

SKYNEWS



Monkey Head Nebula, by Joe Carr

Arizona 2019 - Stars over the High Desert!

Oh, what a difference 17 degrees of latitude make - AND - a whole lot of darkness in those starry Arizona skies....

In early March, a group of us joined Garry Sedun at his ranch home near the Dragoon Mountains, southeast of Tucson, for a week of stargazing and imaging. Chris and Christine Purse left Victoria a few days earlier, so they could enjoy touring the Phoenix and Tucson areas, including Kitt Peak Observatory. Joe Carr, John McDonald, Lauri Roche, and I flew into Phoenix on March 2nd, and from there enjoyed a road trip southeast to the ranch, before meeting up with the rest of the community.



Rainbow over the Dragoon Range, by Diane Bell

We came packed with our wish lists, log books, cameras, and computers. It was a good opportunity for Lauri and Chris to work on their “Explore the Universe” projects; moving closer to completing their certificate work. I came with my own logbook, star maps, an exhaustive list of NGC objects, my trusty 25x100 binoculars, and some telescope covers I made for Garry’s 20” and 25” Newtonians.

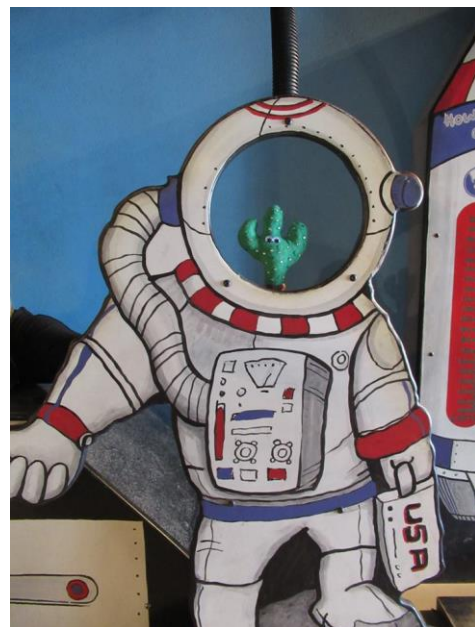
The night skies were glorious. Although there were small, light domes low on the horizon, from the nearby towns and cities, they didn’t hamper the darkness above. The stars were amazing. The crazy tilt of the constellations, at 32 degrees north, was evident. We were reacquainted with some old acquaintances, including Canopus, the second brightest star in the night sky. The southern constellations of Vela, Puppis, and Centaurus rose, almost in their entirety, as the hours passed through the evening and into the early morning. The constellations above were overwhelmed with star fields, not easily seen from our Vancouver Island skies, at over 48 degrees north. The Northern Milky Way showed forth its subtle beauty, as it flowed like a glowing river through Perseus and Cassiopeia in the northwest.

And the silence - oh, the silence through the nights - wonderfully interrupted by the coyote families that “yipped” out their conversations to each other, in the distance....

One big challenge I set for myself on this trip was to try to visually find IC 434, better known as the Horsehead Nebula. On one of our best nights, I found the target area and slewed the 25” scope. After an unsuccessful search for our object, we found an Oxygen III filter and began again, star-hopping to the area near Alnitak, in Orion’s Belt. After a star map check, I tried again with Garry and Chris’ help, scanning the area and using averted vision. I did see very subtle light and dark areas but alas, it didn’t reveal itself as the characteristic dark “horsey” patch that I wanted to see and record. A proper Hydrogen Beta filter may be on my wish list for the following year!

Some of the mornings were truly glorious. Most of us were up after 4:30am to catch the southern constellations, which were higher at this time of year. The timing of the New Moon in early March was a great advantage (we did the previous trips in mid-February), with Scorpius high on the horizon and quite beautiful, and the area around the Teapot asterism of Sagittarius showed forth its galactic treasures. The light glow of the Milky Way's centre "steamed" out of the Teapot's spout. The Messier objects and nebulae seemed to really pop in the pre-dawn sky. Jupiter, Saturn, and Venus were lovely in the southern skies. At this latitude, however, the dawn does come swiftly....

Our imagers caught some beautiful targets through Garry's 20" Newtonian. The Monkey Head Nebula (NGC 2174), the Witch's Head Nebula (IC 2118), the Jellyfish Nebula (IC 443), and a wonderful interacting galaxy cluster (ARP 270) residing in Leo Minor, were waiting for the cameras. Chris and Lauri were busy, sketching and observing constellations in their logbooks, in the evenings and early mornings. And me? Behind the eyepiece of the 25" telescope, I managed to sketch and describe seven NGC objects including a bonus: the beautiful Omega Centauri (NGC 5139) rising after midnight. On our second to last night, I also enjoyed a mini-Messier marathon, finding almost 40 objects in the evening and morning through my large bins.



We enjoyed daytime outings while we were there, including a hike through the Council Rocks area, in the Dragoon Range. We ventured into the mining town of Bisbee, near the Mexican border, before a stop in the Wild West Town of Tombstone. Chris, Joe, and I made a visit to the PIMA Air and Space Museum (*trip mascot Starlene seen posing above right*), in Tucson; while Christine and Lauri checked out the Tucson Art Gallery. As a special treat, we joined Peter and Dianne Jedicke, and some friends from the London, Ontario Centre for dinner in the nearby town of Vail. We were thrilled to meet well-known astronomers, David Levy and his wife Wendee, who joined us at the restaurant that night.

A big THANK YOU to Garry, our host, for welcoming us once again to his beautiful home and observatory in Arizona! Logbooks were filled, photons were gathered from some of the loveliest deep-sky objects, and many sky-treasures were captured from the eyepieces of telescopes and binoculars. Now it's time to unpack the memories as well....

Diane Bell

Editorial Remarks



Some RASCals fled the Canadian winter, for the starry skies of Arizona, leaving the rest of us to endure the unseasonably cold temperatures of early March in Victoria. While they were gone we did have a great Plaskett imaging session that made up for a bad run of luck suffered by the technical committee, as they continue to struggle getting our Victoria Centre Observatory up and running again. Up on the plateau of North Saanich, it wasn't until the second half of March before the ice age finally ended here and the last crystalized snow on the ground was gone. We had some beautiful weather that coincided with the full moon, which isn't at all what observers and imagers are looking for when scanning the night sky for deep space targets.

Hopefully, we'll get some clear skies for the Messier Marathon in early April. In this issue of SkyNews we have: an interview with Dorothy Paul; an article about the hunt for a different Planet X; some information on a forgotten RASC Victoria Centre telescope; as well as all the regular columns. I've even decided to include the answers to last month's crossword puzzle, just in case people were wondering if I was going to do that.

Bruce Lane: SkyNews Editor

President's Message for April



The Victoria atmosphere has finally acquired some spring like qualities. This means that it is almost time to launch the 2019 Public Outreach Season. The official kick-off takes place on Saturday, April 27th with Astronomy Day. From 10AM to 4PM the Victoria Centre will be hosting the session at the Royal BC Museum. Numerous tables devoted to all things Astronomical will be located in the Clifford Carl Hall (main lobby). Three lectures will be delivered in the adjacent Newcombe Conference Hall. David Lee, the captain of the Astronomy Day Team, has recruited leaders to organize the various tables and things are coming together nicely. From 7:30PM to 11PM, our cousins, the Friends of the DAO, will be hosting the first Saturday Star Party of the season at the Dominion Astrophysical Observatory.

