

NOVA

NEWSLETTER OF THE VANCOUVER CENTRE RASC
VOLUME 2013 ISSUE 6 NOVEMBER DECEMBER 2013



Antony Overton's Legacy

by Leigh Cummings

As Council Chairperson of the Antony Overton Memorial Observatory, I find myself in awe of the amount of work that was put in to the building of the observatory in the middle of a forest. Every bit of sand, cement, lumber, siding, wiring as well as all the equipment had to be transported into the research forest. All the excavating, levelling and framing was all done by hand. It must have taken a lot of motivation and dedication for volunteers who worked all week at their jobs to spend their weekends building and equipping this project.

Antony Overton was probably the most driven and passionate of the volunteers. He led by example. He was at the site at

every opportunity. I was not a member of RASC at this time so I never met Tony Overton. I have heard that although not every

directions taken. Since then, the observatory has undergone many transformations both in equipment as well as usage.

Whatever your opinion of the issues of the day, you cannot dispute the accomplishment that the observatory is today.

Back in late July, I was contacted by a young man by the name of Shawn Brule. In his email, he told me he is Tony Overton's grandson and that he was hoping to pay a visit to the AOMO. He had just gotten married and was out west with his new bride on their honeymoon. They had never visited the West before and were enjoying taking in as much of the west as



decision made was unanimous, they Tony had a big influence in the

could. His mother had

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NOVEMBER 14

Our Past-President Howard Trotter: Adventures in Astrophotography. Room C9001 (see map on p. 4)

SFU

DECEMBER 12

Annual General Meeting with talk to follow (topic TBA). Watch Meetup for room details.

SFU

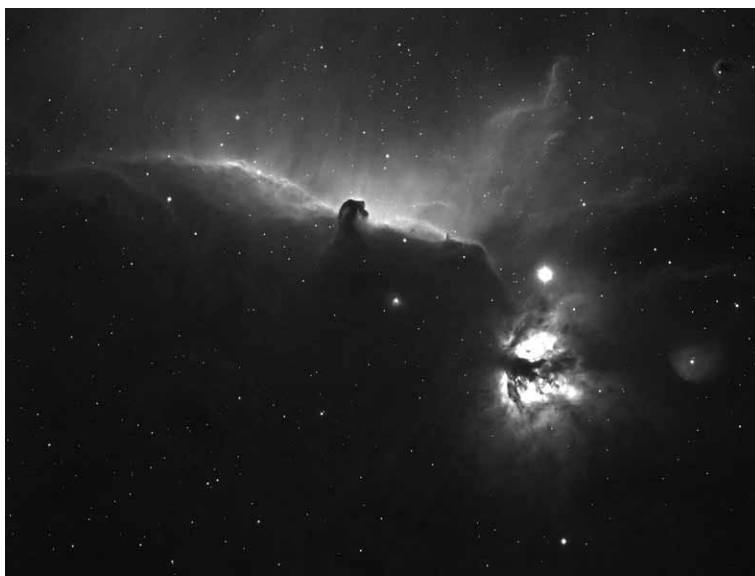
JANUARY 9

Jeremy Heyl: Introduction to High-Energy Astronomy. Room TBA

UBC



Members' Gallery



Aurora (above) and Horsehead Nebula (left)

by Mark Eburne

Northern lights last summer at Pitt Lake. Canon T1i for 30 seconds at *f*2.8, mounted on my astrotrac.

Horsehead in HA 3nm from Maple Ridge. Takahashi FSQ 106 and QSI 583ws camera.

President's Message

by Mark Eburne

Hello and welcome to the members of RASC and the public who are enjoying this copy of the Nova. I would also like to extend a special welcome to all the new members joining us for the first time. We have had a lot of new members join in the last few months and that is wonderful to see.

