from Earth. At that distance, rather like that of Caroline's Rose, NGC 7789, you'd expect this cluster to be dim, especially since this is a relatively small cluster (only 5 arc-minutes across, as we see it). Instead, it's bright, at magnitude +3.79; the discrepancy comes from the unusual youth of this system—being newly minted, with an age of only 5 million years, the same type of very hot class O and B stars already missing from M41 are *still here*, burning very brightly, because their newness has precluded them from exhausting their fuel yet.

Theory aside, NGC 2362's inherent brightness makes it a lovely object for observation, and like M41, it shows up very nicely in a 6-inch 'scope in suburban Denver. Though the cluster is visible at low magnification in the 6-inch (as tiny pinpoints, using averted vision), the small dimensions and the individual stars' relative brightness mean that much better viewing will be had at higher powers—150x worked best for me in the 6-inch, under less-than-perfect conditions; try 100x and work your way up.

As it happens, there's another good reason for the cluster's luminosity: the presence of **Tau (τ) Canis Majoris**, blazing along at 4^{th} magnitude from about 4800 light years away—it's that "topmost" star in your finder we just used to find NGC 2362, easily visible on its own in a 6x30 finderscope in the city. (For comparison, at the same distance, our own Sun would linger on the bare edge of visibility *in a 10-inch 'scope* under perfect skies.) Because Tau CMA is so very hot, the visible light from this brute is only part of the story, and far more light streams out of it in UV wavelengths—some 200,000 times our Sun's luminosity.

As they say on late-night TV, "But wait, there's more...": Tau is multiple star system, with five stars layered in

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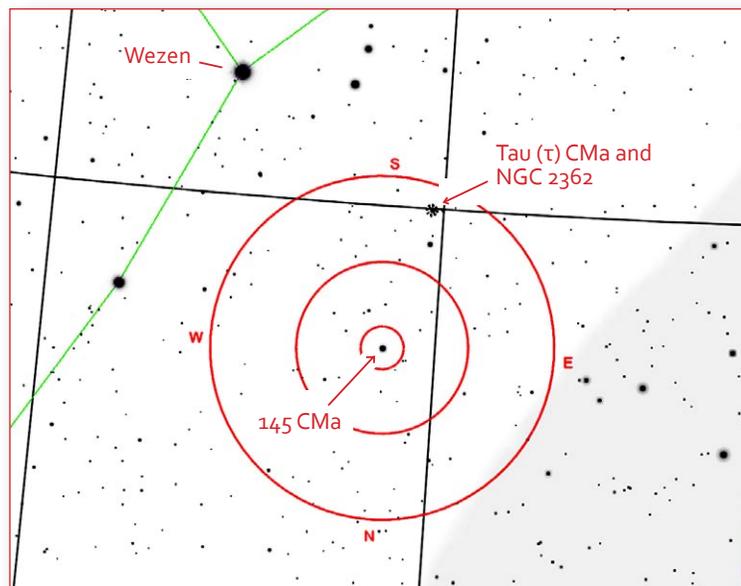
March Skies

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hierarchical orbits. The innermost pair is reported to lie perhaps a tenth of an AU apart, and can only be detected spectroscopically, while the outermost companion—a 10th-magnitude star—orbital at least 13,000 AU away, and appears some 8 arc-seconds from the inner group, as seen from Earth. In theory, the outer companion should be visible to larger 'scopes—its angular separation and magnitude differences are about the same as Rigel's. However, Tau CMa is four magnitudes dimmer overall, and sits much lower in our local sky, making this object even more challenging to split than Rigel. I'll leave it for the advanced folks to try (with a 10-inch 'scope or bigger), knowing that success splitting this star from here in Denver may be elusive. But Tau is fascinating to think about, at the least, and you don't have to look very hard to find it.

Tau CMa lights the way to NGC 2362—find Tau, center it, and the cluster itself will be visible in your 'scope. As mentioned above, Tau is clearly visible toward the top of your finderscope's view when the binary star 145 CMa is in the finder's crosshairs. After centering 145 around 9 PM mid-month—or any time this part of the sky is high in the south, Tau appears at about the "1 o'clock" position in an inverted finderscope view—note that if you center 145 later in the evening (or later in the month), Tau's position, and that of the bright star near it, will have rotated in a clockwise direction relative to 145, but the stars should still be easily recognizable.

—See you next month.



View of INVERTED Telrad / finderscope field centered on 145 CMa, showing relative positions of NGC 2362 and Tau CMa (inside NGC 2362) around 9 PM in mid-March. (Field will be rotated at other times; turn chart to match.) Note also the bright star Wezen at upper left.

Object positions, constellation and meridian lines charted in SkySafari, and then enhanced.