RASC members will be in force with their telescopes to act as tour guides of the Universe. RASC will also have an information table in the Centre of the Universe, public outreach building. Star Parties at the DAO will be held every Saturday until September 7th.

Victoria Centre usually hosts another type of Star Party each year. The main focus of this event is an observing session directed toward the community of amateur astronomers rather than the general public. Selecting the date of a Star Party can be a challenge. It should meet the following criteria: fall near a New Moon, have a sufficient amount of darkness, avoid conflict with other nearby Star Parties and ... oh yes ... enjoy favourable weather conditions. This year the Mount Kobau Star Party, near Osoyoos, will take place between July 31st and August 4th and the Island Star Party, held at Bright Angel Park in the Cowichan Valley, will occur on the Labour Day weekend. Many Victoria RASCals are loyal attendees of the Island Star Party, so it is best to avoid having our star party that weekend. The New Moon and amount of darkness are easy to predict. It is, however, a bit trickier when it comes to the weather.



Pinwheel Galaxy (M101) by Clayton Uyeda

The saying goes that climate is what you expect and weather is what you get. While climate statistics can let you down it does reveal that the atmospheric dice are loaded. One rudimentary statistic which has proven useful in this area is the chance of 5 consecutive days without rain. The premise is that if there is no rain during a 5 day interval it suggests the presence of a ridge of high pressure that is diverting weather systems away from the area and suppressing afternoon shower activity. Using 50 years of quality controlled precipitation data from Victoria International Airport; I calculated that the chance of 5 consecutive days without rain varied from 65% on Aug 1st, to 47% on Sept 1st, to 29% on Sept 28th. These values suggest that favourable weather conditions may be more than twice as likely on August 1st than during the New Moon interval near Sept. 28th. During the last three summers, however, smoke from wildfires has frequently obscured the night skies during the July and August. Also, astronomical twilight ends at 8:43 PM on Sept. 28th, compared to 11:13PM on Aug. 1st. As a consequence, the Council is leaning towards holding the Victoria Centre Star Party from Friday, Sept. 27th to Sunday, Sept. 29th. The location will once again be the yard of St. Stephen's Anglican Church in Central Saanich ... which was rained out on Sept. 7th last year. Be wary of those climate statistics!

Cloudless Nights

Reg Dunkley

Astro Café: Monday Nights, 7:30-9:00pm



Astro Café is a weekly astronomy gathering, for both RASC members and the public alike. It runs on Monday nights, from September to May, with the last evening held before the summer break on May 27th. Astro Café is primarily a social gathering, with presentations of recent observing sessions, astronomy gear show and tell, discussions about astronomy, and of course coffee and cookies (please remember to bring a reusable mug). It's located at the Fairfield-Gonzales Community Association, in one of the portable classrooms tucked in behind the main administration building, at 1330 Fairfield Road.

This month we had some pictures from RASCals returning from their Arizona expedition; images from the Plaskett imaging session; a number of short presentations; and members showing their latest astrophotography. Our Victoria Centre president even recently held a vote to determine if a new brand of knock-

off cookies was better than the Viva Puffs, the favourite of Astro Café regulars. Needless to say, the Viva Puffs remained the brand of preference. Astro Café is a nice introduction to the amateur astronomy community of Victoria. The lights will be on and a sandwich board out front to let you know where we are.

Bruce Lane

Borrowing Telescopes

The RASC Victoria Centre has telescopes for new and seasoned observers that members can use. For more information contact Sid Sidhu at telescopes@victoria.rasc.ca

New Observers Group

Hosted by Sid Sidhu - 1642 Davies Road, Highlands. Call 250-391-0540 for information and directions.

What's This?

The once little known of, antique, Wray-Brydon telescope has been getting a bit more attention lately, since it was referenced at the Mini AGM. It's been dragged out once to the Royal British Columbia Museum for RASC Victoria's 2014 Astronomy Day and many members are surprised to learn it's ours, given how seldom we see it. It's a 100mm brass, refractor telescope, with a clock driven, equatorial mount. It was made in London, by Wray and Co., and purchased by Allan Miller in 1882 for use to observe the Transit of Venus the following year. Miller was a founding member of the Astronomical and Physical Society of Toronto (1890), the precursor to the Royal Astronomical Society of Canada. Miller mounted the telescope on an equatorial mount, powered by a clock drive, at his home observatory. He also acquired a Browning spectroscope and filar micrometer (astronomy reticle) for his telescope, making his home observatory one of the better small aperture telescope observatories of that time.

Miller is likely the first Canadian to have studied solar prominences, being advised on the subject by American astronomer, George Ellery Hale, through the letters they exchanged. Because of his extensive spectroscopic work, astrophotography, and astronomy writings, he was appointed to the National Committee of Canada for the International Astronomy Union, a position typically only held by professional astronomers.

When Allan Miller's eyesight failed him, he reluctantly sold his telescope to Bob Brydon (RASC Victoria president from 1934-35), who published several scientific papers based on his observations. At this time there were not a lot of telescopes available for members of the Victoria Centre, so Brydon let fellow RASCals use his home observatory. More than just allowing the club access to his telescope, observatory, and home; Bob Brydon was very active in sharing his love of astronomy with the local community, be it through public outreach, lectures, or talking to a wider audience via radio. The way Brydon opened up his home to his fellow RASCals, as a meeting place, will remind some people of the early days of Astro Café, when the meetings were hosted in the homes of Victoria Centre members, before Astro Café finally moved to the Fairfield-Gonzales Community Centre. It's the reason why the telescope was later renamed the "Wray-Brydon" telescope, although given Alan Miller's contributions to astronomy, it should probably be called the "Miller-Brydon" telescope. RASC Victoria purchased the telescope from Brydon in 1943, even though the telescope remained in use at the observatory on his Oak Bay property until he died in 1947. Afterwards, both the telescope and observatory bounced from home to home, across the Greater Victoria area, including a nearly 30 year stay by the telescope at the University of Victoria. At some point, before ending up at UVic, the observatory was left behind and likely fell into disrepair. The last time the telescope, with its clock driven equatorial mount, was in use for observing was 1973. In 2001, it was installed as an exhibit piece in the Centre of the Universe, the public outreach building for the Plaskett Telescope.

And there it was tucked away in the corner of the public outreach centre, mounted on a very heavy, cast-iron base that could double as freighter anchor. Five of us over-engineered it 15 meters, out of the main hall and into the lobby, where it now presides. It will be there at least until the carpet is replaced in the Centre of the Universe, in preparation for another busy season of visitors. After the carpet is done the question is whether the Wray-Brydon telescope stays in the lobby or goes back into the main exhibit hall. Personally, I think it looks quite nice in the lobby. Having never come across any receipts or appraisals of this telescope, during my tenure as treasurer, it's very difficult to fix a price to it, as was being done with wild abandon at the annual general meeting in February. There can be no doubt though that it's a piece of our Centre's history.