At the Vancouver Centre,

our membership has been fairly steady over the years with a few exceptions when major astronomical events happen. Today we find our membership somewhat diverse in age, gender and reasons for becoming a member. With our current nomadic lifestyle (where we host meetings) we get a wider audience

participation which is leading to new members' opportunities but unfortunately that comes at a cost of the consistency of our public meeting locations. Like any non-profit organization these days, finding cost-effective accommodations to deliver our primary objective—the

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About RASC

The RASC Vancouver Centre meets at 7:30 PM on the second Thursday of every month at various locations in Metro Vancouver (see page 1 for meeting locations and page 4 for maps). Guests are always welcome. In addition, the Centre has an observing site where star parties are regularly scheduled.

Membership is currently \$73.00 per year (\$41.00 for persons under 21 years of age) and can be obtained by writing to

the Treasurer at the address on page 5. Annual membership includes the invaluable Observer's Handbook, six issues of the RASC Journal, and, of course, access to all of the club events and projects.

For more information regarding the Centre and its activities, please contact our P.R. Director.

NOVA, the newsletter of the Vancouver Centre, RASC, is published on odd-numbered months. Opinions expressed

herein are not necessarily those of the Vancouver Centre.

Material on any aspect of astronomy should be e-mailed to the editor or mailed to the address below.

Remember, you are always welcome to attend meetings of Council, held on the first Thursday of every month at 7:30pm in room P8445.2 of the Physics wing of the Shrum Science Centre at SFU. Please contact a council member for directions.

2013 Vancouver Centre Officers

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Pomponia Martines
J. Karl Miller

Library

The centre has a large library of books, magazines and old NOVAs for your enjoyment. Please take advantage of this club service and visit often to check out the new purchases. Suggestions for future library acquisitions are appreciated.

On the Internet

<http://rasc-vancouver.com> or
<http://www.rasc.ca/vancouver>
<http://astronomy.meetup.com/131/>
<http://www.facebook.com/RASC.Van>

 @RASCvancouver

Mailing Address

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Maps to Meeting Sites



SFU

Our September meeting is in room C9001, at the west end of the south concourse on the 3rd (main) level of the Academic Quadrangle (indicated by the arrow on the map at left).

Pay parking is available at several locations around campus (indicated as “P” on the map).



UBC

Our UBC meeting site is in room 201 of the Hennings Building. The main entrance is off Agricultural Rd. (indicated by the arrow on the map at left). Room 201 is up the stairs and on the left.

Pay parking is available at several parkades located around campus (indicated as “P” on the map).

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advancement of astronomy—to the public will remain a challenge but a challenge that is met every month by council and volunteers alike. Efforts are ongoing to bring the best possible speakers to you and we are certainly looking forward to continuing that mandate. Through our regular monthly meetings, the sidewalk astronomy programs,

Astronomy Day events, public speaker programs and other activities, we reach thousands of people every year.

In our upcoming December meeting, the first part of the meeting will be our Annual General and the election of next year’s council. It is important to note that if you are interested in volunteering on council or know someone who is, please contact any one of our current

council members. We are always looking to include anyone who wants to contribute and volunteer their time. We will be holding our annual budget and planning meeting early in January and any member is welcome to submit ideas for the 2104 event calendar.

Changing gears a bit, here is a quick update on the national front. There has been a flurry

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of activity at other centres as well. Sometimes we forget that our membership at RASC Vancouver are part of a bigger organization with over 5,000 members in 29 centers across Canada. Be sure to visit the national website regularly and sign up for one of the national user groups and see what is going on across the country. Our national executive council have been working hard developing and managing the collective structure and they have announced there will be a National Advisory Council teleconference soon.

Closer to home, I hope you have had an opportunity to get out under the stars over the last few months and do some observing or imaging. We have had a wonderful fall this year and hopefully the weather gods will continue to provide more of the same. Of course not all nights are observing nights but there is a lot of non-observing astronomical interests to feed your astro fix. Interests such as keeping up with all the space mission launches, following the Kepler discoveries or the latest in astrophysics surprises.

Whatever it is, you can be sure these topics and more

are expanding as fast as the universe itself.

In closing, I can't believe it is that time of year again already but don't forget to get your 2014 calendar on sale at each of our meetings. There is a great selection of shirts, hats, toques and other goodies. They make great Christmas gifts for someone or yourself.

