Newsletter of the Royal Astronomical Society of Canada Winnipeg Centre January/February 2021

Winnicentrics

The Royal Astronomical Society of Canada - Winnipeg Centre

Upcoming Events

RASC Winnipeg Centre Monthly Meetings (via Zoom)

January 8. 2021
February 12, 2021

Members' Observing Nights

TBA

Oak Hammock Marsh Astronomy Night

Cancelled for telescopes

Regular meetings of the Winnipeg Centre are normally held in the Robert B. Schultz Lecture Theatre in St. John's College at the University of Manitoba, 92 Dysart Road. Free parking is available in the lot across the street. The theatre is on the lower (basement) floor of the College. Meetings are usually held on the second Friday of each month from 7 p.m. to 10 p.m. After the meetings, members who wish to do so usually retire for pizza and more conversation about astronomical subjects.

However, due to the current restrictions imposed by Manitoba Health for the COVID-19 Pandemic all meetings are being held via Zoom at 7:30 PM on regular meeting nights as above. Regular meetings will resume once restrictions are eliminated and our members can meet in safety. We miss you!

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YouTube https://bit.ly/2FrcZJZ

https://bit.ly/3iSmFed

Winnipeg Centre Officers & Volunteers

President: Bryan Stach

Vice-President:
Dennis Lyons
Secretary: Vacant
Treasurer: Abdul al Manni
Past President:
Brenden Petracek

Councillors:
Kaeren Anderson
Sam Giesbrecht
Bill Krosney
Ed Wright

National Representative:
Dennis Lyons

SWSP Organizer: Silvia Graca

Webmaster: Gord Tulloch

Winnicentrics Editor:
Gord Tulloch

Observatory Director:
Bryan Stach

Winnicentrics is published six times or more each year by the Winnipeg Centre, RASC. Winnicentrics is produced by and for the members of the Winnipeg Centre.
Any opinions expressed are those of the author. Any questions or comments please email:
newsletter@winnipeg.rasc.ca
Or contact one of your Councillors above

Notices:

The Glenlea Observatory LX200 / Dome is CLOSED. Please contact Bryan Stach at bstach@mymts.net or phone 204-295-8506 for current info.

Glenlea Warm Room (2 person limit) and Pad are open to members subject to Social Distancing and Mask requirements.

Members Observing Nights are CANCELLED due to COVID restrictions.

Member Meetings continue to be virtual due to COVID restrictions, please see your email or the RASC Winnipeg Forums for Zoom information.

Boston Pizza after-meeting social events continue to be virtual due to COVID restrictions, please see your email or the RASC Winnipeg Forums for Zoom information.

Visit our web site at:
www.winnipeg.rasc.ca

President's Message

By Bryan Stach, RASC Winnipeg Centre President

Thanks to everyone for giving me the opportunity of being the Club President for the past few years, I really appreciated the experience. It was time for me to give back to the club and carry the torch for a while. I found that being the Club President is always fully supported by people whovolunteer their time and energy, which makes our club stronger.

It has been quite the ride, with the snowstorm back in 2019 and then COVID-19 which resulted in Zoom meetings. This is the group that oversaw the development and the implementation of the new website and the beginner's package.

Thanks to Scott Young's support for restarting the RASC Facebook Group which is now more active than ever before. There are 103 active members, who are sharing their pictures, ideas etc... It also a great way to promote the club to the general public and for publicizing upcoming events.

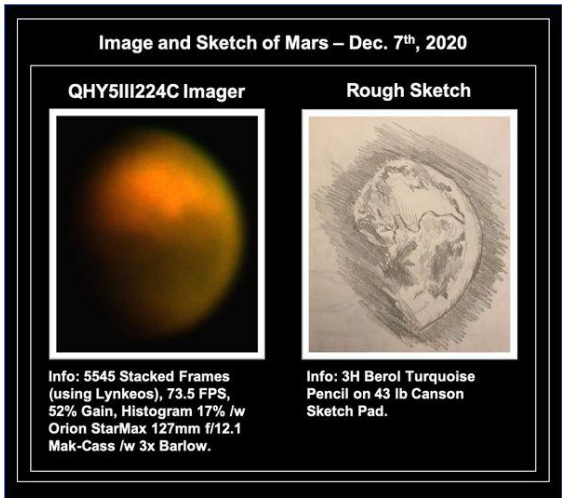
It is important for me to acknowledge the people who helped me during my presidency.

