

# OBSERVER



A wide view of the Crescent Nebula, NGC 6888, and surrounding area in the constellation Cygnus.

Image © Alan Erickson

## OCTOBER SKIES

by Zachary Singer

We have two meteor showers this month, an occultation of Antares, some planets and planetary alignments, and interesting deep-sky objects—but for half of these, you might see them (or find them)—or you might not! Unlike previous months, where the majority of what we looked at was relatively certain to be visible (and most were easily found), some of this month’s targets might be hard to find—or may not be visible at all! The payoff for these is that if you *do* see something, it’s something you might well have missed otherwise.

First then, those two meteor showers—one of which is known to be less predictable. This shower, the **Draconids**, peaks on the 9<sup>th</sup> of the month. Some years, these meteors are a no-show—the number of meteors streaking across the sky in an hour, or Zenith Hourly Rate (ZHR), is essentially zero. Other years, especially those when the meteoroids’ originating comet flies past the sun, you get strong showers—or even *storms*, with ZHRs in the thousands. Since this year it isn’t a “pass-by-the-sun” year (they occur about 6½ years apart), we probably won’t get a big

event—but we might get a decent showing. As it happens, the radiant point is high in the northern sky, so the meteors, as many as there might be, should be visible all night (moonrise at the peak is at 3 a.m.).

The **Orionid** shower peaks on the 21<sup>st</sup>, though Ottewell’s notes that these meteors sometimes have multiple peaks. Unlike the Draconids, the stream is more consistent, and usually can be counted on for a ZHR of about 20 (and up to 70 in good years). Ottewell says that the Orionids, which are the debris trail from Halley’s Comet, are “sometimes bright, and more than half leave persistent trains.” This year, the Moon will set around 12:25 a.m., minimizing its interference as the shower’s radiant climbs in the east. It should be a decent show.

In a different vein, **the Moon will occult (pass in front of) Antares**, the Alpha (α) star of Scorpius, *in daylight*, on the morning of the 2<sup>nd</sup>. *Sky and Telescope* suggests that Antares should be visible in a telescope—in spite of both the blue sky and the sunlit surface of the Moon at its leading edge. Other sources, including Ottewell’s, cast doubt on this. Who’s right? Well, we’ll find out for certain on October 2<sup>nd</sup>. Past that, I can only offer you this: If you try and succeed, it promises to be memorable—how many of us have witnessed a star slowly “winking

### Sky Calendar

4	Last-Quarter Moon
12	New Moon
20	First-Quarter Moon
27	Full Moon

### In the Observer

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# PRESIDENT'S MESSAGE

by Ron Hranac

## Farewell to Our Friends

I have fond memories of growing up during a time when hobbyists were served by local mom-and-pop businesses that catered to a variety of interests. In or near my Pacific Northwest hometown, one could find a rock shop for the rock hounds, at least three retailers that sold electronics components and radio equipment (many grocery and drug stores also sold vacuum tubes), and a handful of stores that carried woodburning kits, chemistry sets, balsa wood, model kits of all kinds, glue, paint, and tools such as X-ACTO knives. Sadly, most of those businesses are long gone.

When my family and I moved to Colorado in the early 1980s, one could still buy electronics parts and supplies from the likes of Gateway Electronics and Fistell's Electronics, but they, too are no more. There were a couple stores that catered to ham radio operators (Ham Radio Outlet bought one of them, and the other closed its doors years ago), a rock shop or two (also gone), and a local telescope store called S&S Optika. There are still a few places that cater to model railroaders and radio controlled (RC) hobbyists.

One of the attributes of many of these hobby-centric businesses was personalized customer service. More often than not, the employees were actively involved in the same hobby or hobbies supported by their place of employment. Regular customers were known by name, and if the store didn't carry the particular gadget one was looking for, odds are one of the staff knew where to get it.

*Sadly, we are about to lose another local business, this one near and dear to most of us.*

There was a collective gasp of disappointment at the end of our August 28<sup>th</sup> General Membership Meeting when Cathie and Tim Havens announced they are retiring and closing S&S Optika. As Cathie put it that night, "We're retiring to New Mexico, where we plan to enjoy some spectacularly dark skies while our vision is still good."