Hope to see you all at the AGM in December and under clear skies soon.

Clear Skies. ✨

– Mark Eburne
President, RASC Vancouver Centre

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suggested he seek out a chance to see the observatory that his grandfather had a big hand in building. After a few emails, we settled on meeting up on July 28th in Maple Ridge so that I could take them up to the observatory for a tour and photos.

Around 1pm on the 28th, I got a phone call from Shawn to let me know where they

were in Maple Ridge. I knew the spot, so I told them to stay there and I would come and guide them to the Malcolm Knapp Research Forest. We met at a gas station where I was introduced to his new bride, Adriane Aboul. My guiding left a little to be desired as I forgot that the bridge on 232 that crosses the Alouette River was closed. After an extended tour around Maple Ridge's farming

area, we finally got to the forest gate. I was grateful that they invited me to ride with them in their rental car the rest of the way up to the observatory, saving me from squeezing us into the Mini for a pounding trip up the hill. The trip up the hill was uneventful for me, but new and exciting for Shawn and Adriane.

Shawn was moved at the
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Membership has its Privileges!

New members, did you know? The Vancouver Centre has 8 telescopes available for loan free of charge! We have telescopes ranging from 60mm to 10" diameter. For more information see the Director of Telescopes after the members meeting. The loaner period is for one month, to be returned after the next meeting. Telescopes are not allowed to circulate outside of these meetings. You

can now reserve two different telescopes per year and use what is left at the end of the meeting anytime.

Your greatest opportunity as a member of the RASC is to take advantage of the company of other enthusiasts to increase your knowledge, enjoyment and skill in astronomy.

The best thing you can do to gain the most from your membership is to get ac-

tive! Take in the club meetings; engage other members with questions; come out to observing sessions (also known as "star parties"), and, by all means, volunteer to take part in our many public events.

For the usual observing sites and times, visit our website at <http://rasc-vancouver.com/observing-sites/> or contact the Observing Chair at observing.rascvancouver@gmail.com.

Upcoming Events

December
12 – AGM

February

1 – Paul Sykes Lecture at 8pm at SFU. William Borucki, principal investigator for the Kepler Mission, will be our speaker. Watch Meetup for details.

Triple Play

Take a bow if you can go outside and point to the constellation Lynx. I didn't think so.

The reality is that Lynx is a “celestial sphere wilderness.” It's a gangly northern circumpolar constellation, whose scattered faint stars in no way suggest the outline of the eponymous wild cat. It shares a border with Ursa Major (not the distinctive and easily-found Big Dipper portion, mind you, but the more obscure nose and front paws of the great bear) and with Gemini, Cancer, Auriga, Leo Minor and Camelopardalis. When you look into the vacant area in the midst of that group, you're looking at Lynx. A wag once remarked that it was so-named because you needed the eyes of a Lynx to see it.

So why bother with Lynx? Well, if you're a double star enthusiast like me, you'll find it rewards your patience and curiosity. Indeed, Sissy Haas devotes two full pages to 22 Lynx doubles in her book, *Double stars for small telescopes*, published by *Sky & Telescope*.

I hadn't until now spent much time exploring Lynx. But I kept coming across Lynx double

stars in the “go-to” databases I use: Celestron's *Nexstar*, Sky-Watcher's *Synscan* and TeleVue's *SkyTour*. I use *SkyTour* with my refractors. That's how I discovered “12 Lyncis.”

Ms. Haas is effusive in her praise of this object. She calls it a “showcase system.” So one early evening in mid-February, during a short break in our cloud cover, I set up my TeleVue NP-127 5-inch refractor to check it out. After engaging *SkyTour* and checking out the seeing and transparency on a couple of familiar doubles and the “beehive cluster” (M44) in Cancer, I swung the instrument over to Lynx in the high northeastern sky.