Bruce Lane





NGC 2024 Flame Nebula, IC 434 Horsehead Nebula, and Alnitak by Clayton Uyeda

Hill and Dale (Observing on the Island)

The Plaskett imaging night and Saturday's scheduled observing session at the Victoria Centre Observatory met in the Plaskett parking lot, and we had a Summer Saturday Star Party of our own on the Hill, but without the summer. 19 RASCals were up on Little Saanich Mountain, for a night of imaging, observing, socializing, and doing their best to stay warm. It was certainly a lot cozier in the control room of the Plaskett Telescope, which is where I was for most of the evening, after some time spent imaging on my 203mm Schmidt-Cassegrain, and using the 20" Guy Walton, Dobsonian, reflector telescope, with Sid and Reg. Hardier souls than I spent most of the night out in the parking lot with their telescopes. The skies were clear, with low humidity, and there was little to no wind. The seeing wasn't perfect, but you can only ask for so much with the cold weather we've been having. Clayton did some imaging out in the parking lot with his 150mm Astrograph Reflector and two of his pictures from that night are in this issue of SkyNews (*including the one seen above*).

Inside the Plaskett Observatory, Dan Posey gave a guided tour of the facility and Michel Michaud was our Plaskett telescope operator for the evening. The list of targets displayed on the viewing screen were: the Phantom Galaxy (Messier 74), galaxy NGC 772, Silver Sliver Galaxy (NGC 891), Little Dumbbell Nebula (Messier 76), planetary nebula NGC 1501, open star cluster Messier 37, the Crab Nebula (Messier 1), Hubble's Variable Nebula (NGC 2261), nebula M78, the Eskimo Nebula (NGC 2392), globular star cluster NGC 2419, the UFO Galaxy (NGC 2683), and spiral galaxy NGC 3486, but sadly no Ghost of Zosma due to how the telescope was configured for the evening. After Michel did some imaging for his Pleiades project, the 1.83 meter (72") Plaskett telescope was directed to the three main imaging targets of the night: the Sunflower Galaxy (M63), intermediate barred spiral galaxy NGC 3486, and lenticular galaxy NGC 3718 (Arp 214).

VCO technical difficulties persist, but I'm confident that the Technical Committee can overcome the problems that have been piled up on our little observatory. The computer died during the cold spell we had and with it we lost a lot of our data, including the software that makes the place run and the information necessary to work on the telescope's aiming. Having either the telescope's complex collimation or the computer out of commission is one thing, but having both out makes it very difficult to address either of those problems individually. Joe Carr has generously donated a computer to the cause, so now it's just a matter of reinstalling a lot of software, hopefully without having to purchase licenses again, and setting up all the necessary parameters. The Technical Committee had someone from the Comox Valley compare their identical collimation tool with our own, so they were able to rule that out as a possible problem. At the moment, it looks like we will have to ship our 16" Ritchey-Chretien telescope back to the supplier to get the unexplained collimation issues resolved. During their last meeting, to this end, the RASC Victoria Council passed a motion to pay for the crating and shipping of our telescope. Maybe, while it's gone, we can have our 127mm, Takahashi refractor mounted at the VCO, while we wait for our primary telescope to return. Now that the snow on Observatory Hill is all but gone, Bruno Quenneville and Kurt Lane have volunteered their time to get the 20" Obsession Dobsonian reflector telescope assembled; so it should soon be available for upcoming weekly observing sessions.

A reminder that the VCO belongs to and is for the use of the members of the RASC Victoria Centre, with both weekly scheduled and unscheduled sessions run by our MiCs (Members in Charge). Because it is located on NRC property, all visitors to our observatory must be on our observer list. To get on the list, just contact Chris Purse (Membership Coordinator) membership@rasc.victoria.ca and we'll see you up there on the Hill some night soon.

Bruce Lane

Monthly Meeting Speaker: Dr. Karun Thanjuvar

Deep (Machine) Learning with Neural Networks - the second industrial revolution

7:30 PM, Wednesday, April 10th; 2019 in Room A104, Bob Wright Centre, University of Victoria

Artificial intelligence (AI), especially Deep (Machine) Learning applications, are already ubiquitous and in everyday use, and have been called the second industrial revolution. Deep Learning algorithms, called Neural Networks, thrive on Big Data. The happy 'problem' we now face of enormous amounts of data available in this digital era. In astronomy too, telescopes will soon routinely produce terabytes of data every night. Piggybacked on the impressive recent advances in high performance computing, neural networks are trained on these available large datasets to then perform a variety of human-like tasks, such as real-time decision making, identifying subtle patterns in the data, forecasting and making recommendations based on experience, and so on. In this presentation I aim to provide an overview of this rapidly burgeoning field, explain in simple terms the construction and working of a neural net, and illustrate these principles with a working model.

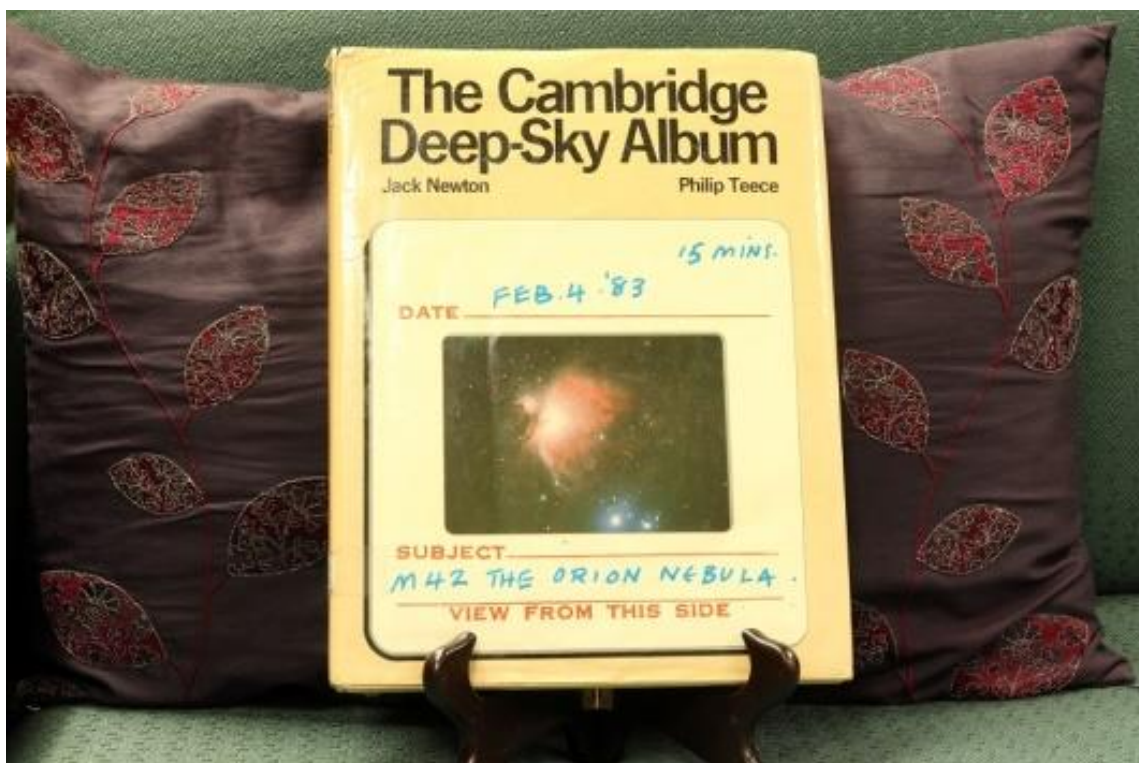
As an observational cosmologist, discovering new gravitational lenses and developing innovative techniques to harness them as observational tools are amongst my diverse research interests. As part of my doctoral thesis at UVic in 2009, I developed an automated technique to search for lenses in wide field, pan-chromatic imaging. These explorations of the distant universe come after a full career as a mechanical engineer, specializing in control systems and robotics. Born and raised in a small town in South India, I completed my education up to a bachelor's degree in mechanical engineering there, before moving to Canada to pursue graduate studies; first in Robotics, and later in Astrophysics. After my PhD from UVic, I worked as a Resident Astronomer at CFHT in Hawaii for three years, before returning to UVic to accept a position as a senior lab instructor in astronomy. Even though undergraduate teaching is the focus of my current position, I continue to pursue various research projects. I also enjoy sharing the excitement of science and my research efforts with the public through several outreach initiatives through the UVic observatory.