S&S Optika started in Iowa as a telescope-making business – there was no retail store at the time. The two S's in the company name came from the last names of the original owners, and "Optika" was chosen because it sounded somewhat European. S&S moved to the Denver area in late 1972, and obtained a retail license in October of that year. The business was operated out of Cathie's home for the first year, and in late '73, the retail store opened in the 3800 block of south Broadway, south of Hampden. S&S Optika was officially incorporated in 1974.

Cathie and Tim met at the Broadway store. He was a customer, they took a liking to one another,

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## DAS SCHEDULE

### OCTOBER 2015

- 9-11 Dark Sky Weekend—EGK Dark Site & Brooks Observatory
- 17 Open House—DU's Historic Chamberlin Observatory—Starts at 7:00 PM
- 24 DAS Auction—DU's Historic Chamberlin Observatory—Starts at 11:00 AM
- 24 Reception for Cathie & Tim / S&S—DU's Chamberlin Observatory—Starts at 5:00 PM
- 30 E-Board Meeting—At DU's Historic Chamberlin Observatory, 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](http://www.denverastro.org)) or call (303) 871-5172.

## Society Directory

### DAS Executive Board

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Chuck Habenicht Dan Wray  
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*The Executive Board conducts the business of the DAS at 7:30 p.m., at Chamberlin Observatory. Please see the Schedule of Events for meeting dates. All members are welcome. <http://www.denverastro.org>*

# DAS NEWS

## Volunteer Opportunities

**October 23&24, 6:30PM-8:30PM:** Evening observing; **October 25, 11AM-1PM:** Solar observing; **All 3 Days:** Table. From October 23-25 the MileHiCon, Colorado's largest Sci-Fi/Fantasy Literary Convention will be held at the Hyatt Regency Hotel in the Denver Tech Center. For more details please email Sorin and check out the event website: <http://www.milehicon.org>

**October 24, 10:00AM-3:00PM (setup 7:30AM-9AM):** Douglas County Libraries is hosting a large scale STEM event at the Douglas County Event Center that will be modeled off of a science fair with vendor booths as well as a main stage for performances. We have been invited to host a booth with an activity. The attendance goal is 1500. The target audience is ages 8-12. We could do solar observing or something else. I will contact those who sign up shortly to organize the

activity.

**October 26, 9:00AM-11:30AM:** Our Lady of Our Lourdes Catholic School in Denver has asked us to supplement their solar system curriculum by coming out to their school and doing some solar observing and/or a presentation/activity. Approximately 50 second- and third-grade students will be in attendance. I will contact those who sign up shortly to organize the activity/presentation.

To volunteer, please contact Lindsey Shaw at [external@denverastro.org](mailto:external@denverastro.org) —and thanks! ∞

## DAS Auction!

Turn Your Old "Astro-Stuff" into CASH and SCHOLARSHIP DONATIONS!

Haul your old scopes, mounts, eyepieces, filters, CCDs, observing aids, and other astro stuff to the 2015 DAS member auction by about **11 AM, on the morning of Saturday, October 24th**. We'll review the loot for a few hours, and then the auction will **start at 1 PM and last until 3 or 3:30 PM**.

Proceeds will go in varying amounts (10% minimum) to the DAS to support the Van Nattan-Hansen Scholarship Fund.

### ITEMS TO SELL OR BUY:

Eyepieces  
Ccads  
Adapters  
Lenses  
Mirrors  
Secondaries  
Filters  
Telescopes  
Mounts

Wedges  
Crayfords  
Guide scopes  
Focusers  
Motors/drives  
Books  
Star atlases  
Observing guides  
More!!!



## Farewell Reception for S&S Optika

The Denver Astronomical Society will host a farewell reception for Cathie and Tim, of S&S Optika, at **5:00 PM, on Saturday, October 24th, at the Chamberlin Observatory**, after the auction. ∞

## Writers Wanted

The Denver Astronomical Society is looking for good, volunteer writers to contribute articles for *The Observer's* "This Month's Skies."

Are you brimming with ideas about how to describe celestial events? If you are, please contact the editor, Zachary Singer, at [editor@denverastro.org](mailto:editor@denverastro.org) ∞

# 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 is a long-time member in good standing of the Astronomical League and

the International Dark Sky Association. 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 Historic Chamberlin Observatory and its telescope in cooperation with the University of Denver.

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 Ed-

mund G. Kline Dark Site Fund.

