

SKYNEWS



Dragonfly resting on Tea Rose, by Bruce Lane

RASCals in the Garden

Between astronomy events being cancelled, reduced hours of darkness, and being in a solar minimum (for those of us with solar observing/imaging setups), June has been a pretty quiet time for amateur astronomers. For RASCals with gardens and yards to manage, it's the complete opposite. After nurturing plants from seeds, gardens have been planted, and it's now time for a constant cycle of watering and weeding; that and wondering what varmint has been using your garden as an unauthorized salad bar and taking appropriate counter measures.

With people worried about food security and being stuck at home more than they're used to, gardening has been one of the most popular hobbies during the Lockdown. Apparently, I picked the wrong year to decide to back off on gardening. I gave some consideration to growing tomatoes this year, but decided I was too busy and needed a year off. Prices for grown plants, chickens, and other agricultural purchases for your *Apocalypse Home and Garden* have been much higher than normal and seeds were in short supply, often only available on back order.

In the *SkyNews* editor's North Saanich yard, the rose garden is in its full glory and while the fruit trees, herbs, and potatoes look healthy, everything else is having mixed results. The peas, corn, and sunflowers were annihilated in the smaller garden patches, shortly after planting, once taken from the safety of the indoors. The *rascally* rabbit (seen right), is among the leading suspects. These days, after work I'm outside with the chickens, clearing brush, and pulling bindweed out of the garden. As companion plants go, bindweed is a bit on the undesirable side, and returns with a vengeance after every rainfall. Here in the forested realm of insufficient light, we're usually two weeks behind the growing season enjoyed by the rest of garden city of Greater Victoria.



I can see imprints in the grass where the deer are sleeping beside the high fence of the main vegetable garden; in one case using the garden fence post as a back rest. If they sleep in our yard and carry out their Viking raids on the neighbour's gardens, we may yet see some produce from all of this. Now that the bird nesting season is done with, I can start moving some of the existing piles of branches they were hiding in and get a bit more enthusiastic about brush clearing. I'm not saying that I haven't been mowing my lawn a lot, resulting in an extended *No Mow May*, but I'm beginning to think some of my neighbours are starting to mow their lawns more regularly as an act of passive aggression.



Jim Hesser has been growing basil and tomatoes (*seen left*). In his own words:

Over the 42 years we've been in our Gordon Head home, our miniscule lot has become very shady and the area's deer population has exploded. Saanich bylaws don't allow for fences high enough to keep the deer from the neighboring properties out, so vegetable gardening has gone by the wayside, with one exception. In tune with our COVID 19 topsy-turvy world, I'm attempting to grow some tomatoes and basil plants on our deck, in an upside-down planter, around which I can arrange some deer fencing. Maybe we'll have some home-grown tomatoes by late August.

Our Centre's treasurer, Deborah Crawford, has been giving balcony gardening (*seen right*) a try:

Taking advantage of the long days, fear of a disrupted food supply, and in between working on RASC Victoria Centre 2019 CRA charity return, I have nurtured (more or less) a semi-indoor vegetable garden. I am not sure how all of this is going to work out for some of these plants (lettuce is easy). I am growing 2 types of tomatoes, 2 types of lettuce, peas, zucchini, cucumbers, delicate squash, broccoli, miniature sweet peppers, green onions, Swiss chard, and beets.



Out in Metchosin, when not behind a telescope, either at home or out at Pearson College, Bill Weir can often be found gardening:

Gardening has been a hobby of mine for pretty much my whole life. In our household, I'm the vegetable gardener and my wife does the non-edible plants. While I do enjoy the planting, tending, and how it all looks, the aspect of gardening that's a big draw for me is the creating of these spaces. I grew up in a home where my artist father had created a uniquely beautiful garden space. Because of this, it seemed natural for me, after my wife and I bought our chunk of land in the hills of Metchosin, to want to do the same. Our little project has taken over three decades. This is partially because of the scope of the project but also because as you build an area then it requires maintenance. Then there is the "Oh I think I'm going to change that" feeling that regularly happens, but it's mostly done. I remember, about fifteen to twenty years ago, talking to the original backhoe operator when he was standing in our driveway. We'd gotten him in to push back the hillside, from close to the house as well as carve out some terraces, to match an initial drawing I'd made. He kept straining to look past a trellis covered in honeysuckle to see into the back of the house. He eventually said, "do you mind if I go have a look? I thought you two were nuts when I drove away from here." We probably were a bit nuts or at least a naive young couple in their early twenties. He'd left a pretty nasty scar carved into about one third of an acre around our house. From doing rock work growing up I had the idea it would take years. On the other hand, my wife thought that in the three weeks we had booked for vacation we would pretty much get it done. This I think was back in 1986.