I centred 12 Lyncis using a 20mm Nagler eyepiece. This eyepiece yields 33X power in the NP-127 refractor with its 660mm focal length. Even at that low power I have no problem splitting a double in which the components are about 9.0” apart. But there was something about one of the components that piqued my curiosity—it was ever so slightly elongated. In went my 13mm Ethos eyepiece, giving me 51X. Now I was pretty

sure that this star was itself a double. I switched to a 6mm Ethos (110X) and confirmed it. There was just a smidgen of breathing space between the two tight components, but with mediocre seeing that tiny gap closed and opened irregularly. My most powerful eyepiece, a 3.7mm Ethos sealed it, however. So, 12 Lyncis is actually a *triple* star, and the freshly-split components are a mere 1.9” apart.

In the indispensable *Cambridge Double Star Atlas* by James Mullaney and Wil Tirion, author Mullaney notes that the two extremely close components revolve around their common centre of gravity in about 700 years. Apparently the orbital period of the more distant component is not known. All three lie about 140 light-years from us.

This triple system is not unique. Check out Iota Cassiopeiae next time you're exploring that region of the sky. Again, one of the components is itself a double. Perhaps the best known triple is Beta Monocerotis, although Sigma Orionis is pretty impressive, too.

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Dorothea vs. the Wizard of Occ

by Dan Collier

On October 17, the main belt asteroid Dorothea occulted a mag-11 star near Orion's head. The 46-km-wide track of opportunity led from coastal B.C. to Los Angeles, and good weather enabled a handful of observers along it to record the event. Some were successful, some not. But all observations are valuable, even negative ones (see "Asteroid Repellant" in the Nov. 2009 NOVA).

Did Phil Morris and I see an occultation? No. Why? We are asteroid repellant! For asteroid Ekard, we drove to Hope to get under the expected centreline.

Ekard veered well to the west of us but fell into the clutches of four other observers. This time we would stay in Vancouver to guard Dorothea's 1-sigma error line. Our odds of success would be less than 20%. Others on the team might get the interception and score the touchdown. Phil and I would serve as defensive ends in case the play changed direction unexpectedly. We ef-

fectively repelled Dorothea onto its centreline.

We mounted the FLI camera on my 8" LX-5 to make a drift-scan image. The idea is to make an extended exposure of the

target star.

Drift scans are tricky to plan. We timed the event by measuring when the shutter opened and closed. This was done by tape-recording the sound of the

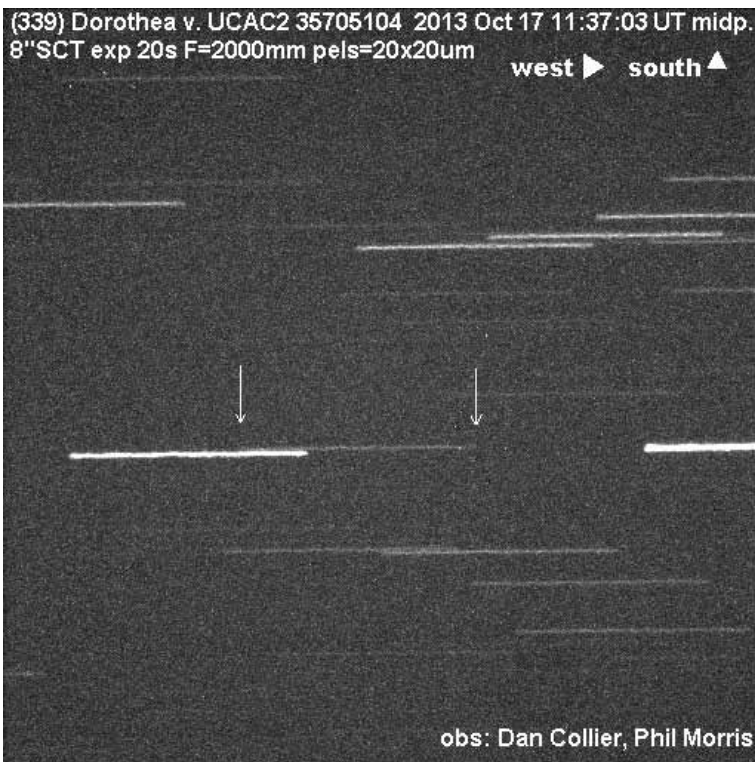
shutter along with wvv, the shortwave time signal. The onset and duration of the dimming (if any) is then worked out by counting pixels.