I want to say "Thanks" to Scott Young, Jay Anderson, Michelle Boyce, and Daniel Pahud, who assisted me with the RASC meetings. Scott Young came up with the idea for "What's on with the Planetarium" which allows the RASC Members to be informed on what is going on at the Planetarium and provides virtual Planetarium shows via Zoom. I also wanted to say "Thanks" to Gord Tulloch and Sam Giesbrecht for creating and designing the new website. Gord is continuing to do an excellent job on running and maintaining the website.

A "Special Thanks" to Dennis Lyons, Brenden Petracek, Silvia Graca and Gerry Smerchanski for their support. Silvia and Gerry "I owe you big time".

I will remain on the Council as Past President and Observatory Director. This will allow me to continue to support the Council and be part of an excellent team. I will also continue to work with the National on a few projects and I am looking forward to dedicating more time to upgrading the Observatory and creating programs. It is now my pleasure to pass on the "Torch" to our new President Dennis Lyons.

Thanks Again & Stay Safe!



Michelle Boyce

Editor's Message

By Gord Tulloch, RASC Winnipeg Centre

Happy New Year! We made it out of 2020! I hope that despite 2020 being a pretty horrible year for most things, you managed to get a lot of quality time under the stars! Certainly many people are taking advantage of the lack of distractions to buy astrogear with most vendors reporting that they can't keep up with demand, items are back ordered for months (like ZWO Atmospheric Dispersion Correctors!) and they are hiring staff to keep up with demand! Sky & Telescope reports[1] businesses are seeing 40% to 400% increases in sales over the prior year. While this bodes well for a surge of overall interest in Astronomy (and hopefully continued strength for Winnipeg Centre memberships) there's definitely a lot of interest in higher end gear for astrophotography as more advanced amateurs find the time to rediscover their passion for capturing the night sky. While tragic circumstances continue to dominate the headlines, we at least can find comfort in the newly recovered strength of our hobby. Please spend some time helping in outreach activities this year once we're able to, there is a new untapped reservoir of astronomy buffs waiting to find a group like ours to help them enjoy the hobby to the max!

After this issue we are no longer able to get the Abrams Planetarium Calendar and Star Maps for free, and will need to purchase a subscription to continue publishing this resource. If you enjoy having this content in our newsletter please take the time to drop a note to newsletter@winnipeg.rasc.ca or talk to any Council member to encourage the Centre to continue publishing this content.

Stay safe, wear a mask, wash your hands, social distance, and enjoy the heavens. We're in this together, and we will prevail. Best wishes for a safe, healthy, joyous 2021 with clear skies all year, and to enjoy them with good friends as soon as it's safe to do so.

MANITOBA Parks

Online Zoom Presentation with Gord Tulloch, RASC Winnipeg Centre

Registration details at: https://www.gov.mb.ca/sd/parks/education-and-interpretation/event-listings.html

Parks after Dark: How Do We Know That?
Saturday, January 23, 2020
6:30 p.m. – 7:30 p.m.
We often hear scientists talk about stars and other celestial bodies with a puzzling level of familiarity - how do we know how hot they are if we can never measure it directly over the vastness of space? How do we know what they're made of, and how much they weigh? How did we discover how far away they are? How can we know so much about these objects when we have never touched them directly?
Join a Park Interpreter and special guests from the Royal Astronomical Society of Canada, for this look at how scientists can figure out a tremendous amount of information based on the only thing we can get from these objects - the light they emit.

[1] Skyandtelescope.org by Sean Walker Oct 16 2020 retrieved from https://skyandtelescope.org/astronomy-news/pandemic-inspires-surge-in-telescope-sales/ on Nov 24, 2020.