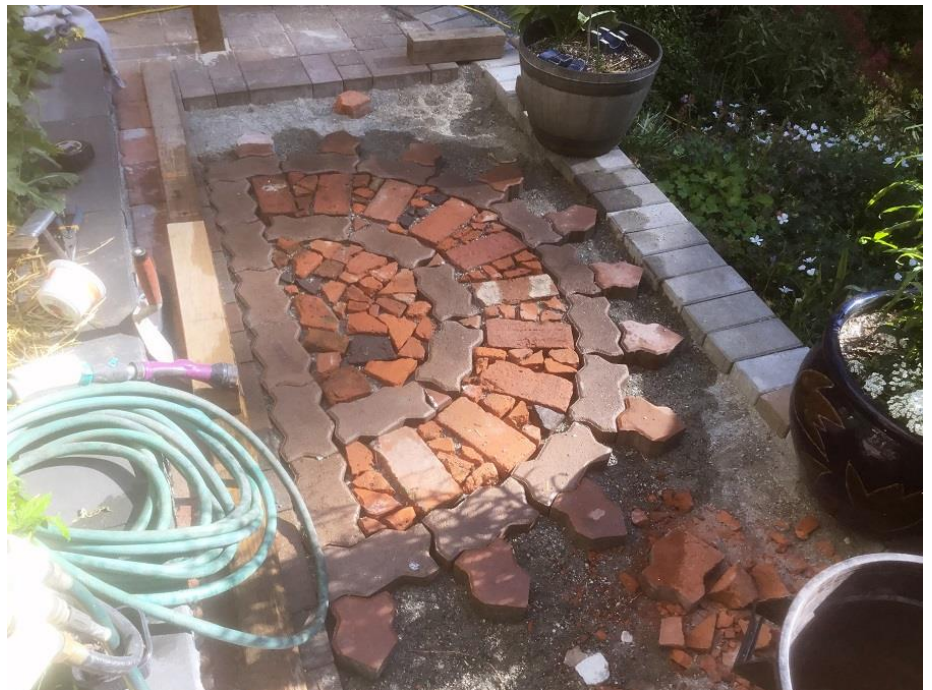
The first photo shows a similar shot of part of the yard comparing about 3-4 months into the project and now.



And now it's the spring of 2020 and I've finally made it into a space I've wanted to refine for years. It's always been something like a greenhouse that eventually rotted down. Then the base turned into a ghetto raised bed for years, surrounded but weeds. Now it has big plans. Over the years, I've been collecting bricks. First it was the big pile of antique ones that I collected from the Royal Jubilee Hospital, when they demolished part of it back in the 1980s. Then there are the interlocking thermal ones that came out of the house when we did a renovation. There are also chimney bricks from the same renovation. Finally brick paving stones were added to this pile, about five years ago, when a sunroom/granny suite took away a large portion of a patio from the back of our house. It was a big pile of bricks. Oh, I almost forgot to mention the about a dozen left over

decorative wall blocks my father in-law had made, to build a wall on their property. I found them when I moved my in-laws to our place.

A covered raised brick bed was built with bought wall blocks. Then a retaining wall was built with the antique bricks and the chimney ones, in combination with rocks found in the forest on our property. Finally I was left with what to do with the flat space surrounding the bed. Space is an operative word here. As pavers were placed along the two narrow sides along the bed, the undone largest area became a box. I decided a pattern was in order for this space using the interlocking brick. Again, think space. The final design sort of created itself. It started out as a rather rigid, straight geometric set of lines, but as I stood on a garden level above it, the shape showed itself to me when I looked down at it. Curves and a galaxy was born. The best part is when my wife looked at it. Her response was, "I like it. I didn't like the first one". The area isn't even finished and she's already moved in some chairs, as this area gets the last of the Sun on the property. On the other side of the bed I should be able to do a setting Sun. Not sure, as I haven't gotten that far yet. I don't work fast, because I don't have to.



I asked Dorothy Paul, author of our feature article for this issue, if she had anything to add to a collaborative article about gardening. Ever true to her dedication to fighting light pollution, she sent me a copy of the Victoria Centre's poster on light pollution (see next page).

Bruce Lane

The Royal Astronomical Society of Canada – Victoria Centre

Best Lighting for Yards and Gardens

Day: Sunlight

Night: Moon – Starlight

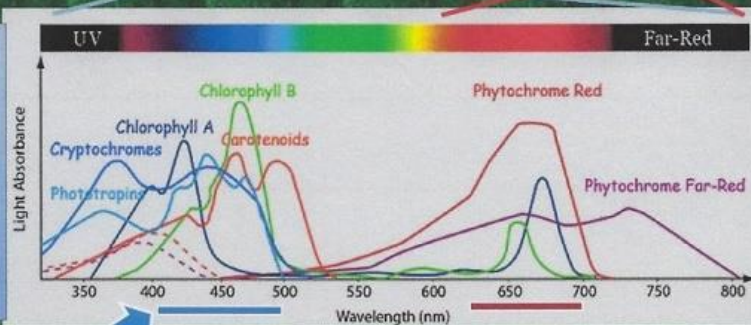


Plants use

Blue & Red

- > for *photosynthesis* &
- Blue, Red & Ultraviolet
- > to sense photoperiod in daylight hours

Ultraviolet strongly attracts insects



The **blue in sunlight** keeps the *circadian clocks* in all organisms, Plants and Animals, in tune with daylength as seasons change through the year

Plants require Continuous darkness for *vegetative growth* during the night



Night tells many animals when to eat, to sleep, to hunt, to migrate, or to reproduce. At least half of all life starts daily activities at or after sundown.

Artificial light at night:

- > Blinds nocturnal pollinators
- > Disrupts predator-prey balance
- > Breaks food chains
- > Reduces biodiversity
- > Weakens ecosystems

Result

Unstable, easily-perturbed environments

Blue at night

- > blocks melatonin production
- > disrupts biological rhythms in all species, harming their health and ability to adjust to the annual cycle of seasons
- > disrupts activity of nocturnal pollinators (moths, beetles, other insects), which reduces flowering, fruiting, and reproduction in plants
- > Changes behaviours of many nocturnal and diurnal vertebrates (birds, reptiles, amphibians, mammals, fish)

Red at night interferes with plant growth; disrupts bird orientation

Leave leaf litter wherever possible* because it:

- ✓ Moderates ground and subsoil temperature fluctuations winter and summer
- ✓ Shelters insects, spiders, and other invertebrates that are food for birds and mammals
- ✓ Shields from stray artificial light the eggs, larvae, and pupae of butterflies and moths (pollinators of next season's flowers)
- ✓ Returns nutrients to the soil

* Remove leaf litter only where necessary for safety on walkways and steps.