The exposure should be long enough to allow for the duration of the sought-after occultation and the uncertainty of its onset (for Dorothea, 8 and 20 seconds). Too

short, and the event might be caught in mid-stride or missed altogether. Too long, and the trail runs off the image and the ends are obscured. Long exposures in rich starfields also summon the spectre of overlapping trails.

Dorothea's target star would not be a star quarterback in the CFL. It threw us a bad pass. And the ref called interference

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target star with the telescope drive turned off. If the asteroid does pass in front of the star and block its light, the trail will appear interrupted. Other stars in the field are also trailed and serve as checks. If the telescope were shaky or clouds came in, all the trails would be affected the same way. If an occultation did take place, it would stand out prominently in the trail of

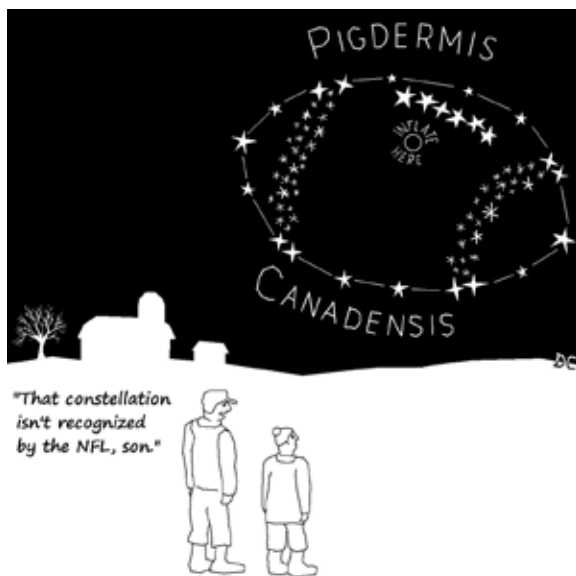
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against us too. We knew even in the huddle the play would come off poorly. Charts showed two bright field stars flanking the target, same Dec and only a few seconds apart in RA. Their trails would overlap our target if we let the exposure go too long. We chose 20 seconds and got a 30% overlap from one star. Twenty seconds was a bit short, considering the uncertainties. But we had little choice.

The major uncertainties were the asteroid's ephemeris position and the star's coordinates. The star's "error bars" (30 by 30 mas) were greater than the asteroid's (11 by 19). Since these errors add quadratically, i.e. as Pythagorean triangles, the star dominated the uncertainty equation. The error along the track delayed the asteroid a few seconds. This was good for us

because had we imaged a dimming, it would have been clear of the overlap. In cross-track terms the event was well predicted, i.e. no dimming for us, as expected.

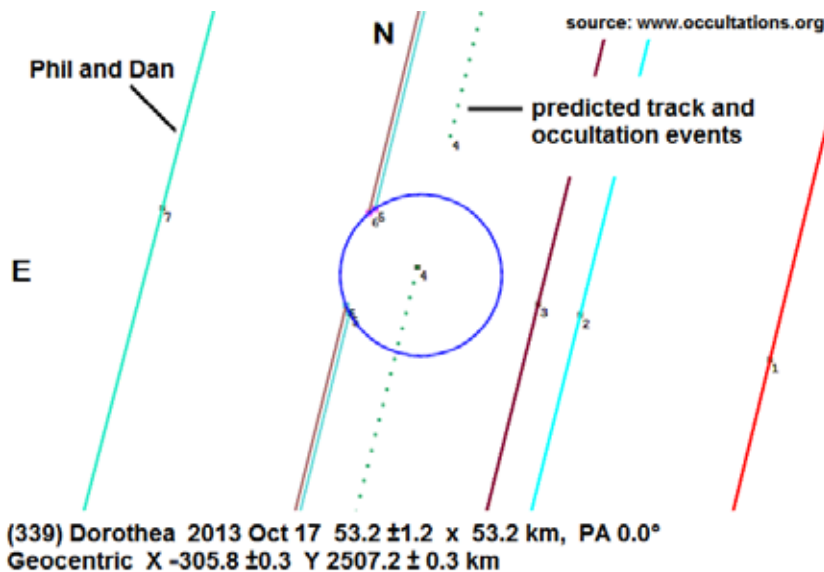
Our image is an 8-bit rendering of the FITS data from the camera. Scale: 1/8 sec/pixel (RA) by 2 arc-sec/pixel. The reader may not see it but the only trail with any dimming whatever is the target star's. That's exciting! Although we definitely did not record the primary occulta-