Dr. Karun Thanjuvar

From the Library

After our monthly meeting, feel free to join your fellow RASCals socializing in the astronomy faculty lounge, on the 4th floor of the Elliott Building, where we have coffee, juice, and cookies. It's also where the RASC Victoria Library is housed, with over 500 titles, curated by RASC Victoria Librarian: Diane Bell. Our library covers many aspects of astronomy: observing, astrophotography, telescope construction, space exploration, astrophysics, and much more. Every month, SkyNews will be featuring a new selection from our Centre's library, complete with a brief book review.

This month we're taking a closer look at **The Cambridge Deep-Sky Album**, by **Jack Newton and Philip Teece**. Philip Teece was a local author and RASC Victoria member, who passed away last October. A series of Philip's Messier object sketches, made between 1973-78, were donated to the Victoria Centre and are in our library. These sketches have also been scanned and uploaded to our RASC Victoria Zenfolio site and one of them can be seen in the last page of this issue of SkyNews. Philip Teece collaborated on a couple of his astronomy books with fellow Victoria RASCAl, Jack Newton.



Jack Newton is one of the best known amateur astronomers on the planet, a pioneer in astrophotography, and inventor of the cold camera. For some time he was a member of RASC Victoria and he was Centre President, from 1980-81 and 1990-91. These days, Jack can usually be found either at his astronomy bed and breakfast in Osoyoos or in Arizona Sky Village (an astronomy friendly community he helped found).

This book is nice read for both observers and imagers alike, with a glimpse back at how astrophotography was done just a few decades ago. There are diagrams of the cold camera that Jack Newton invented; explanations of how he did his work; as well as detailed notes for observers. There are also 126 film photos and descriptions of deep space objects, taken with great consistency of camera settings, using Jack Newton's 400mm (16") reflector telescope. Given that the pictures and observations were all taken from Jack Newton's Victoria observatory, it also serves as a good guide for deep space targets accessible for locals. It's an interesting read and one waiting for you at the RASC Victoria Library.

Bruce Lane

Better Know a RASCal

This is a series of short interviews done with members of the RASC Victoria Centre, to give you a better idea of the different experiences that other amateur astronomers have. Our fourth interview is with Dorothy Paul, who is both very active in public outreach and a long-time champion in the fight against the scourge of light pollution. Dorothy and her husband, Miles, are both very experienced observers, taking their large Dobsonian reflectors out to remote locations, both here and in the US, to view the night sky. They have done public outreach as far away as Namibia's NamibRand Nature Reserve (Africa's First International Dark Sky Reserve).



SkyNews: How long have you been a member of RASC?

Dorothy: Eleven or twelve years(?)

SkyNews: What is your first memory of doing astronomy? (with intent)

Dorothy: Interpreting "with intent" to mean "learn more about", that would be at about age 6, when my mother occasionally took us up to the top field, on our hilly farm at night, and pointed out constellations with Classical names, ones she knew. The names were familiar from the many stories we were read. She told us the other star patterns had names, too, but she didn't know them. It was a three-hundred-sixty-degree, dark sky with brilliant stars and in season, the glowing Milky Way. Not an electric light in sight – it was unfashionable to leave on outdoor lights. The experience was unforgettably-magically-beautiful and implanted my enduring love of the dark and what's to be seen in it - down below as well as up in the sky.

SkyNews: What was your first telescope?

Dorothy: That would be my current 'very own' 15" Ultra Compact (F4.2) Obsession, a birthday present in 2009. But, Miles and I share ownership of our important essentials, so I could say my first telescopes were the ones Miles acquired when he retired early to become a full-time, amateur astronomer: the Celestron SS80 we still use for public outreach, a C8 (now with a weak tripod leg, so we use it less often), and a magnificent, made-to-order 20" F4.5 Dob (now in use at Shawinigan Lake School).

SkyNews: What's your primary interest these days in astronomy? (public outreach, observing, astrophotography, etc.)

Dorothy: Observing and sketching deep sky objects, after the fun of hunting them down by star-hopping. The fainter and farther away, the more thrilling to look at and think about, once I've found them! At home, reading about astronomy, trying to semi-understand astrophysics when it's cloudy; public and school night-sky viewing when it's not.

SkyNews: What's your favourite RASC public outreach or "inreach" event and why?

Dorothy: Probably the DAO Star Parties, especially when it's clear enough to show people a few interesting objects, hear their reactions, and try to field their questions. Although, the Brownies' 'Zenith Star Party' last summer was particularly fun. It's so christened because the party took place in a small field surrounded by tall trees, so the only direction to point telescopes was up! As far as Miles and I could tell, one-hundred percent enthusiastic participation, with girls reluctantly descending the ladder after long looks and lining up again for a second look, while you and Diane were equally busy.

SkyNews: What is your favourite book on astronomy?

Dorothy: One, you ask?!! I'll take a deep breath – Brian Greene "The Fabric of the Cosmos", James Kaler "Extreme Stars - at the edge of Creation", and "Deep-Sky Wonders: A Tour of the Universe with Sky and Telescope's Sue French". Greene took me farther into the cosmos than I had ever thought to be taken. Kaler supplies lucid, tho' still mind-boggling, explanations of the lives of stars, revealing how they are actively re-shaping what's 'out there'. It's not a book to be read all at once, from cover-to-cover, rather one to return to for a refresher or to learn more about star's innards and evolution and cosmic time scales. Sue French's book is a compilation of her monthly columns in Sky & Telescope magazine, up to the time of its publication (2011), and is simply a pleasure to read regardless of how well you know or don't know the sky.