Best Light for yards and gardens?

But, when mounted lights are needed, use

- > Amber–yellow lamps (colour temperature 2700 K, or lower if available)
- > Fully shielded fixtures mounted as low as possible & pointed down to prevent light spread beyond path (may need extra baffle)
- > Infra-red motion sensors or time of night controls adjusted to minimize



See recommendations for lamps and fixtures in flier on *Safe and Healthy Outdoor Lighting*
victoria.rasc.ca/night-lighting



Editorial Remarks



Having gardening as the subject of the lead article might feel like an unusual choice for a newsletter for amateur astronomers, but even without all the closures to public activities, the weeks around the summer solstice tend to be times of low astronomy activity. Going a bit off topic like this, reminds me of the series of short presentations, given by Victoria Centre members at Astro Café, focusing on what other things they do as hobbies. It was an enjoyable segment for Astro Café that ran for a number of weeks, where for a few minutes on a Monday night, those in attendance got to enjoy their own version of *Better Know a RASCal*. This year, it's very trendy to have an *Apocalypse Garden*. I say *Apocalypse Garden*, because calling it a *Victory Garden* doesn't quite have the right sound to it. Next month, we'll be back with a lead article more appropriate to a newsletter about amateur astronomy, probably be something about hunting and gathering.

In this issue of *SkyNews*, we'll have more recaps from our Centre's activities, an essay about deep space observing by Dorothy Paul, as well as all the astrophotography and articles you've come to expect from the *Victoria Centre SkyNews*.

Bruce Lane: SkyNews Editor

Astro Café: Now Online

The weekly social gathering of amateur astronomers on Monday nights, known as Astro Café, is now online. As with many groups, we're trying to find ways to still function as a Centre, without meeting in person. Members are posting their astrophotography, short articles, as well as links to astronomy stories from the Web. Sadly you'll have to make your own coffee and the only cookies are those your browser picks up when you visit our website. You can access the *Virtual Astro Café* at:
<https://www.victoria.rasc.ca/astronomy-cafe/>

The last Astro Café of the month got the additional access treatment of being made into a UTube video, you can find the link to on our RASC Victoria website or in the email that was sent out to our Centre members. Joe Carr gave a presentation on the various methods of recording your astronomy observations, Randy gave a preview to a talk he's planning next week about "noon shadows". Chris Purse mentioned the RASCanada UTube channel that hosts a lot of astronomy content and pointed out some highlights. Reg Dunkley closed the evening with some highlights from the Astro Café page of astronomy being done by people outside the Victoria Centre.

Bruce Lane





Behind the April Planet Parade

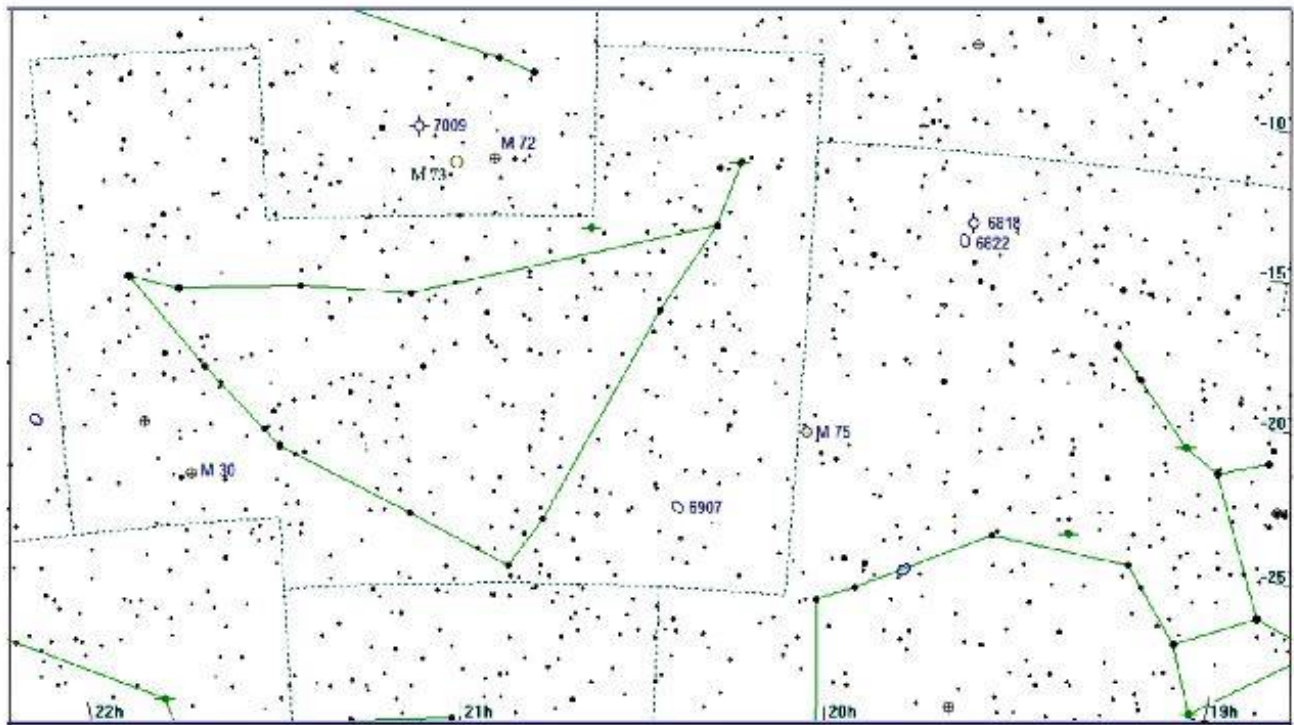
The brightening sky behind April's dawn parade of planets was obscuring the deep sky beyond. But, a few of the last stars to be overwhelmed by sunlight were captured photographically at 5:14 am, on April 13 by David Lee, who helpfully identified the brightest, Alpha Capricorni (1). Alpha Cap is in the northwest corner of the constellation Capricornus, identified by a roughly triangular asterism in the shape of a boat floating in an area of sky devoid of other stars as bright. Alpha Cap sits as the figurehead on the boat's bowsprit (Fig 1). On the date of David's photograph, its position relative to the planets revealed that Mars was in the boat, while Saturn and Jupiter were west in eastern Sagittarius (Figs 1, 2). This set me dreaming of the many nights I have spent wandering in the deep sky beyond these parading planets. The Sumerians called the triangular asterism in Capricornus: the Magur-Boat (Fig 3, below right). It is the oldest of the modern constellation star patterns in the Western World, predating the invention of cuneiform writing and hence written history (3), the smallest of the zodiacal constellations (4), and has retained its jaunty figure over more than eight thousand years to the present day. The Magur-Boat appears to be leading the 'water' zodiacal constellations, also with Sumerian roots, westward toward Sagittarius (Figs 1, 2). Although not bright, the Boat in Capricornus floats clearly in a dark sky, with no light pollution or moon, because we are looking out from the plane of the Galaxy and hence away from the bright swath of light that is the Milky Way.