More information about DAS activities and membership benefits is available on the DAS website at [www.denverastro.org](http://www.denverastro.org). ∞



## GETTING YOUR BEARINGS

...from the editor

Capricornus and Aquarius

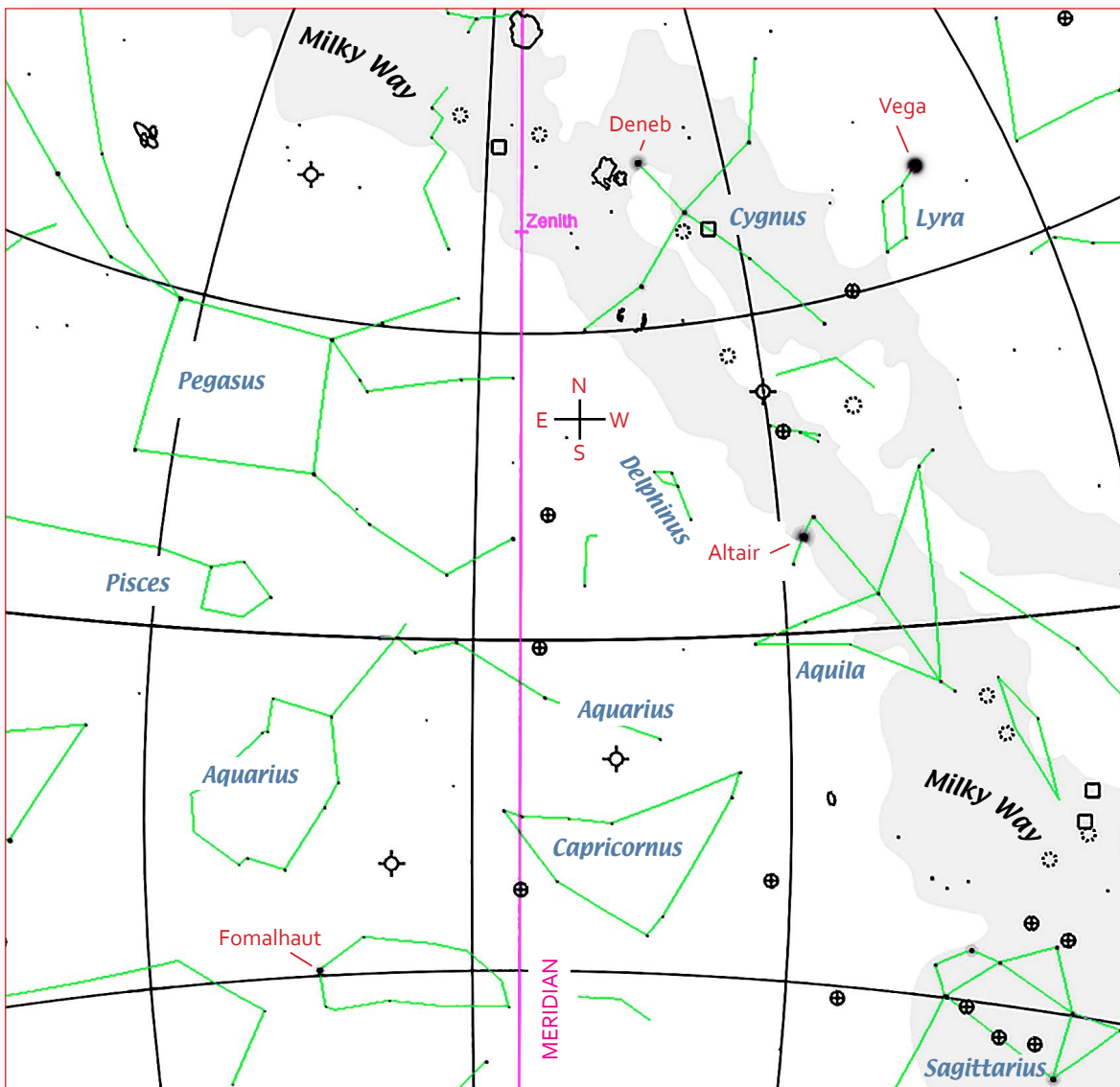
Our deep-sky targets this month are in the constellations Capricornus and Aquarius; you'll find them low in the south, spread out on both sides of the Meridian (the line running north-to-south through the highest point of our sky).