Her engaging descriptions of selected gems, ranging from single stars to deep-sky objects, visible each month, starting with binocular and small telescope views, are based on her own observations over many years, always with a smattering of history or poetry entwined. Her prose makes one (or me, anyway) want to go out and look up right away, however well I may think I know that part of the sky. It's both inspiring to dip into on cloudy nights and useful for planning ahead for future opportunities to observe. But, in the field, Tirion et al.'s "Uranometria 2000 Deep Sky Atlas" takes precedence for the game of star-hopping. And, it is hard to beat "Collins Gem Guide – The Night Sky" (later editions renamed "Guide to Stars and Planets") as best value for content/size (genuinely fits in a small pocket) and choice travelling companion, to pull out when you find yourself languishing on slow public transportation or stuck in a waiting room... That was one tough question! (*Ed: as a bit of a bibliophile myself, I can appreciate that*)



Dorothy setting up her telescope, at a windy Metchosin Star Party, by Bruce Lane

SkyNews: What's your current telescope(s) and what do you think about it?

Dorothy: It's my first (as described above) and I love it, although I've recently given myself a dilemma. I got an equatorial platform from Tom Osypowski, for tracking objects while trying to sketch them, instead of having to sprout a third arm to keep nudging the scope. Problem is, the platform elevates the eye-piece enough that I have to climb more steps on my short ladder, so now I have to pay attention to balance! Of course, I also love the views through Miles' Star Master 20" F3.3 Dob, but I can't hug it as I can my Obsession, so am saved the risk of developing aperture fever! For now, anyways!

SkyNews: How does technology figure into your experience as an amateur astronomer, beyond the telescope itself?

Dorothy: I use Willmann-Bell's MegaStar Star Atlas program for planning promising star hopping routes to deep-sky objects on my wish lists for future observing. I also use Stellarium and Voyager 4 to check what will be visible where and when on specific dates – very handy to know ahead of time for public night-sky viewing events, with their restricted hours and often horizons.

SkyNews: What is the next thing you want to do as an amateur astronomer (complete an observing list, familiarize yourself with something, observe an object, astrophotography project, etc.)?

Dorothy: Explore the deep sky visible from our favorite camping-observing sites in east-central California, around the time of the next new moon, with my Obsession, of course ... weather permitting!

SkyNews: How has being an amateur astronomer made your life better?

Dorothy: It wasn't until after I retired in 2006 and had both more time to read about astronomy, cosmology, and areas in biology not immediately related to my research, and teaching, and the freedom to get out to observe more often, that it fully sunk in how intimately connected are my loves of the outdoors, watching animals day and night, and admiring the sky. It surprises me now to realize how little I had known about the deep interconnections between the evolution of our planet and of life over the past 4.5 billion years, and how they are still sculpting our combined future history. It's a fascinating story. And still so much more to learn. In short, being an amateur astronomer has greatly enriched my indoor and outdoor life.

SkyNews: What are all the Council positions you've held over the years and what's your favourite accomplishment while on Council?

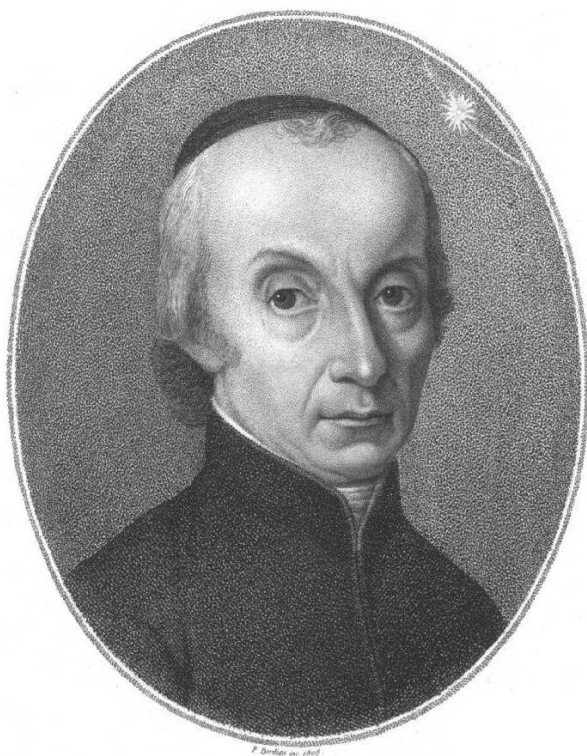
Dorothy: Short answers 'none', therefore 'none'. But, extending your questions a bit: I haven't exactly been sitting by idly and somehow fell into a habit of suggesting new ideas to Council and then having to face the consequences if they were approved, i.e., having to act on them! It started with President John McDonald's rounding up a group to prepare (or revise?) a statement about LPA (Light Pollution Abatement) for the Centre's webpage (sounded like a good idea).

Later, at the beginning of IYA 2009 (International Year of Astronomy), Sid proposed to infiltrate homes with information about the fundamental harm caused by LP to animals, plants, and the environment (and astronomy!) by making up a set of illustrated cards for children to take home for their parents of see. Sounded like another good idea, and guess whom he asked to design them in time for Astronomy Day? The first version of the Centre's flier on outdoor lighting "Are you doing your part to promote safe and healthy outdoor lighting in your neighbourhood?" followed the cards, in time for that year's Saanich Fair. And, about then, thanks to Jim Hesser, I found myself on the national LPA Committee. This turned out to be helpful when Mark Bohlman was spearheading our successful application to have Cattle Point designated an Urban Star Park, and for designing the earth and sky sections of the kiosk to explain what the USP was all about. Then, came the posters on 'light, life, and astronomy' for the Centre's Astronomy Day displays at the Royal British Columbia Museum and the Centre of the Universe (Plaskett telescope public outreach centre): A Brief History of Chronobiology and Light (a pictorial chronology of study of light, starting with Galileo); "The Electromagnetic Spectrum, Light, and Life on our Planet"; and "The Electromagnetic Spectrum – Astronomy – Exploration". Sometime along then, Council agreed that sponsoring the Vancouver Island Regional Science Fair would be worthwhile (I'm not sure, but the Centre might have been engaged with the Science Fair for a time in the distant past) and liked my idea of RASC-Victoria bookmarks for all participating students. Designing them gives me something to do during cloudy, winter weather at the beginning of each year! I learn lots of new stuff about many areas of science (and human psychology) and have fun while working on all these graphics, all the while knowing they could always be better. ... But, they do take up a lot of time!

SkyNews: Thanks, Dorothy! I've always enjoyed doing public outreach with you, whether it's a rarely occurring RASCals of Cattle Point, a local school, or a *Three Dob Night* with the Girl Guides.