Elections 2021 Results

Nominations are closed for the RASC Winnipeg Centre for the following Council positions and the following nominations have been received:

President	Dennis Lyons
Vice-President	Gord Tulloch
Treasurer	Abdul al Manni
Secretary	Ed Wright
Councillor	Judy Anderson
Councillor	Scott Young
Councillor	Michelle Paquette
Councillor	Terra Jentsch
Councillor	Andrew McCaskill

Councillor Bill Krosney is not up for re-election until next year. Councillor positions are staggered so as to provide continuity on Council rather than the entire slate being replaced all at once. Deadline for nominations was November 30, 2020. As there was great interest in Councillor positions and the Council thought that each person nominated brought fresh perspectives to the Council it was decided that the Councillor positions would be increased from 4 to 6, which is consistent with the by-laws of the Centre.

Once again, please take an opportunity to thank the outgoing President Bryan Stach (who now remains on Council as Past Present), VP Dennis Lyons, Treasurer Abdul Al Manni, and Secretary Cliff Levy for their service to the Centre over the last two years. Also please thank Sam Giesbrecht, Darren Hennig, Ed Wright, and Kaeren Anderson for their service as Councillors. Special thanks to Kaeren for acting as Winnicentrics Editor for 2020-21 and Bryan for his role as Observatory Director.

Elections will not be held electronically as previously indicated as there is no competitions to be decided. All roles are awarded by acclamation.

If you would like to volunteer for an appointed position please contact a Council member to indicate your interest. Currently appointed positions include Newsletter Editor, Webmaster, Observatory Director, and National Representative. If there are any questions or comments please also feel free to contact any Council member.

Make plans to attend the April 2021 Zoom meeting of the Winnipeg Centre when we will feature a presentation by Tom Field, Contributing editor at Sky & Telescope Magazine and Author of the RSPEC Spectroscopy Software on Spectroscopy. Meeting is on April 9 2021 at 7:30PM, watch your email or the Forums for Zoom login info!

Centre Treasurer's Report

The following report was presented at the Annual General Meeting on Jan 8 2021.

Centre Treasurer's Report

		2019	2020
REVENUE	Membership Fees	3,941	4,358
	Donations	525	
	Sales of Observer's Calendars	308	1,307
	Interest and Dividends	35	46
	TOTAL REVENUE	**4,809**	**5,711**
EXPENDITURES	RASC publications, Promo Items, etc	1640.14	1825.25
	Meetings	500	746.4
	General Assembly	542.43	0
	Office Administration, supplies, Awards, Website, etc	617.73	1321.72
	Insurance	700.86	703
	Glenlea Expenses	506.41	415.48
	TOTAL EXPENDITURES	**4507.6**	**5011.9**
	SURPLUS OR DEFICIT ON OPERATIONS	**302**	**699**
BALANCE Summary	**ASSETS**		
	Current assets	**19218.9**	**19917.74**
	Long-term assets	25000	25000
	Total Assets	**44,219**	**44,918**
	LIABILITIES		
	Current liabilities	0	0
	Long-term Liabilities	0	0
	EQUITY		
	Net Equity	44,219	44,918
	Total Liabilities and Equity	**44,219**	**44,918**

RASC Winnipeg Centre Telescope Giveaway

In November an anonymous donor contacted the Club through the web site and offered to donate two small telescopes, a Celestron 127mm reflector on a GEM opened once, and an unopened Tasco 114mm reflector on a GEM. Your Editor was able to pick the scopes up by the end of November and based on the donor's preferences a decision was made by Council to offer the telescopes to kids for Christmas based on love of astronomy, and family need in these tough times.