cartoon by Dan Collier

tion, we could have picked up the dimming of an undiscovered moon of Dorothea. A deep dropout due to a small moon could have been "filled in" by light spilling from the trail be-

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fore and after.

I attribute our dimming, about 50%, to noisy data. Another observer in the IOTA Yahoo group suggested (in jest one assumes) that Dorothea is

an inactive comet and we detected its coma. He has not seen the image. Without others to corroborate us, and our data being of poor quality, we make no claim.

It is very possible that Doro-

thea has a moon after all. Maybe you will discover it and become famous! Dorothea is passing through a rich field and may occult more stars, giving us further opportunities to look for a Toto. *

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sight of the observatory his grandfather was such a big part of. I opened up the observatory and took them for a tour of the office and then up in the dome. We didn't open the shutter, however Shawn was happy to see

everything that he could. After the tour, I took a photo of them for a keepsake. Shawn told me he hadn't seen his grandfather since his grandfather had moved to the west coast. He was obviously glad that he had decided to follow his mother's

advice and seek us out.

It was very much a pleasure meeting and guiding this nice young couple to the AOMO, especially with his family connection. I am happy I was able to be involved in his quest. *

RASC BC Jackets for Sale!

Hi fellow RASC-Vancouver members.

Council has finished work on a design for an all-weather observing jacket with logos for all the centres of British Columbia. You will be able to read all about the jacket on our web page as well

as download an order form to fill out. We will be accepting orders at our next meeting or you can mail in your order, with payment, to our Centre's address which is on page 3 and our web page as well. We can only accept cash or cheques for your orders and the

by Leigh Cummings

jacket has to be paid for before we place an order. Our supplier requires that we order the jackets in groups of 10 or more.

We will have a sample of the jacket at the meeting on Thursday night for anyone wishing to touch and see. *



Scott's ISON Viewing Guide

by Scott McGillivray

The Comet of the Century... Really? Is it a daytime object brighter than the full moon? This guide will show you where to find ISON and what rumours to believe.

It's mid-November and ISON is passing from Leo into Virgo, accelerating toward the sun. You can see it with the naked eye on the eastern horizon for about 2 hours before dawn. From the city, ISON will look like a smudge, but if you can find a dark place, you should be able to see a clear tail. On November 18, ISON will be very close to Spica and the 5th magnitude comet Encke (get ready, astro-photographers). November 21 is likely the last day to view before ISON disappears into the daylight.

Thursday, November 28 is our big day; ISON is at its brightest as it makes a dramatic turn around the Sun. The spectacle will occur between 9am and 5pm local time, so there's no better place than the West Coast to enjoy the show. On the 28th, ISON will reach apparent magnitude of

-6 to -10, which does rival the Moon for brightness, but it will be only 13 arc-minutes from the Sun, so don't expect to find your comet-shadow. The lunar-like magnitude will not continue beyond the one day event.

Observing on November 28th must be done cautiously because you're looking *very* close to the sun. Do not attempt to use binoculars or a telescope. If you accidentally get the Sun in your view, you will cause permanent eye damage. The safest and best option is to stand on the edge of a well-defined shadow; I will be using the edge of a building or a street sign. If you barely block the Sun, you should see the comet. It will sling around the sun from the South West, taking a 90-degree turn around noon and redirecting toward Polaris.