The Other Planet X

With all the commiserations with Pluto, over its demotion from planetary status, I thought we should have a look at another victim of planetary size discrimination. In 1772, a German astronomer by the name of Johann Bode proposed that there could be a planet somewhere between Mars and Jupiter, based on the later discredited Titius-Bode law. This disproven hypothesis basically stated that every gap between planets moving outwards in the solar system would be twice what the previous gap between planets was. Titius-Bode Law was vindicated by the discovery of Uranus (1781) and then later discredited by the discovery of Neptune (1846), which didn't conform to Bode's solar system model. Regardless of the fact that an incorrect hypothesis began the search, the hunt for a planet in the Asteroid Belt was on. Franz Xaver von Zach, a Hungarian astronomer working in Germany, named 24 astronomers from across Europe, known as the *Celestial Police* to find the missing planet. Many of them were from the Vereinigten Astronomischen Gesellschaft, an international group founded to share observing results from their star charts. One of the 24 astronomers of the *Celestial Police* was Guiseppe Piazza, even though he hadn't been formerly invited by von Zach to become a member.



The man who discovered Ceres couldn't have been more different from the rural, meticulous, apprentice astronomer who discovered Pluto. Giuseppe Piazzi came from a very privileged home and was made a doctor of astronomy, despite never having taken any astronomy classes or having any experience as an amateur astronomer. He oversaw the construction of the Palermo Observatory the same year he was made a professor of astronomy (1787). He was also a professor of mathematics and while he had taken classes in that subject, had never published any mathematical papers. When he found the object that would become known as Ceres, on New Year's Day of 1801, he wasn't even looking for the eighth planet in our solar system. That night, Piazzi was doing observations on stars from the Francis Wollaston's star catalogue and was looking for Mayer 87, but it didn't look quite right. He had in fact discovered both Lacaille 87 and Ceres in his mistaken observations, but didn't include observations of Lacaille 87 in his notes.

After being sidelined by five days of bad weather, he was again able to make extensive observations of this "star" and on January 23rd Giuseppe Piazzi came to the conclusion that he had likely discovered a comet and quite possibly a planet. He cautiously sent just three letters about his discovery: one to Johann Bode, one to Franz Xaver

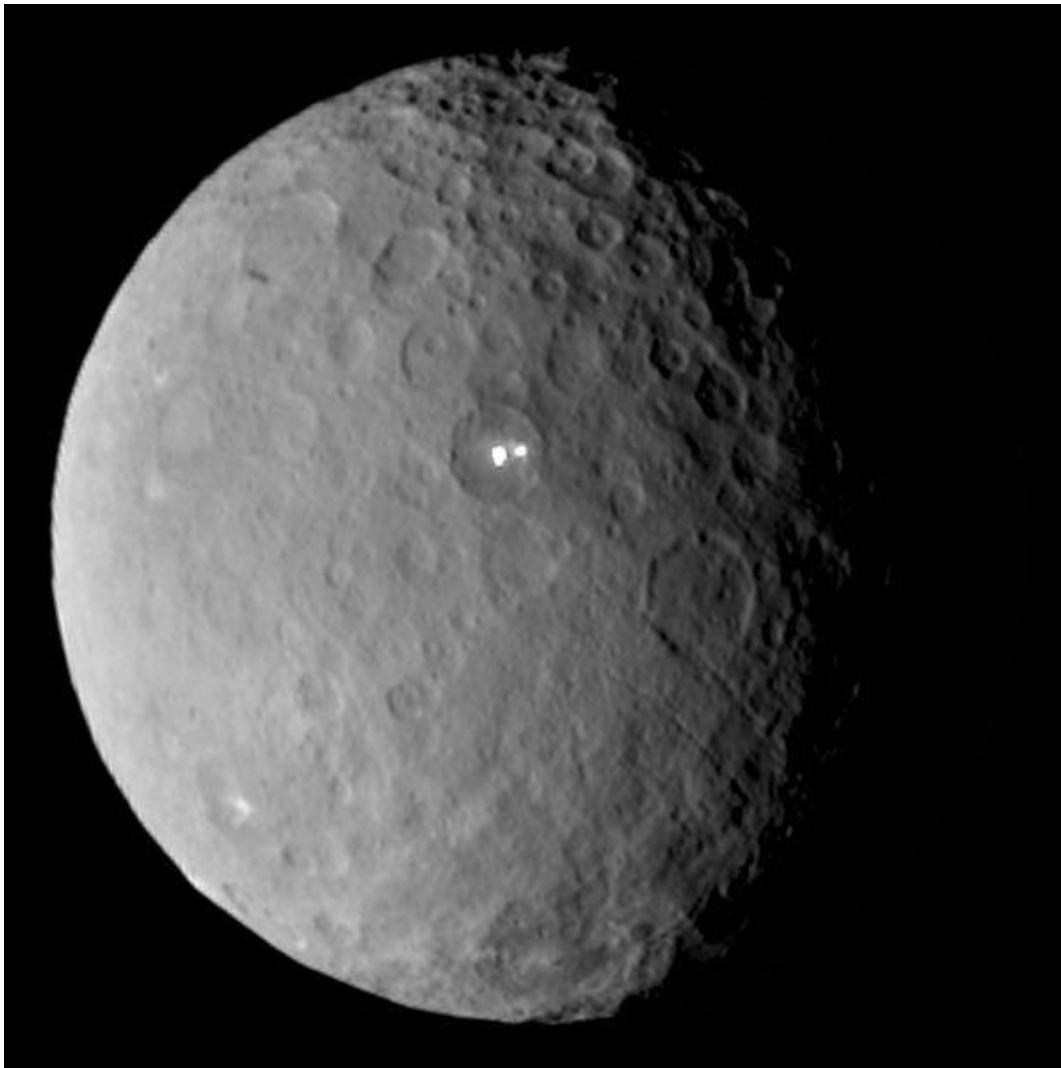
von Zach, and one to Barnaba Oriani (a close friend and astronomer in Milan). The letters took months to arrive in Germany, in part due to the Napoleonic Wars being fought during this time. Johann Bode was a bit perplexed by the lack of detailed notes in Piazzi's observations. The Italian astronomer recorded the right ascension and declination of the object, but did not record the time in any of his notes, which is very necessary to find any object in the night sky (mostly due to the Earth's rotation). While a few people have suggested that Giuseppe Piazzi kept the observation timings for himself, so he could be the one to plot its orbit, others have suggested that he just did sloppy work. It didn't help other astronomers confirm his discovery when the coordinates he gave were also off by 30 arc minutes. Piazzi had made the mistake of adding 15 arc minutes to the declination, instead of subtracting them, when calculating the difference in position between Ceres and the star he was observing. When German astronomer, Johann Karl Burckhardt got a look at the work done by Giuseppe Piazzi he was furious. He found other mistakes and was shocked that someone this careless was given control of the Palermo Observatory, home to some of the finest scientific instruments on the planet. Given that Piazzi was also working on a star catalogue of his own and the precision needed for those observations, some doubts of his ability were now circulating amongst the other members of the *Celestial Police*.