The Magur-Boat provides a comfortable platform from which to launch explorations of the surrounding sky. Eight deep sky objects surround it (Figs 1, 2), six of which are well known to amateur astronomers: four Messier star clusters and two planetary nebulae. The remaining two, less often visited, are galaxies and more challenging to find. All are rewarding sights to find with binoculars or small/medium sized telescopes, but requires dark and transparent skies to properly appreciate.



Messier discovered the compact globular cluster M30 in 1764. Only 28,000 lightyears distant from us, it trails close behind the Boat and at magnitude 7.7, is nicely observed with binoculars. M72 and M73 float above the deck. Discovered by

Fig 1. Chart prepared in *MegaStar* (2) of area of sky photographed in Fig 2, showing the **Magur-Boat** (3) in *Capricornus* and part of eastern *Sagittarius* (Tea Kettle's handle at lower right) with deep sky objects discussed labelled. Stars to magnitude 8.



Messier's colleague Paul Méchian in 1780, M72 is a small (6 arc- minute apparent diameter), relatively inconspicuous globular cluster of magnitude 9.4, but nevertheless a rewarding sight in a telescope eyepiece. At 54,000 lightyears away M72 is a more remote and relatively old Messier star cluster (~12.7 billion years). M73, by contrast, is something of an enigma – or a joke? Messier described it as “cluster of 3 or 4 small stars, which resembles a nebula at first glance, containing very little nebulosity” (5). At best called an asterism, these stars are unrelated, ~2,500 lightyears distant, with an ensemble magnitude of 9. In other words, M73 is easily overlooked and not much to look at! (5, 6)

M75 is to my mind the most interesting of these four Messier clusters. Isolated in an area of sky ahead of the Boat with few bright stars, it is most easily found by geometric relations of bright stars forming the Boat's bow to the east and the 'spoon' asterism in eastern Sagittarius to the west (Fig 1). Discovered by Paul Méchian in August 1780, and observed and cataloged by Messier in October the same year, M75 is the most centrally concentrated (Class I) globular cluster in the Messier Catalogue. It is a small, bright (mag 8.6) concentration of ~400,000 stars, 67,500 lightyears away, floating detached from the sparse star field of the surrounding sky. Messier saw it as “a nebula without a star” (3) and it is a fun challenge to see how many stars one can discern at the perimeter of this distant, old ball of stars. (4,5)

Both planetary nebulae are delights, fully living up to their names when viewed even at modest magnification. Both can also be spotted with binoculars. The Saturn Nebula (NGC 7006) trails M72 and M73 slightly north of east. The Little Gem (NGC 6818) is about 9 o'clock, directly west of Beta Cap, and having first centered this star in your eyepiece, can be found by letting the sky drift east for 36 minutes until the Little Gem comes into view – plenty of time to rest your eyes, enjoy a hot-chocolate break, and admire the sky! But, after making sure you've accurately determined west in the eyepiece, you can carefully swinging the scope westward to get you there a half hour sooner! (Figs 1, 2)

But, it was the two galaxies in the Boat's entourage, not the Messiers or planetary nebulae, which sprang to mind when I saw Alpha Cen labeled in David's photograph. I expect they will always be my favorite deep sky objects in this part of the sky, both because of my initial struggles to even find them, and then for their intriguing appearances when I finally did.