What happens in December, nobody knows for sure. Canadian astronomer/writer David Levy says, "Comets are like cats; they have tails and they do precisely what they want." Even so, most pros agree we'll have an amazing

show for the next two months. ISON will be a pre-dawn object for about a week, but it should be brighter with a much longer tail as the cold side of the comet sees its first exposure to the Sun. On December 1st, look for the moon, Mercury, and ISON together on the morning horizon. By December 10th, you should see ISON for most of the night and its tail will be at the longest, possibly stretching across ¼ of the sky. Mid December to January will be especially awesome in Vancouver, as the comet goes circumpolar, meaning it never goes below the horizon. It will move quickly through Hercules toward Polaris and can be viewed the entire night, slowly fading but easily viewed well into February. *

[Editor's note: The most recent predictions for ISON have been downgraded a fair bit, with an expected magnitude on Nov. 28 of only -2.0 and a corresponding dip in brightness for the rest of its trip through the inner solar system. Still, comets are hard to predict, so get outside and take a look!]

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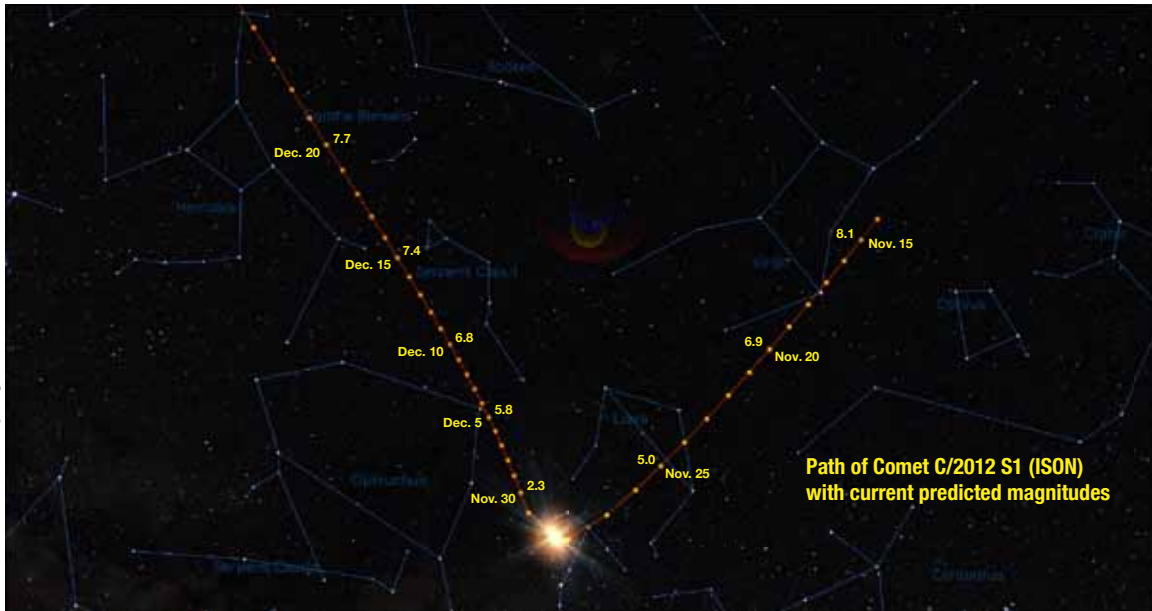
And, yes there are quadruple stars as well. Think of Theta Orionis, "the trapezium," at the heart of the Orion nebula.

To be quite accurate, I should point out that some of these doubles and triples are "optical" and not true binaries. By that I mean that the stars in question are not related to each other,

but merely lie in the same line of sight from us. Also, some of the double and triple systems have companions we can't see due to their proximity to the visible components. Castor, in Gemini, includes six or more members, but only two of them are readily visible in small telescopes. The "hidden" components reveal themselves

through the gravitational effect they have on the others, and this can be measured through spectral analysis. *

David A. Rodger is a life-long amateur astronomer and science writer. A member of the Vancouver Centre since 1967, he observes the sky from his North Vancouver townhouse.



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