Bode had serious doubts about a comet that lacked nebulosity and the changes in observed position weren't what one would expect for a comet. Bode was both highly interested and highly frustrated, given the possibility of finding the planet to further prove his Titius-Bode law and the poor data of Piazzi's observations. It didn't help that Piazzi couldn't find the object again that he had discovered at the beginning of the year, both due to lengthy illness and the tilt of the planet. Given that Ceres wasn't available in the night sky for a lengthy period of time, the same way other planets aren't always observable, even using a much more modern telescope it wouldn't have been seen. That and its orbit hadn't yet been mathematically calculated, to allow someone to predict its position, until Carl Gauss got his hands on Piazzi's revised data. On December 8th of that same year, using the predicted orbit created by Gauss, Franz Xaver von Zach rediscovered the object that would later be known as Ceres. This, combined with additional observations, were enough proof of the discovery of a new planet, in the gap between Mars and Jupiter. Piazzi wanted to name it Cerere Ferdinanda, after both Ceres and to honour Ferdinand III of Sicily (patron of the Palermo Observatory), but the partisan name wasn't accepted by the international astronomy community. The planet Ceres was now a fact in the scientific community.

Sir William Herschel was one of the first to take aim at reducing the planetary status of Ceres. Even using the most powerful telescopes, this new planet visually appeared to be more like a star than a planet; with no disc seen as was the case when observing other planets. A year after Ceres was first discovered, Herschel suggested that a new designation, *asteroid* ("star-like"), be used, but the term was rejected outright by the astronomy community. With the discovery of other tiny worlds in the Asteroid Belt, like Phaeton and Vesta, the scientific community eventually concluded that there was a big difference between the tiny planets, located between Mars and Jupiter, and the larger planets of our solar system. By the 1860s the term *asteroid* was in regular use to describe these tiny planets. One can only assume they took so long to bring the term back into usage, because they were waiting for William Herschel and his sister Caroline to be both long dead, and his son John Herschel retired, to avoid hearing "I told you so".

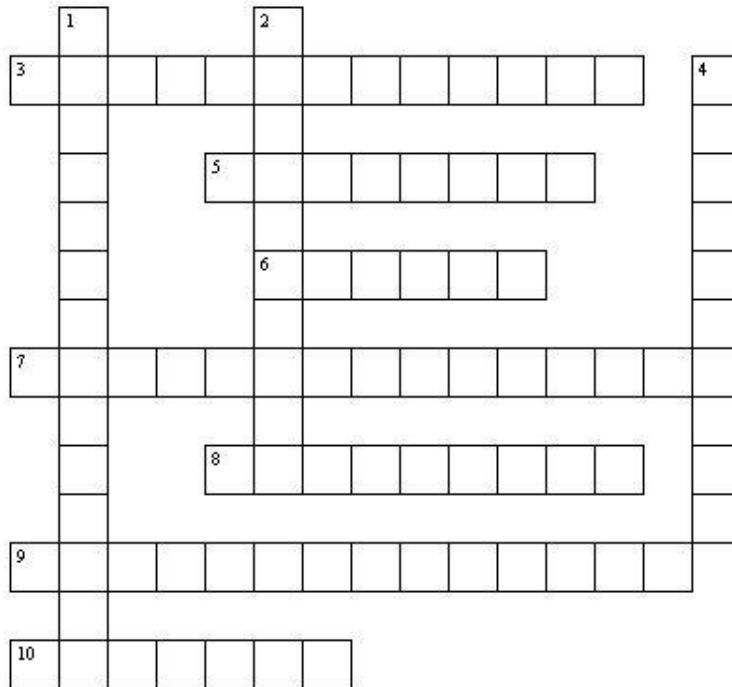
After half a century enjoying the lofty status of a planet, Ceres was now just a large asteroid. Of the over 150 million asteroids in our inner solar system, counting those over 100 meters in diameter, Ceres was now just the biggest rock on the rock pile. The status of Ceres would eventually become entwined with that of Pluto. In 2005, a proposal was submitted to the International Astronomy Union to make Ceres a planet again. Instead of being fully reinstated as a planet, the designation of dwarf planet was created the following year. Ceres joined Pluto (*thanks a lot Ceres*) and Eris as the first of the reclassified dwarf planets in our solar system. Given its history, I have a feeling that this won't be the last time Ceres or Pluto have their status changed by the International Astronomy Union.

Bruce Lane



Ceres, imaged from NASA Dawn Mission on February 19th, 2015

April Astro Crossword



Across

- 3) Messier Object in Pisces
- 5) Name of a dwarf planet
- 6) Name of current Vice-President for RASC Victoria Centre
- 7) Target from last Plaskett RASC imaging session
- 8) Type of telescope
- 9) Enemy of astronomers
- 10) Location of Jack Newton's bed and breakfast

Down

- 1) One of Dorothy Paul's favourite destinations
- 2) Name of a German astronomer
- 4) Name of a historic telescope in Victoria



Three Day Old Moon, featuring Mare Crisium in the middle of the crescent, by Bruce Lane

March Astro Crossword Answers

Across 2: Colour of Neptune, when viewed through a telescope is **blue**; **Across 7:** **Vesto Slipher** discovered galaxies were predominantly red shifting away from us; and **Across 9:** **Dava Sobel** is an author quoted in several recent Astro Café presentations

Down 1: **Messier** List is of deep space objects that aren't comets; **Down 3:** **Orion** is a prominent constellation in the southern sky at night these days; **Down 4:** **Collimation** is aligning mirrors or lenses of a telescope; **Down 5:** Pluto was discovered from **Mars Hill**; **Down 6:** An **astrograph** is a type of telescope used for photography; **Down 7:** Joe Carr's favourite cookies at Astro Café are **Viva Puffs**; **Down 8:** **Plaskett** is the name of a local 1.83 meter telescope

Astronomical Term of the Month: Differential Flexure

When using an auto guider, to keep a telescope on target for longer exposures, if there are any differences between the guiding telescope and the primary telescope this is referred to as "*differential flexure*". This can be caused by the two telescopes and their components being affected differently by the effects of gravity, in their mount attachments, as they track objects across the night sky. How the two telescopes are attached to the mount, how their components are mounted, and even mirror shift can mean the difference between a blurry image and a sharp one. To put it into perspective, the differential flexure between the guiding and primary telescopes can be off by a fraction of the thickness of a human hair to begin giving you imaging problems.

The previous 14" Schmidt-Cassegrain telescope at the Victoria Centre Observatory used an auto guider, so this was a factor that the Technical Committee had to contend with. The 16" Ritchey-Chretien telescope, we currently have at the VCO, has an off-axis guider, which uses the primary telescope for guiding, eliminating the problems of differential flexure. It also allows much fainter stars for guiding, because the off-axis guider is looking through the primary telescope. If you're dealing with mirror shift issues, a problem that catadioptric telescopes sometimes have, an off-axis guider isn't going to help correct for that.

Bruce Lane

In Closing



It's finally feeling a lot like Spring, a time when a RASCal's thoughts turn to the night sky and probably some yardening. It's a special time of year, when you can go out under the night sky for a few hours before midnight and not have to dress like you're on a polar expedition. For fair weather observers, it's time to peak out of doors and for everyone a chance to get their last look at the Orion Nebula, before it disappears into the sunset. It's also the time of year where the pace of public outreach really starts to pick up, especially between Astronomy Day and the Saanich Fair on the Labour Day weekend.