Our Communications Coordinator, Ed Wright, created a great message that went out far and wide:

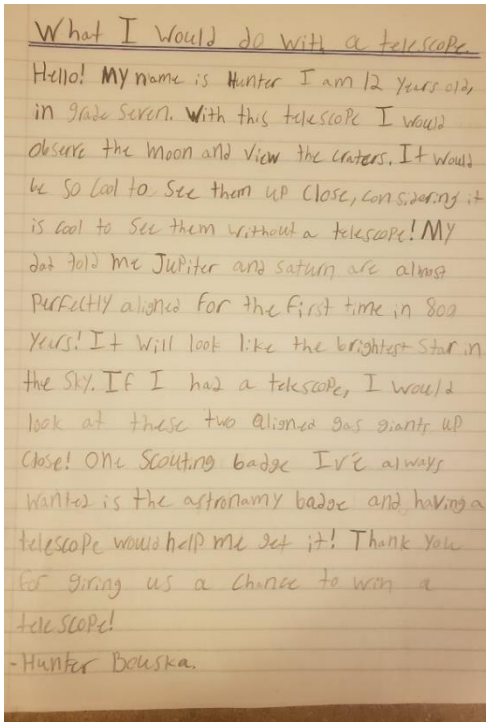
> *What's better than standing outside on a crystal-clear night with your children staring in awe at the beauty of the night sky? Answer: Having equipment that will help them to see more detail and build their curiosity in the natural wonder of the universe.*
>
> *During these challenging times, some of us might not currently have the resources to acquire equipment for our children to use as new astronomers.*
>
> *RASC Winnipeg Centre recently received two like-new beginner telescopes from a private donor. These telescopes are:*
> - *a Tasco Iuminova 114mm reflector telescope, and*
> - *a Celestron Power Seeker 127 mm reflector telescope.*
>
> *Imagine your child being able to see firsthand the rings of Saturn, the moons of Jupiter, or detailed views of craters on the moon. Your Council is looking for two deserving families to give these scopes to just in time for the holiday season. This giveaway is being run as an essay contest. Volunteers will deliver the telescopes to the winning families during the weekend of December 19.*

To enter the contest parents and sponsors from the Club were urged to have a child write a one-page essay entitled *"What I Would Do With A Telescope".* Rules were the entry must be handwritten by the child and sent to President Bryan Stach in digital format so he could distribute to the judges. Deadline for entries was 6:00 p.m., Friday, December 16, 2020. Also required was either the parent or a sponsor must be a member in good standing of RASC Winnipeg Centre, and the family should not already have any substantial astronomy equipment.

Cont. next page

RASC Winnipeg Centre Telescope Giveaway (cont.)

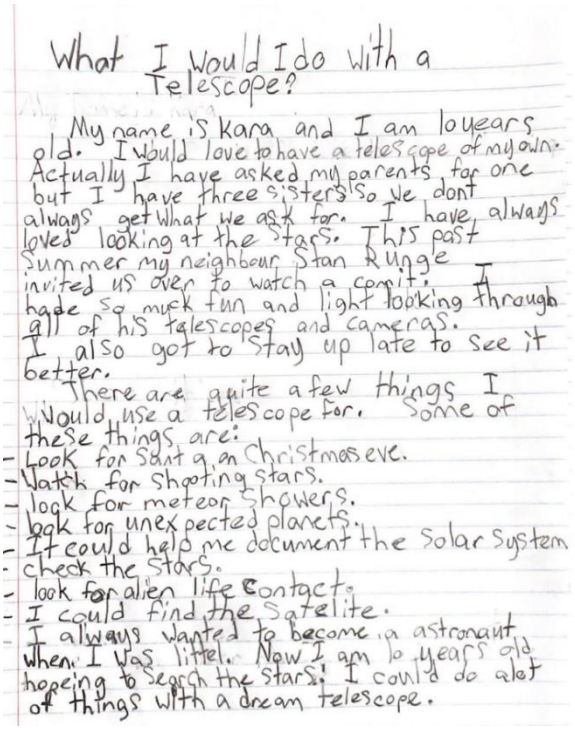
On the evening of the 17th Council members met and deliberated, deciding to award the telescopes to Hunter Bouska (a Scout, 12, from Winnipeg) and Kara Powroznik (10, from Tuelon.) Hunter has received the Celestron 127mm (since he is older and more able to handle a larger scope) and Kara has received the 114mm Tasco. Their entries are below along with pictures of the kids with their scopes.