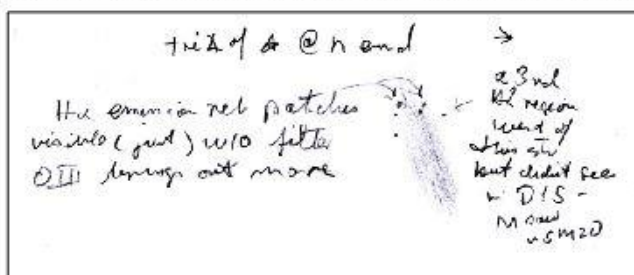
Fig 2. The Capricornus Boat asterism (green dashed lines) and eastern section of Sagittarius photographed from campsite in White Mountains, Ca, 2600m elevation, latitude 39.5° in early October 2019. Stars delineating the Boat's bow labelled in green: *Alpha*, *Rho*, *Pi*, and *Psi Capricorni*. Positions of deep sky objects were determined by overlaying a Megastar chart (2) scaled to match the photograph.

1, NGC 6822 (Bernard's Galaxy); 2, NGC6907 (galaxy); planetary nebulae: 3, NGC 6818 (Little Gem) and 4, NGC 7009 (Saturn Nebula); 5, M75; 6, M72; N, *Nunki* (brightest star in Teapot's handle, *Sagittarius*); S, Saturn, north of *Nunki*.



Locating Barnard's Galaxy (NGC 6822) should be a cinch, as it is less than 1° south of the Little Gem planetary nebula, which can serve as a beacon toward this dwarf irregular galaxy, close by in our local group. Alternatively, a shallow arc of three, 5th magnitude stars, south-east of it, point toward Barnard's Galaxy and the planetary parade (Fig 2). With a visual magnitude of 8.7, one might expect NGC 6822 to be easy to spot. However, its light is spread over an area of 15.5'x13.5' resulting in an apparent magnitude of 11.1 (6). After repeated failures to find Barnard's Galaxy, over several observing sessions, I printed charts prepared using the Megastar Star Atlas program (2), with fields appropriate for the eyepieces I would be using, before leaving home. No problem to match the view in the eyepiece with the stars on the chart ... but ... not even a hint of nebulosity to suggest a galaxy, as far as I could see! I asked my much more experienced and knowledgeable observing companion to take a look. "Oh, Barnard's galaxy, that's easy – you're sure you have the right field?!" Long pause while he looked in the eyepiece: "You're in the right place; I don't see it either; the transparency's not very good". At least I wasn't blind! A few nights later, with more transparent sky, I had no doubt the galaxy was where it should be: "NGC 6822 - large faint but well evident, less than 1° S of 6818" (from my notebook, 9 Oct 2015). A year later, from the same location, with a better the sky, the galaxy was

Fig 4. Sketch showing locations of H-alpha regions in northern end of Barnard's Galaxy, NGC 6822, near a triangle of barely visible foreground stars, as noted at top of sketch; magnification 234X. Observed on 26 Sept 2016 from the same location as for Figs 2 and 5.



even more obvious and the transparency sufficient to reveal two of the H-alpha emission regions near its northern end, without using any filter, although an OIII filter made them more obvious (Fig 4). We could see a third, fainter H2 region on the west side of the galaxy in the 20" telescope, but not in my 15" scope.

Fig 5. NGC 6907, pencil sketch on white paper, 9 Oct 2018, scanned and inverted in Photoshop.



The galaxy NGC 6907 poses diametrically opposite challenges to those posed by Barnard's galaxy: it is difficult to locate, but easy to see once found. I now have two star-hopping routes which, if followed carefully, after having very accurately determined west (sky drift) through the eyepiece, will land me spot on. My first route starts from Rho Cap (Figs 1, 2) and is better described as long-jumping than hopping from star to star, because the 10 or greater distances between the scattered stars marking the way are mostly just beyond the perimeter of my widest-field eyepiece. The second route starts from Psi Cap and is shorter, but nonetheless challenging, because the stars in this region are strewn haphazardly and vary little between each other in brightness. Setting out to find NGC 6907 is like departing a trailhead to climb a mountain, surrounded by wilderness, searching for cairns or trail signs to find the way. The fun in both is that even if or when you get lost, interesting sights appear along the way, which with repeated attempts; fill in your mental "topo-map" until you can't get lost on your way to your destination, whether it's on earth or in the sky. And, 'landing' on NGC 6907 was well worth the effort!

My first glimpses of NGC 6907 through my low power (88X), wide field eyepiece were of a miniscule streak, barely visible in a sparse field of faint stars (magnitudes ~12 or fainter). At 142X, it appeared "slightly S-shape, with central part larger, brighter; oriented almost exactly east-west; eastern arm different - more distinct?" (*from my notes, 14-Oct-2017*).

Whatever eyepiece I used, magnifications up to 334X, there remained something intriguing about this galaxy's overtly simple shape that I couldn't describe in words, even after numerous revisits over several years - whenever the Boat was high enough and sky conditions favorable. Neither could I catch this elusive feature in my first careful sketch of NGC 6907 on 9-Oct 2018 (Fig 5). Something about the eastern arm didn't look 'right'. Was the 'oddity' in my brain or in the galaxy? Or, was the answer in both?