Speaking of increased activity, the Messier Marathon is right around the corner (April 6th) and if the weather behaves, we should see a small herd of Dobsonian reflectors and other telescopes up on Little Saanich Mountain. Astronomy Day is also fast approaching, with RASC Victoria setting up shop for the day at the Royal British Columbia Museum on April 27th. That night, we'll also be up on Little Saanich Mountain for the first of the year's FDAO Summer Saturdays (although they might need to rework the event name if they keep expanding how many weeks into spring and autumn it goes).

Bruce Lane: SkyNews Editor

Photography Credits

Page 1: NGC 2174 (Monkey Head Nebula): image taken at Sedun Observatory in southern Arizona, on 2019-03-05, by Joe Carr. L,R,G,B taken with a Moravian G2-8300 MARK II CCD camera through a 20" Newtonian Astrograph mounted on a Paramount ME. Images Plus 6.5 used to process images using mono CCD routines, with t-shirt flat frames applied, BP 400. No dark or bias frames applied; some additional contrast stretching using ACDSee Photo Studio development.

Page 2: Rainbow over the Dragoon Range, by Diane Bell; March, 2019

Page 3: Starlet (trip mascot) at the PIMA Air and Space Museum, by Diane Bell; March, 2019

Page 3: Crop of Bruce Lane (SkyNews Editor) at 2013 RASCal Star Party in Metchosin, by Chris Gainor

Page 4: Crop of Reg Dunkley (RASC Victoria President) at 2018 AGM, by Joe Carr

Page 4: M101; from Plaskett parking lot with 150/750 Skywatcher Astrograph/Canon Eos Rebel sl1; ISO 3200, 30 X 60s lights, 20 darks, 27 bias, no flats; March 9th, 2019; by Clayton Uyeda

Page 5: Photograph and Design of Astro Cafe Mug, by Joe Carr

Page 6: Wray-Brydon Telescope in Centre of Universe Lobby, March 9th, 2019; by Bruce Lane

Page 7: NGC 2024 Flame Nebula, IC 434 Horsehead Nebula, Alnitak; from Plaskett parking lot with 150/750 Skywatcher Astrograph/Canon Eos Rebel sl1; ISO 3200, 45X60s lights, 20 darks, 27 bias, no flats; March 9th, 2019; by Clayton Uyeda

Page 9: Posed Book, "The Cambridge Deep-Sky Album, by Jack Newton and Philip Teece", taken in UVic Astronomy Teacher's Lounge on March 13th, 2019, by Bruce Lane

Page 10: Crop of Dorothy Paul at Astronomy Day, May 14th, 2016; using Casio Exifilm EX-Z850 camera, RASC Victoria Centre Zenfolio photographer unknown

Page 11: Dorothy setting up Dobsonian reflector telescope at Metchosin Star Party, taken by Bruce Lane; July 28, 2017

Page 13: Portrait of Giuseppe Piazzi, image from Smithsonian Gallery Library (public domain), engraving by F. Bordiga; created December 31st, 1807

Page 14: Ceres-Dwarf Planet: image made from stacked photos by NASA Dawn Mission on February 19th, 2015 from distance of about 46,000 kilometers, with a resolution of 4km per pixel.

Page 15: Three Day Old Moon, featuring Mare Crisium in the middle of the crescent; March 9th, 2019, by Bruce Lane. Taken with Canon Rebel T7i, through a 203mm (8") Schmidt-Cassegrain telescope, with a focal reducer-flattener

Page 16: Snow Chickens in North Saanich; March 3rd, 2019, by Bruce Lane

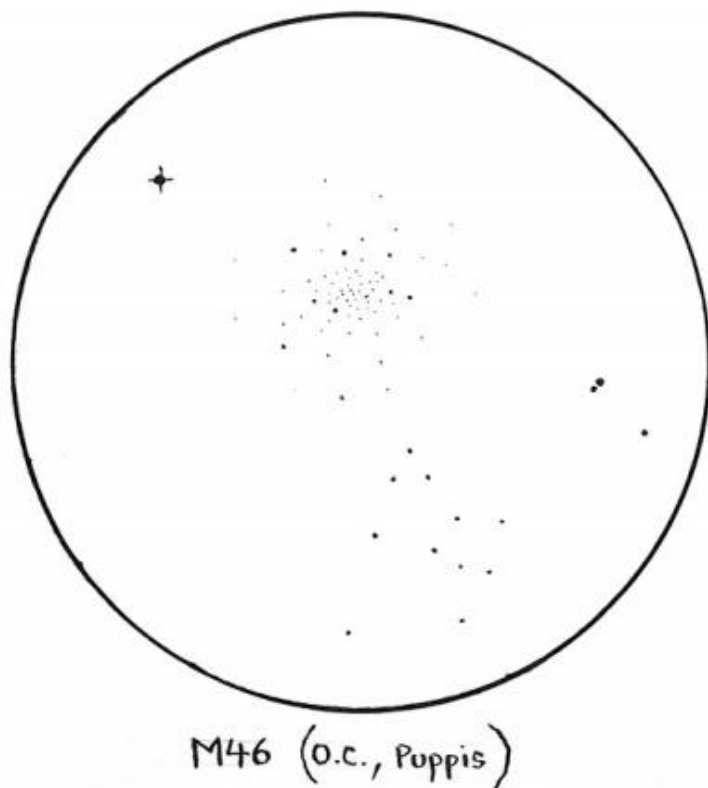
Page 18: Sketch of M46, by Philip Teece, January 19th, 1977.

Call for Article and Photo Submissions for May Issue

SkyNews is looking for submissions of astronomy photos and articles for the May issue of our Victoria Centre's magazine. Send your submissions to editor@victoria.rasc.ca

RASC Victoria Centre Council 2018-19

Position	Name	Email
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President	Reg Dunkley	president@victoria.rasc.ca
First Vice President	Awaiting Occupancy	vp@victoria.rasc.ca
Second Vice President	Awaiting Occupancy	vp2@victoria.rasc.ca
Treasurer	Deborah Crawford	treasurer@victoria.rasc.ca
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Nat RASC Anniversary Wrkg Group	Dr. James Hesser	james.Hesser@nrc-cnrc.gc.ca
FDAO Liaison	Laurie Roche	
UVic Liaison	Alex Schmid	
Observing	David Lee	Li-Ann Skibo
	Dan Posey	John McDonald



OBJECT: M46
 DATE: 19 Jan., 1977
 TELESCOPE: 5-in. f/5
 refractor at 20x.
 REMARKS: A very
 complex field. At 20x the
 cluster is a faint mist of stars.
 M47 lies just outside this
 field to the west (on left
 in this inverted-image
 drawing.)
 (NGC 2438 glimpsed with C-90,
 Feb '85)
 P.T.

From the RASC Victoria Centre Collection of Messier Sketches by Philip Teece