What I would do with a telescope.

Hello! My name is Hunter I am 12 years old, in grade seven. With this telescope I would observe the moon and view the craters. It would be so cool to see them up close, considering it is cool to see them without a telescope! My dad told me Jupiter and saturn are always perfectly aligned for the first time in 800 years! It will look like the brightest star in the sky. If I had a telescope, I would look at these two aligned gas giants up close! One Scouting badge I've always wanted is the astronamy badge and having a telescope would help me get it! Thank you for giving us a chance to win a telescope!

-Hunter Bouska.



What I would Do with a Telescope?

My name is Kara and I am 10 years old. I would love to have a telescope of my own. Actually I have asked my parents for one but I have three sisters so we dont always get what we ask for. I have always loved looking at the stars. This past summer my neighbour Stan Runge invited us over to watch a comit. I had so much fun and light looking through all of his telescopes and cameras. I also got to stay up late to see it better.

There are quite a few things I would use a telescope for. Some of these things are:

- Look for Santa on Christmas eve.
- Watch for shoting stars.
- look for meteor showers.
- look for unexpected planets.
- It could help me document the Solar System
- check the Stars.
- look for alien life contact.
- I could find the Satelite.

I always wanted to become a astronaut when I was littel. Now I am 10 years old hopeing to search the stars. I could do alot of things with a dream telescope.

Hunter opens his Telescope Christmas morning

Stan Runge delivers Kara's Telescope

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RASC Winnipeg Centre Telescope Giveaway (cont.)

The Council has agreed to award not only Hunter and Kara but ALL of the 7 entrants (which includes 2 sets of siblings) with annual Family memberships to the RASC!

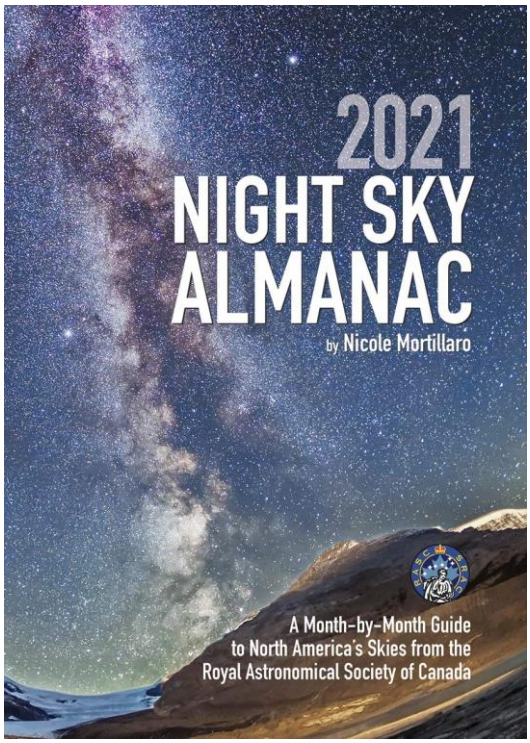
Thanks Council, Stan (for taking the scope up to Kara) and our anonymous donor! Both kids will have an amazing Christmas holiday with their new telescopes, and RASC Winnipeg Centre gains some young members who hopefully will be the first of many.

If you have any telescope equipment you would like to donate to the club for this or future similar initiatives, particularly at this point decent eyepieces (since these telescopes included the default eyepieces that aren't all that good) please email newsletter@winnipeg.rasc.ca and I'll pick it up. While this contest was spur of the moment based on the donations made in late November, perhaps next year RASC will be able to run a larger contest involving (and engaging more kids.) Stay tuned!

Stan Runge - Well, it took many hours to put together, but I too have an image showing about 25 of the meteors I captured on the night of the [Geminid] shower. Taken with a Canon T1i (APS Frame size) with a Tokina 11-16 zoom lens at 11mm F/2.8 and ISO 3200. Hours and hours of 20 second exposures from Lorraine's backyard in the Astronomical Hub of Teulon (aka AHT). The camera was aimed at the centre of the radiant. The one meteor I really appreciated was the one right at the point of the radiant. It is very small and quite bright, because it was coming straight at me. The brightness in the lower left-hand side of the image is the direction of Gerry Smerchanski's place - humm!