According to the old mythology, Capricornus is supposed to represent a "Sea Goat," that is, a goat with a fish's tail. At the risk of offending the ancients, though, you'll find the constellation's shape much easier to identify if you look for a "giant bikini bottom" instead. (Have a look at the star map, and you'll see what I mean!) Once you start looking for the bikini, you'll find that the challenge in finding it isn't its shape, but rather that most of its stars are so dim—most of those in the outline are 4<sup>th</sup>-magnitude at best. (The brightest ones, those at the top corners—the "bikini strings," if you will—are only 3<sup>rd</sup> magnitude.)

Knowing this, there are two ideas to keep in mind—first, don't drive yourself crazy looking for Capricornus in the city—even on a good night, most of the stars other than the "bikini strings" are likely to be washed out by city lights. The second is better news—once you're out under dark skies, you'll probably find Capricornus easily once you're looking in the right area.

To get your bearings on Capricornus, then, look for the Summer Triangle, the bright trio of stars we've been exploring in the last two issues. As you face southward around 9 p.m. this month, Altair, the southernmost in the Triangle, will be high up and off to your right in the southwestern sky—from Altair, Capricornus is "down and to the left," about halfway down to the horizon. Deneb, high up in the constellation Cygnus, is the easternmost of the trio, and almost directly north of Capricornus—along with the constellation Delphinus, it sits right above the Capricorn (or bikini) as you face south at our stated time. Heading downward from there will put you over the bikini, no problem.

Spread over a much wider area, some parts of Aquarius (the Water-Bearer) are easier to recognize than others. The western section, which represents the "yoke" by which the water-bearer carries his load, isn't difficult to learn—it starts just above Capricornus, and heads roughly



Wide view of Denver's southern sky at 9:00 p.m. in mid-October. Note the zenith marker, near the top of the chart, showing the point in the sky that is directly overhead; the bottom of the chart shows stars about 8° above the horizon.

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

northeast in a line of 3<sup>rd</sup>- and 4<sup>th</sup>-magnitude stars until it ends in a noticeable zigzag pattern. There are a number of interesting objects (some of which we'll cover in "October Skies") that make this area worth the effort.

The eastern section of Aquarius—the water jug—heads downward, or southeasterly, from there, and is more challenging to make sense of. Though the stars here aren't much different in brightness from those in Capricornus, the constellation's outline here is complicated, with lots of twists and turns. Making things harder are the many stars of similar brightness that aren't included in the outline, but which draw your eye from it, almost "camouflaging" this part of the constellation. Since the *purpose* of the traditional outlines is to help you recognize a given area of the sky, learning the outline here may be more trouble than it is worth. For now, I recommend just "hopping" from any easily recognizable feature to another in this area, and never mind the "official" outline. If you have an interest in learning it, this area will slowly reveal itself to you as you become more familiar with its nooks and crannies. ∞

## Van Nattan-Hansen Scholarship Winners

This year, two students were awarded the Van Nattan-Hansen Scholarship of \$1,500 each; Ariel Sandberg and Conner Bray. The awards were presented at the DAS August General Meeting in DU's Olin Hall. Both students were present to accept the awards. Conner Bray is a current Student Member of DAS as well as apprentice PN telescope operator. He is starting his 1<sup>st</sup> year at Colorado School of Mines in Engineering Physics. Ariel Sandberg has been a DAS Student Member in previous years and is starting her 2<sup>nd</sup> year at the University of Michigan, Ann Arbor, majoring in Aerospace Engineering. ∞

Photo © Ron Hranac



Conner Bray (center) and Ariel Sandberg (right) were this year's Van Nattan-Hansen Scholarship recipients, each receiving \$1500 from VNH committee chairman, Ron Pearson during August's general membership meeting.

## Meet Your Fellow Astronomer *by Dena McClung*

This month's column features a couple who both are members of DAS, Dave and Virginia Catlin. Dave is a surgical technician at Children's Hospital, where he has worked since 2007. Virginia earned her Physical Therapy Assistant degree, finishing her studies and practical exams earlier this summer.

Dave has been interested in astronomy as long as he can remember. At age six, he saw M13 through an inexpensive Meade telescope and was hooked. He spent many summer evenings lying on the grass and looking at the stars from the yard of his family's home near Keesler Air Force Base on Mississippi's Gulf Coast. Despite the fact that he regularly pestered his parents to buy him a telescope, they never did. Dave had to settle for looking through those belonging to other people whenever the chance arose.