NGC 6907 has intrigued astronomers, since it was first observed as the larger of two non-stellar objects by William Herschel in 1684. These objects are separated by only 44". Herschel described the larger as "considerably faint, considerably large, very little extended, very gradually a little brighter toward the middle, mottled, 3 stars preceding," and the fainter object, to the east, as "extremely faint, very small, little extended" (7). Dreyer entered them as numbers 6907 and 6908 in his New General Catalogue of Nebulae and Clusters of Stars (1888). With the better optics of modern telescopes, the brighter of Herschel's non-stellar object, NGC 6907, morphed into a two-armed spiral galaxy, the eastern arm appearing somewhat larger and brighter (Fig 6). Is this oddity simply because this arm masks the near-by fainter NGC 6908 from our perspective? The story turns out to be more exciting.

Fig 6. Photograph of NGC 6907
(avertedvisionblog.wordpress.com/2010/09/06/)



NGC 6908 lost its individuality and was downgraded to the status of “PofG” (Part of Galaxy), when astronomers started analyzing the sky as recorded photographically on glass plates. These showed NGC 6907 as a single, expansive galaxy and NGC 6908 was interpreted to be a mere patch of increased surface brightness in the large galaxy’s eastern arm (see Fig 6). With the advent of infra-red astronomy, the fainter of Herschel’s non stellar objects (6908) was identified as an elliptical SO galaxy, hidden by the glare of 6907, thus reinstating its independence – for at least a while. However, when measurements of its radial velocity were shown to be similar to 6907’s, line-of-sight overlap from our perspective became too simplistic an explanation of the relationship between these objects. Madore et al. (2007) reported the results of combining optical and near -infrared imaging with archived data that reaffirm the individuality of NGC 6908 as a galaxy in its own right, but show it to be well embedded within the larger 6907. Thus again, this time inescapably and irrevocably, NGC 6908 is losing its individual galactic identity. Other examples of combined near-infrared and optical imaging, similar to Madore et al.’s, are needed before we will know whether the advanced stages of mergers, such as caught for 6907-6908, occur so rapidly that they will be rarely observed or are sufficiently leisurely for more examples to be discovered, to help advance our understanding of the life histories of galaxies (7).

When under a dark field of stars, planets may at first glance appear almost stellar (e.g., Saturn in Sagittarius, Fig 2). Through a telescope they become colourful discs of light, revealing views, sometimes grudgingly, of their individualities. But even when we are stuck at home under light-polluted sky, the planets are both beautiful to watch in their own right (1) and also serve as beacons, drawing our mind’s eye to the deep space hidden beyond them as they progress across the sky through the seasons.

Dorothy H Paul

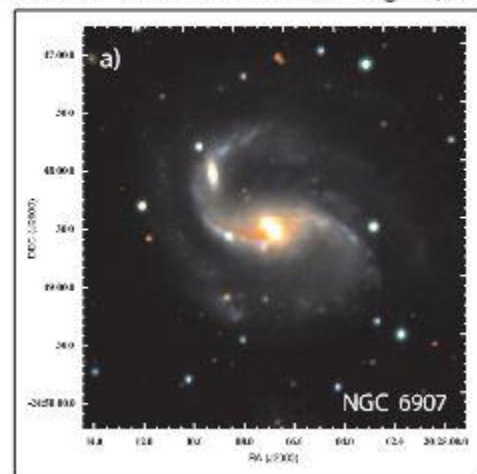
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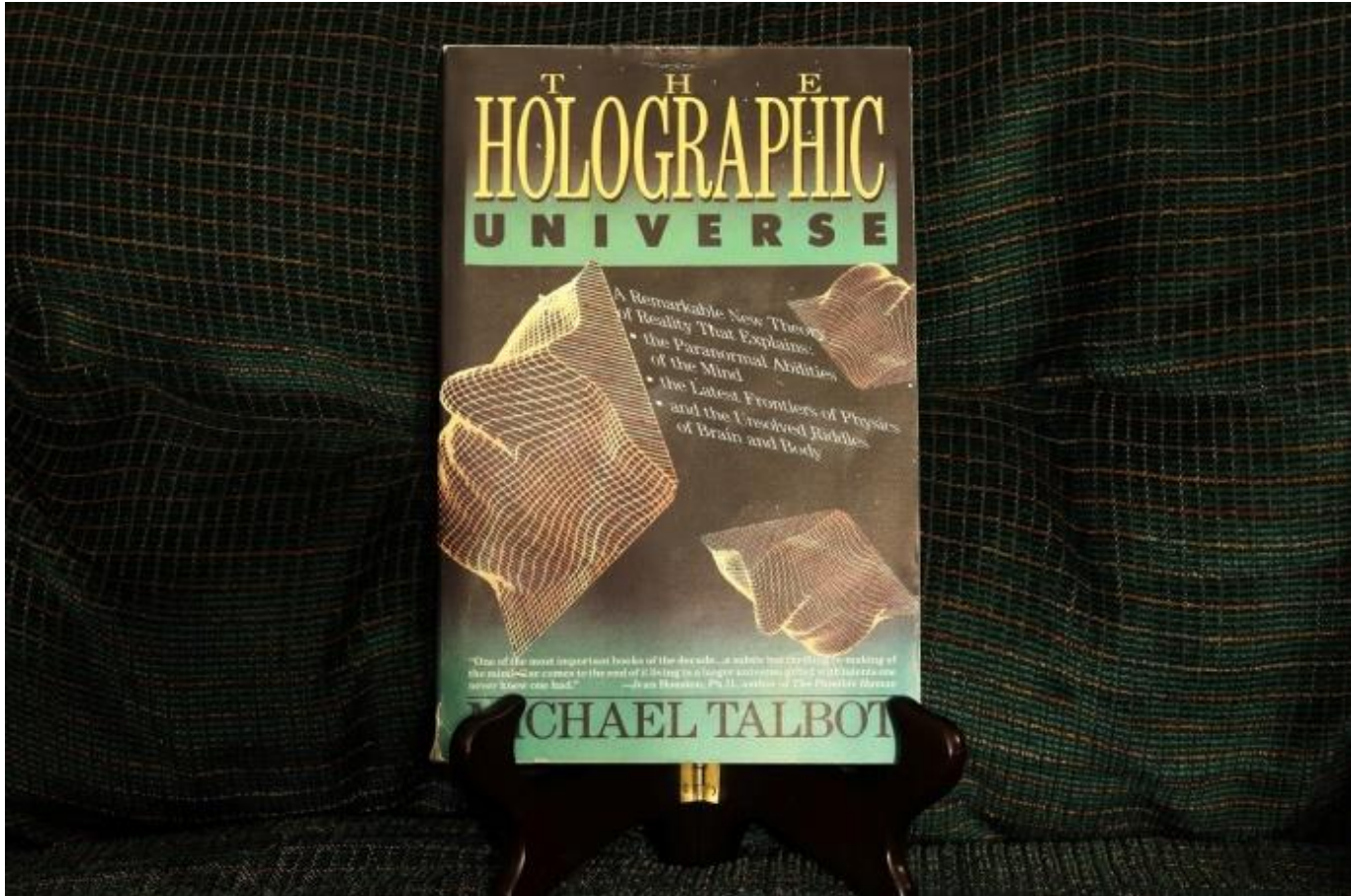
From the Library