Book Review: 2021 Night Sky Almanac

By Judy Anderson, RASC Winnipeg Centre



If you're wondering how you might help yourself and others adapt to life through the next year of COVID-19, this little book is just the thing! *2021 Night Sky Almanac* by Nicole Mortillaro is a recent publication of the RASC, and is much more accessible to the general public than the amazingly comprehensive resource of the Observer's Handbook. The Almanac is subtitled *A Month-by-Month Guide to North America's Skies for The Royal Astronomical Society of Canada* – essentially a "What's Up" for the whole year.

As the long winter nights are now upon us, and still lengthening, the book will definitely come in handy for ideas on seeing planets, constellations, eclipses, meteor showers and comets, aurora, deep sky objects, the Moon, and the Sun, when you need to get outside and look up for some healthy, calm. We are all hoping that viewing during the short nights of summertime will be less restricted to small groupings and distancing. Regardless, events like noctilucent clouds and meteor showers will still be visible, and are nicely described for use by a novice recipient of your gifted 2021 Night Sky Almanac, viewing on their own from somewhere in North America. The book is small enough that postage will be reasonable, too.

The first sections of the book give entry-level information on describing and understanding distance measures and using basic equipment, namely binoculars and telescopes. The diagrams of distance measures using hand span, etc. are also good info just to be able to describe to friends or other astronomy buffs like you, when you see something and need say how far it is from something everyone recognizes like the Big Dipper. I particularly like seeing labels for the major lunar features, the use of clear definitions, and simple diagrams. The author's enthusiasm also shines through in descriptions of objects like planets and comets. Best is that the text is clear, succinct, and accessible to young and old; there's enough information to bring something to mind, inspire an interest in seeing an object or an event, and then point a reader in the right direction so they can find it by eye or with an optical assist.

The last two thirds of the book give month-by-month descriptions of what's visible and how or when it will appear in the sky. A calendar of events and a pictorial lunar calendar begin the pages for each month. That opening is followed by text on the highlights to be seen in the sky looking north and south, each direction with an accompanying map of the visible constellations and notable objects plus a few really nice images of deep sky objects or wide-angle views of the sky. And there's a glossary at the back for quick reference.

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Book Review: 2021 Night Sky Almanac (cont.)

The good thing about the *2021 Night Sky Almanac* is that it's so well-organized that a particular month or event or chart is easy to find; it will be useful right away, without much study, while someone is gazing up while walking the dog in a city or wondering upwards in the backyard, a nearby park, or a cottage. The *Almanac* is a lovely, affordable ($14.95 Cdn, available through the RASC shop online), and handy way to enjoy a hobby, or start a new one, and it will help bring others to understand and share your fascination for the night sky. And you can connect by Zoom with others to help them plan and enjoy looking up, even if they're not in your physical bubble. Awe and curiosity can easily transcend this pandemic – let's help others look up!

(If you check out page 72, you'll find a lovely image of an annular eclipse by none other than Judy Anderson! Great photo Judy!– Ed)

GLP-TRAINED USERS AND SPOTTERS
RASC WINNIPEG CENTRE

The following Members have received training in the proper use of Green Laser Pointers and may apply to receive a permit to conduct an astronomy outreach session in accordance with applicable law and RASC policies respecting green laser pointers. For more information see:

9 August 2019 (Expires 8 August 2022)

Abdul al Manni	Patrick Curry	Kaeren Anderson	Kevin Davis
SHR Bannister	Michael Fry	Michelle Boyce	Darren Hennig
Sean Ceaser	LLoyel Hull	Ralph A. Croning	Paul Karlowsky
Clifford Levi	Dennis Lyons	Alan Macklem	Jim Mcdowal
Krzysztof Keller	Daemon Nightshade	Gail Wise	Brian Renaud
Stan Runge	Bryan Stach	Gordon Sharr	