Dave joined the Army at age 17, and during his time at various locations in the United States and Germany, he used military binoculars to get a closer look at what the night sky had to offer. It wasn't until 2007 that he finally bought his first telescope, a Celestron 127. As a single parent with limited free time, Dave sometimes took it up to a site on Rampart Range Road where darker skies were available. Due to the influx of dirt bike riders and target shooters, he no longer goes there.

In 2012, Dave's daughter moved out on her own, and he got aperture fever. Dave purchased a 10-inch Dobsonian from Cathie Havens at S&S Optika. While there, he learned about the DAS, and joined soon after. He has since acquired a PST for solar observing.

Virginia came into Dave's life last year, and one clear starry evening, he showed her Venus, Jupiter and Saturn through the eyepiece of the Dob, then proposed to her. They were married shortly before Christmas, and both are regulars at most DAS monthly Open House events. Virginia enjoys viewing objects through the telescopes, and

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## President's Message *Continued from Page 2*

and the rest is history. They were married in 1980 on the steps of DU's historic Chamberlin Observatory. Cathie was given away by the then-Observatory Director, Professor Edgar Everhart.

In 1982, the business moved to a strip mall at the intersection of Belleview and Broadway, which is where I first met Cathie and Tim. The store was moved to its current location at 6579 S. Broadway in April of 2008. The plan is to keep the store open until the end of October. The last S&S Solar SUNDAY was held September 6<sup>th</sup>, and the last Backyard Star Party September 26<sup>th</sup>.

I asked Cathie to sum up in a sentence or two the best part of having run S&S Optika in the Denver area for the past 43 years. She said, "It's the pleasure we get out of helping people use their telescopes, and the friends we've made."

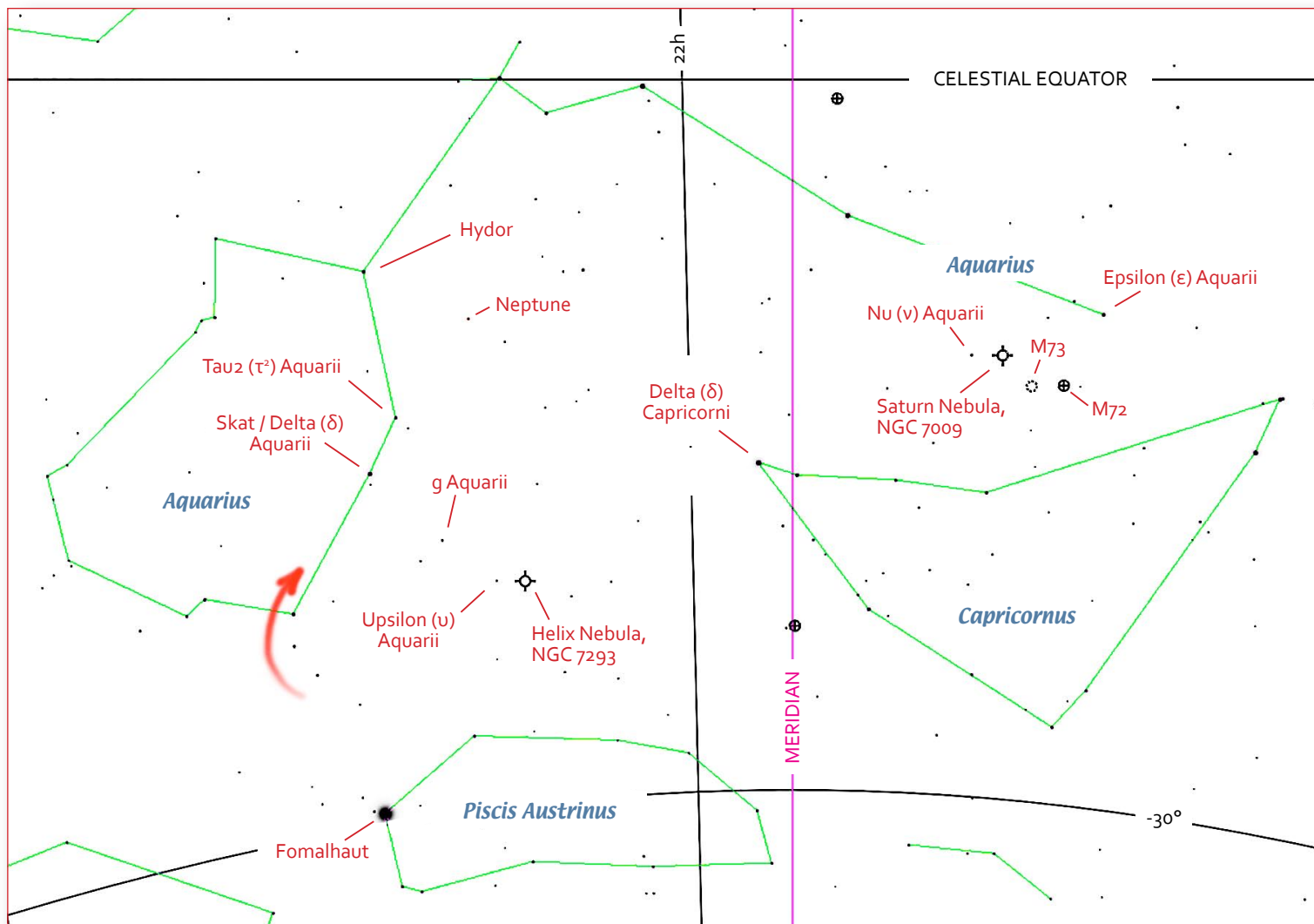
Cathie and Tim are moving to a house situated on 21 acres at 7,200 feet elevation near Quemado, New Mexico. Their soon-to-be retirement home is not far from the National Radio Astronomy Observatory's Karl G. Jansky Very Large Array (VLA).