The RASC Victoria Centre Library is housed in the Astronomy Department’s faculty lounge, located on the 4th floor of the Elliott Building, at the University of Victoria. It contains over 500 titles, curated by Diane Bell, our RASC Victoria Librarian. Our library covers many aspects of astronomy: observing, astrophotography, telescope construction, space exploration, astrophysics, and much more. Normally, the library is opened up during the social gatherings in the faculty lounge, after our monthly meetings, with coffee, juice, and cookies provided by our Centre. I’ve been doing book reviews of the contents of our Centre’s library, but until the resumption of our monthly meetings, I’ll be doing reviews of the astronomy books from my personal library, ones that can be purchased online or better yet at your local bookstore.

Fig 7. NGC 6907/8 - composite image produced by combining H- (red), R- (green), and B-band (blue) images shows 6908 embedded in the east arm of large spiral (7).



This month we're taking a closer look at *The Holographic Universe*, by Michael Talbot. I was reading this book, while waiting for my first RASC Victoria monthly meeting to start. The idea that we're living in a holographic universe is pretty far out there as a hypothesis that when looked at threatens to break whatever version of *reality simulator* you hold dear. *The Holographic Universe* dives headfirst into panpsychism, examining not only the possibility of a holographic universe, but also the concept of a holographic mind. This book does at times veer wildly into the paranormal and I almost put it down when they started citing ghost sightings in Paris. Given the state of astrophysics, over the last fifty years, as a landscape of the *Theory of Theories*, there are a lot of ideas out there about this crazy universe of ours. The Holographic Universe is an interesting read and it's available by order from your local bookstore.



Most people were confident that the speculative concept of a holographic universe would remain an untestable hypothesis. In 2014, particle astrophysicist Craig Hogan used the holometer at Fermilab to conduct the first experiment to determine whether or not we are living in a holographic universe, by attempting to detect variations in space-time. The holometer sounds like something straight out of science fiction, but it's based on a tool called the Michelson interferometer that was designed in 1887. The holometer failed to detect any holographic noise. After the experiment garnered quite a bit of media attention, a subsequent and improved experiment was run, yielding the same result. What the experiments have proven is that with the instruments currently available, scientists have been unable to detect fluctuations in space-time that would indicate the existence of a holographic universe. At this time, it's impossible to say whether Craig Hogan's experiments will stand up to future scientific experiments or if technological advances in the future will indicate different results.

Bruce Lane



Comet C/2020 F3 Neowise at Dawn

July 15 2020

©2020 David Lee

Hill and Dale (Observing on the Island)

June has been a slow month, to the point where there was great excitement over a single sunspot at the beginning of the month and later about a prominence in the middle of the month. Activity has picking up dramatically at the beginning of July with the amazing arrival of the comet C/2020 F3 NEOWISE. It's the best visual comet, for observers in the northern hemisphere, since Hale-Bopp, way back in 1997. While I'm in the process of editing stage this month's issue of *SkyNews*, it's abundantly clear that this comet is resulting in a flurry of observations and images that will continue over the coming weeks. You can see it naked eye, but of course it's best viewed through a telescope or a pair of binoculars. So, make sure to set aside some time and find somewhere with a clear northern horizon, as NEOWISE slowly moves across the sky towards the Big Dipper. *SkyNews* will cover this comet in much more depth in next month's issue, but for now I've included one image by David Lee (*see above*).

The Victoria Centre Observatory remains closed, due to the pandemic. The National Research Council gave permission for a work party from the Technical Committee to crate up or ailing 16" Ritchey-Chretien telescope, so we could ship it back to the dealer for repairs. After getting held up in customs, in Memphis, the telescope finally made its way to the shop of OPT in Carlsbad, California. Hopefully, it will soon be returned to us. Other scheduled work on the Hill, is on hold until we are given more access to the VCO. I'm hopeful that the mosquitoes, breeding in the water reservoir up there, have died of hunger in our absence. It's certainly a good time to have your own telescope and/or astronomy binoculars to make

use of. If you're a Victoria Centre member and wish to borrow one of our club's telescopes, contact Sid Sidhu at telescopes@victoria.rasc.ca to see what's available from the *Garage of Many Telescopes*, where RASC Victoria stores some of its spare optics.