11 August 2019 (Expires 10 August 2022)

Jay Anderson	Judy Anderson

13 December 2019 (Expires 12 December 2022)

Trevor Bryant	Stephen Altstadt	Ed Johnson	Robin Clarke
Adelle Kennedy	Lucille Eustache	Timothy Kennedy	William McDonald
Kevin McGregor	Michelle Paquette	Ed Rajfur	

Sketchers Corner: Testing Mars Colors

By Silvia Graca, RASC Winnipeg

I tested some water colours last night to try and get that orangey colour of Mars we've been talking about. I painted each Mars with a slightly different combination of paints to try and get close to the real colour. I tried orange with a little blue, or orange with a little red blue and yellow and so on until I ended up with a bunch of slightly different shades.

The top middle sketch is an older sketch of Sertys Major that I transposed onto the painting as a test... and bottom left is one from last night. That water colour combination is orange with a little red and a little blue and I felt it was the closest match for last night's Martian orange.

First I sketched it at the eye piece on white paper and graphite pencil. Afterwards, I went in the house and sketched it on to the orange disk that best matched that colour.

Gibous phase - I used a dark soft pencil to shade the area of Mars that is in shadow. I also used a blending stump to add softer grey approaching that terminator.

North Polar Hood - I used an eraser to remove the orange paint and show the white-ish cloud and added very light hint of blue pencil crayon.

North Surface - I used an eraser to remove some of the paint and get closer to the oranginess at the eyepiece. The paint was a little too bright and the eraser worked great to take off that edge. South surface - I used a blending stump that had some graphite on it to smudge the darker areas which turned out to be Solis Lacus and Sirenum. Too bad there weren't more prominent features.

South polar cap - I used a drop of white out.

Maybe I should do what Andrew Elvins did in 1892 (see below) - he cut out the disk and glued it to a black background? Something that I need to fix is the crinkle that the paint left on the paper... maybe I will iron it?

If you had a chance to put a sketch together share with us! Would love to hear your experiences!

The Great Conjunction of 2020

On December 21st 2020 Jupiter and Saturn put on an amazing how just before they descended into the Sun to end another apparition we've been enjoying over the summer. In this case the planets moved to within 6 minutes of each other, or 1/5th the width of the full moon, visually merging into a single object! The event turned out to be very difficult to image due to the fact Jupiter is very much brighter than Saturn, so any image that showed Saturn to advantage resulted in an overexposed Jupiter (see Steve Alsttadt's image below) or if Jupiter is properly exposed, Saturn will disappear. In this case composite images are the only way to show both planets in their full glory.

Scott Young captured Jupiter and Saturn on December 18, 2020, three days before closest approach. Taken with a wide-field, low-magnification telescope to fit them both in the field of view. Tech Details: 6" Orion Starblast telescope & QHY5-III-224C colour camera. 3 exposure levels (for Jupiter, Saturn, and the moons) individually stacked in AstroStakkert3 and processed in Registax. Final composite and labels in Photoshop. [Image S. Young / The Manitoba Museum]

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The Great Conjunction of 2020 (cont.)

Unfortunately most of the Province was under a heavy layer of clouds so only our Westman members got to take pictures near the closest conjection. Steve Alstadt reported

"We got lucky this evening and had a clear patch show up at exactly the time it was needed, and stayed for the perfect duration!

My scope and camera set up are geared towards long exposure monochrome images through filters, not the short exposures needed for planetary imaging.

The pairing was beautiful visually, and these pictures do not do it justice. I stayed at home to use this scope/camera setup, and Sheila went a few miles away for some widefield action with a church since this was the 'Christmas Star'. Looking at the planets, it was easy to see two individual points of light, not the 'one bright star' that the media was hyping.

One picture is mildly exposed, but does not capture the two planets correctly as they require vastly different exposures. The other image is blown out severely to show the moons around each planet, and a large herd of dust bunnies...."
."