Cathie encourages friends to come and visit once she and Tim are settled in at the new place. There is plenty to do in the area, and room to park a camper or RV. Figure about a 10-hour drive from Denver. They plan to come back three or four times a year.

If you get a chance, stop by the store and say thanks for all of their support of our astronomy hobby, and their absolutely top-notch customer service.

**\*\*\* Denver Astronomical Society plans to host a farewell reception for Cathie and Tim on Saturday, October 24th at the Chamberlin Observatory after the auction. We'll get the reception underway shortly after 5:00 p.m. \*\*\***





Section of the Denver sky in mid-October at 9 p.m., as viewed when facing south and looking about 35° up. The arrow at left shows the curving path of stars to follow when star-hopping from Fomalhaut to Skat (on the way to the Helix Nebula).

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

## OCTOBER SKIES

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out”—during the day?

When the Moon passes in front of the star at **7:41 a.m.**, they’ll be high, with an azimuth of 250° (that is, 20° south of west). *Looking directly at the Moon*, Antares will be found in roughly the “10 o’clock” position, relative to the Moon and our horizon. (A Telrad will help with aiming because of its unreversed—and un-rotated—image.) Start observing at least 10 minutes early, both to watch the Moon move toward the star, and to give yourself time to find Antares if it’s difficult.

A more certain event will occur in the predawn sky on the **mornings of the 17<sup>th</sup> and 18<sup>th</sup>**, when **Mars and Jupiter lie less than a half-degree apart**, low in the east. At 4.1”, Mars’ disk will become apparent at high magnification, but less so at the lower powers necessary to include Jupiter in the same view (think a 2/3” field to get them both in without being cramped). Jupiter’s 32” disk, though, should present itself quite well, and at -1.8 magnitude, there shouldn’t be any trouble finding it! At 5:30 a.m., you’ll have time to look before the sky brightens, and the pair will be about 18° above the horizon. (While you’re in the neighborhood, **Venus** is just 2½° away, making a beautiful naked-eye grouping with the other two planets, and a great telescopic target with a “lemon-wedge” phase and *bright*, -4.4 magnitude.)

Our deep-sky travels this month take us out to the constellations Capricornus and Aquarius, where we’ll see some planetary nebulae (which looked like planets in crude early telescopes) and, ironically, the actual planet Neptune, which will look quite star-like at low power!

Our first stop is the **Saturn Nebula, NGC 7009**, which adds another “planetary” twist by getting its name for its vague resemblance to the planet. Though it’s technically in Aquarius, (at 21h 5m, -11° 18’), the easiest way to find it is to look upward from Capricornus, “the Sea-Goat,” which for our purposes here is better imagined as the “Giant Bikini Bottom.” Once you’re familiar with the Capricornus / “Bikini” outline, it’s easy to find in *dark* skies (see this month’s “Getting Your Bearings” if it’s new to you).