A reminder that although 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). The VCO is located on National Research Council property. This means that all visitors to our observatory must be on our observer list and registered with the NRC. 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 in the future when things return to normal or even *normalesque*.

Bruce Lane

Astronomical Terms of the Month: Magnitude

Magnitude is used in astronomy to represent a scale for measuring the luminosity of a celestial object, when viewed from the surface of the Earth. The higher the number the fainter the object is. It was first used by the Ancient Greeks, as a scale between 1 and 6 to designate the brightness of stars; a system developed either by Hipparchus of Nicaea or Claudius Ptolemy. A 1st magnitude star is 100 times brighter than a 6th magnitude star. We have added higher numbers over the years to take into account improvements in optics, including the existence of optics, allowing us to view fainter objects in the night sky. Not surprisingly, there were a lot of discrepancies in how an individual stars were judged by individual observers using this system, without the aid of any instrumentation. Apparent magnitude is a particularly valuable number for amateur astronomers, as it immediately tells them what they will need to observe a celestial object, be it naked eye, binoculars, or telescopes of varying aperture.

Absolute magnitude is a more precise measurement of the brightness of a celestial object. As opposed to a scale built around an Earth bound observer, absolute magnitude is the value of brightness that would be observed from a distance of exactly 10 parsecs away. This value of brightness also removes the factor of dimming from interstellar dust and other sources of dimming located between the observer and the object being viewed.

There is also the less talked about bolometric magnitude, where every wavelength that a star emits is measured as if observed from 10 parsecs away, instead of just the visual spectrum. Bolometric magnitude also dismisses anything that would interfere with observing that radiation between the star and the observer, including: atmosphere, interstellar dust, and the wavelength limits of instrumentation.

As far as the most common use by amateur astronomers it will be to read the apparent magnitude of a target and determine what you need to see it and if you have the gear to make your observations, as well as how dark the skies need to be for that to be possible.

Bruce Lane



In Closing



Emerging from the summer solstice to the longer nights of July marks a return to telescopes for many observers and astrophotographers. Is there a better way to do so than with the arrival of a particularly spectacular comet? Those struggling to find some structure for their observing, need look no further than the observer certificate programs offered by RASC National. They cover a variety of subjects and levels of difficulties. Normally these observing pins would be handed out at meetings, but they're now mailing them out to individual RASCals.

The pandemic's own version of *cancel culture* continues to have a chilling effect on events and public outreach in general, with both RASC National and the Centres finding online options to continue to connect with the amateur astronomy community. Please keep in mind that we could be doing this for a while. When influenza shut everything down in May of 1918, RASC Victoria didn't hold any meetings again until 1919. Grass roots vigilance, adherence to science, and good government are what will see us through these times. Wear a mask when you're out in public and just because things are opening up doesn't mean you should be open to doing everything as if everything was normal. Given how out of control the pandemic is, just south of our border, it's a little like waiting for the other shoe to drop.

While star parties and public outreach aren't going to be a thing for the foreseeable future, Comet NEOWISE has given everyone the opportunity to visit and revisit sites, both new and old, in search of the perfect observing location. When personal experience isn't enough, tools like Google Earth and Google Maps (especially using the satellite view) can be the difference between finding and not finding a suitable site. For those living closer to downtown, the bandstand on top of Mount Tolmie would be a good spot, if only it wasn't so crowded these days. The time spent hunting for remote spots, to do your observing and imaging from, will pay dividends to you as an amateur astronomy both now and for years to come.

Bruce Lane: SkyNews Editor

Photography Credits

Cover: Dragonfly resting on Tea Rose, by Bruce Lane, July 7th, 2020

Page 2: Bunny by Bruce Lane, May 27th, 2020

Page 2: Backyard Gardening by Jim Hesser, June 25th, 2020

Page 2: Balcony Gardening by Deborah Crawford, June 29th, 2020

Page 3: Garden Then and Now, by Bill Weir, 1986 and 2020 comparisons

Page 4: Garden Brick Mosaic, by Bill Weir, June 2020

Page 4: Garden Brick Mosaic, by Bill Weir, June 2020

Page 5: Best Lighting for Gardens handout, RASC Victoria.

Page 6: Crop of Bruce Lane (SkyNews Editor) at 2013 RASCAL Star Party in Metchosin, by Chris Gainor

Page 6: Photograph and Design of Astro Cafe Mug, by Joe Carr

Page 7: Early Morning Planets: Mars, Saturn, and Jupiter by David Lee, April 13th, 2020

Page 12: Posed Book, "The Holographic Universe", taken in Editor's home on July 15th, 2020, by Bruce Lane

Page 13: Comet C/2020 F3 NEOWISE at Dawn, by David Lee, July 15th, 2020

Page 14: Star Craftsman by Comfreak, fair use from Pixabay, Feb 18th, 2017

Page 15: "Mammoth" the Light Brahma, by Bruce Lane, April 12th, 2020

Page 16: Al Shepard pulls the MET during Apollo 14 training. The Central Station is in the background at the right. Al's Hasselblad is stowed on the MET. July 1970. Research by J.L. Pickering, courtesy of NASA

Call for Article and Photo Submissions for August Issue

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

RASC Victoria Centre Council 2020

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