When Capricornus is high in the south, a lone star of similar brightness is visible just above the bikini shape and to the right of its center—if there were a giant girl in the bikini, then this star, Epsilon (ε) Aquarii, would be at about the height of her navel, but rightward half-way to her hip (see star chart). Once you’re at Epsilon, look about 6° eastward to a star about three-quarters of a magnitude dimmer—it’s 4.5-magnitude Nu (ν) Aquarii, and if you’re in

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the right place, you'd be at the bikini-girl's belly button—centering this star will put the Saturn Nebula in your finderscope.

The nebula itself is bright, bluish and easily seen in a 6-inch telescope; and at roughly a half-arcminute across, even moderate magnification will show you a *cloud* instead of a fuzzy dot. (Its angular size is roughly similar to the planet it's named after.) A clear view this past summer, before the haze from fires, showed the nebula's overall round shape distinctly in a 6-inch scope, but it took an 11-inch Schmidt-Cassegrain to begin to show the “handles.” Both views were satisfying, and neither needed a filter.

While you're here, you can also tour **M72**, a remote globular cluster, by “hopping” southwest from the Saturn Nebula to M73 (a small, Y-shaped asterism) and then a similar distance due west to M72. Since each hop is less than  $2^\circ$ , you should see each successive object in your finderscope, in the same view as the object you're hopping from.

The **Helix Nebula, NGC 7293**, is our next destination; it lies due east of Capricornus at 22h 31m,  $-20^\circ 45'$ . Put simply, this ring-shaped planetary nebula would remind you very much of the Ring Nebula, M57, except that the Helix is closer, bigger, and—weirdly—harder to see. The Helix actually has a brighter visual magnitude, but that light is spread over a much wider area of our sky than the Ring is, so its *surface brightness* is lower.

One solution to the problem, the use of a low-power eyepiece, also takes care of a second issue—the nebula's great size. Unlike many planetaries you'll see, whose angular diameters are measured in arcseconds, the Helix is best measured in *arcminutes or degrees*—it's about 15 times the apparent size of the Ring, or about  $\frac{1}{4}^\circ$  across. (I suspect that some folks who found themselves unable to see the Helix “shot through the center” of it while looking for a Ring Nebula-sized object at high power—lost in the dim haze there, they wouldn't have realized that the glowing torus encircling the area was outside the field of view.)

At any rate, low power definitely helps—stories abound of the Helix's visibility in small rich-field telescopes and binoculars while larger telescopes suffered. Another cure, though, is a good O-III or UHC (“nebula”) filter; they were a big help on the 11-inch Schmidt-Cassegrain and 12-inch Newtonian I observed the nebula through recently.

The Helix is an interesting object, and very definitely worth a look—but unless you have a go-to system or setting circles, it will take star-hopping skills that a newbie might find daunting. If you'd like to try, the trick is to start off at Fomalhaut, a very bright (mag. 1.2) star low and to the southeast from the Capricornus bikini. Fomalhaut is the brightest star in this area by far, so it shouldn't be hard to find—the nearest star of similar brightness is Altair, nearly  $60^\circ$  away (see map).

Once you're at Fomalhaut, look toward the “10 o'clock” position relative to the star and horizon, and you'll see a curving star-pattern that bends upward, from northeastward to north (*the relative directions are most accurate around 9 p.m. mid-month*, due to the constellations' rotation, compared to the horizon, while they progress across the sky). The middle of the arc is about  $6^\circ$  from Fomalhaut—a “Telrad and a half” distance, if you want to use that for a guide. (The more-noticeable stars there are 4<sup>th</sup> magnitude or nearly so—about the same as most of those in the bikini.)

From this arc, make a hop of about the same distance, but this time in a “1 o'clock” direction, and you'll arrive at Skat, or Delta ( $\delta$ ) Aquarii, a little brighter at magnitude 3.3. You're in the right place if this star is the corner of a right angle running from Fomalhaut to Skat to Delta ( $\delta$ )

Capricorni (the bright star at the top-left corner of the bikini). Keep this positioning-check in mind to help reorient yourself quickly if you lose your way from here—we're getting close now....

From Skat, look exactly  $4^\circ$  southwest to find a dim (5<sup>th</sup> magnitude) pair of stars aligned perpendicularly to the direction you hopped from Skat. Imagine a line from Skat to the topmost star of the pair,  $\gamma$  Aquarii, and extend the line about  $\frac{3}{4}$  of the way farther to the southwest. You'll see our “locator” star, Upsilon ( $\upsilon$ ) Aquarii—center it in your finderscope, and the Helix should be visible, about halfway toward the western edge of the finder's field of view.

Our last stop, as promised last month, is **Neptune**. Currently, it's a bit over 29 Astronomical Units (AUs) from us, and the Earth is moving away from it at more than a million miles a day—but Neptune's distance is already so great that there won't be any obvious change in apparent size, even a month from now, when it's almost a  $\frac{1}{2}$  AU farther away.


Realistically, Neptune will be hard to see as a *disk* without strong magnification. At 2.3-arcseconds across this month, that disk is appears about as wide as the separation between the tighter pair in the “Double-Double,” the famous double-binary, Epsilon ( $\epsilon$ ) Lyrae. In Denver skies, 150 power is usually the *minimum* needed to split that pair, and 200X is more the norm—even at those magnifications, the pair is still tight together, and the split subtle—and so is Neptune's disk. Still, while you won't see details on the planet, its roundness and blue color should be clear enough.

To find the planet, at about 22h 37m,  $-9^\circ 35'$  mid-month, start off from Skat. From there, head in the same “1 o'clock” direction that took you to Skat the first time, and make a  $2\frac{1}{2}^\circ$  (a little more than a Telrad's mid-sized circle) hop to a reddish star known as Tau2 ( $\tau^2$ ) Aquarii (see the chart). We'll use the Skat-Tau2 line as a reference shortly, but in the meantime, head  $6^\circ$  ( $\frac{1}{2}$  Telrad-circles) “up and leftward” from Tau2 to the similarly reddish star Hydor.

If you have an alt-azimuth mount, like a Dobsonian, center Hydor and then sweep rightward/westward with your telescope until the Telrad's center is a little over  $4^\circ$  from the star. The Telrad circle should then also roughly intersect the line from Skat to Tau2—when you're there, Neptune will be one of the “stars” in your finderscope, about  $1^\circ$  below the center.

*Note that these directions are most accurate around 9 p.m. mid-month; at month's end (or an hour later at mid-month), aim downward a degree or two to put the planet in the finder; at the beginning of the month (or 8 p.m. mid-month), centering Hydor will put Neptune at just the right height when you sweep to it.*

Telescopes with an equatorial mount won't have to account for the changing angles if the mount is aligned to the polar axis, and the scope is properly oriented at Hydor. To accomplish the latter, first center Hydor in your Telrad, then use the scope's *declination* control to point southward (so Hydor seems to move northward through the Telrad circles), until Hydor rests on the edge of the outer,  $4^\circ$  circle. Then sweep westward (i.e., in right ascension) toward Neptune, until the Telrad is also lined up with Skat and Tau2, and you should have Neptune in the finderscope, regardless of the time or day of the month.

—Good luck, and see you next month. 

## Meet Your Fellow Astronomer

*Continued from Page 5*

likes seeing the variety and abundance of features on the moon.

Dave loves doing public outreach, visiting parks near his Castle Rock home at least twice a week during good weather with one or more of his telescopes, day and night. He likes the “out” portion of outreach, taking it out to the public instead of waiting for them to come to the observatory. He buys used astronomy books to give to youngsters who are particularly interested. It’s always music to his ears when he hears someone’s reaction to seeing a celestial object through a telescope for the first time, and he loves making them aware of the wonders beyond our home planet. Because he goes out so frequently, he has a 6-foot DAS banner on extended loan.

Dave has discovered that telescopes pique people’s curiosity. One such person is a park planner for the Philip S. Miller Park, in its second phase of construction near Castle Rock. The planner was so taken that he told Dave he would see if they could create an area designed to accommodate telescopes.

Dave has overcome his fear of public speaking as a by-product of doing outreach. He was at a campground near Larkspur almost every Saturday evening one summer, and he found that he had to talk to visitors until it got dark enough to begin using the telescope. This year,

Dave has participated in most of the official DAS outreach events as well.

Dave and Virginia would like to attend the Okie-Tex Star Party some year when both of their schedules permit. ∞