Steve Alstadt's Closest Conjunction Image with a 16" telescope
Dec 21 from Koleida MB

Building the Poor Man's Star Analyzer (PMSA) Spectrograph

By Gord Tulloch, RASC Winnipeg Centre

After attending the Sacramento Mountain Spectroscopy Workshop in 2019 and getting excited about doing spectroscopy on my own telescope, I've been looking at various spectrometers, but they are quite a ways down the list on budget priorities, so the costs have been prohibitive.

The cheapest entry point for spectroscopy for amateurs is the Star Analyser 100[2] (SA-100,) sold under a few brand names but manufactured in the UK by Paton Hawksley Education Limited. At about $200CDN to purchase not an inconsiderable expenditure, especially when you consider it's essentially a plastic or glass diffraction grating mounted in a standard filter housing, how hard would it be to make one? Optimally we want the filter to be within standard size tolerances to facilitate putting it in a filter wheel with the normal LRGB or photometric BVRI filters.

Figure 1 – Paton Hawksley SA100

Given it's name (and the SA200 also sold by the same manufacturer) the SA100 diffraction grating is clearly 100 lines/mm, while the SA200 is 200 lines/mm which provides a larger image for larger sensors or where the sensor is closer to the grating such as in filter wheels where the camera is attached via threads to the wheel. Where the filter is attached to the nosepiece of the camera, a 100 lines/mm grating is quite sufficient. This was confirmed on the https://www.rspec-astro.com/calculator/ site, which is useful to see what will work with your telescope setup.

With the confident assurance that a 100 li/mm grating would work, I went looking for one, eventually ending up on AliExpress and a "Ultra Precision Nano Engraving PET Trasmission Diffraction Grating F Teaching spectral decomposition Precision component Detect." This is a 36mmx28mm grating which can be mounted in an old color filter (after being cut down a bit to fit 1.25" or 31.75mm) at a wallet friendly $10 each. I bought a few of them in case I wrecked them cutting them down. Unfortunately the shipping time was quoted at 57 days so I had a long wait to see what actually arrived.

Fortunately, slow boat from China arrived after a fairly decent 25 days and I could get on with this project! At first I thought someone in China had shipped my a lot of tiny empty plastic bags, til I realized each little bag held a clear diffraction grating. I grabbed an old Moon filter with a kind of crappy plastic

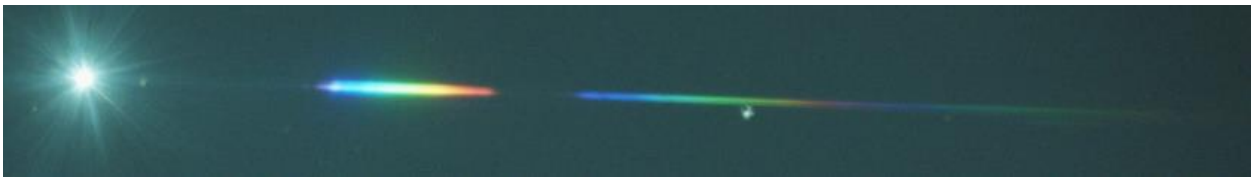
[2] For excellent info on this spectrograph see http://translate.google.com/translate?hl=en&sl=auto&tl=en&u=http%3A%2F%2Fastrosurf.com%2Fbuil%2Fstaranalyser%2Fobs.htm

case, unscrewed the retaining ring that keeps the filter in place, then used the old filter as a guild to cut the edges off the diffraction grating. I dropped the grating into the case, screwed it together, and viola!

Figure 2 – Dismantled filter w/grating, and final result

To mount the grating on my Canon 1100D (Digital Rebel 3T) 12.2 mp DSLR, I had planned to use a T ring and a nosepiece that screwed into it. I know the sensor to T-ring is about 44mm and the distance from the ring to where the filter will screw in is an additional 50mm so 90mm is the distance from sensor to the grating will be about 94mm. The pixel size for the camera is 5.9u x 5.9u so plugging these numbers into the RSPEC site linked about indicated I should be able to get a reasonable dispersion of 6.3 angstroms (Å) per pixel for a spectral coverage of 0 to 12,854 Å – visible light covers 4100Å in the violet to 7000Å in the red so this is ample for our purposes.

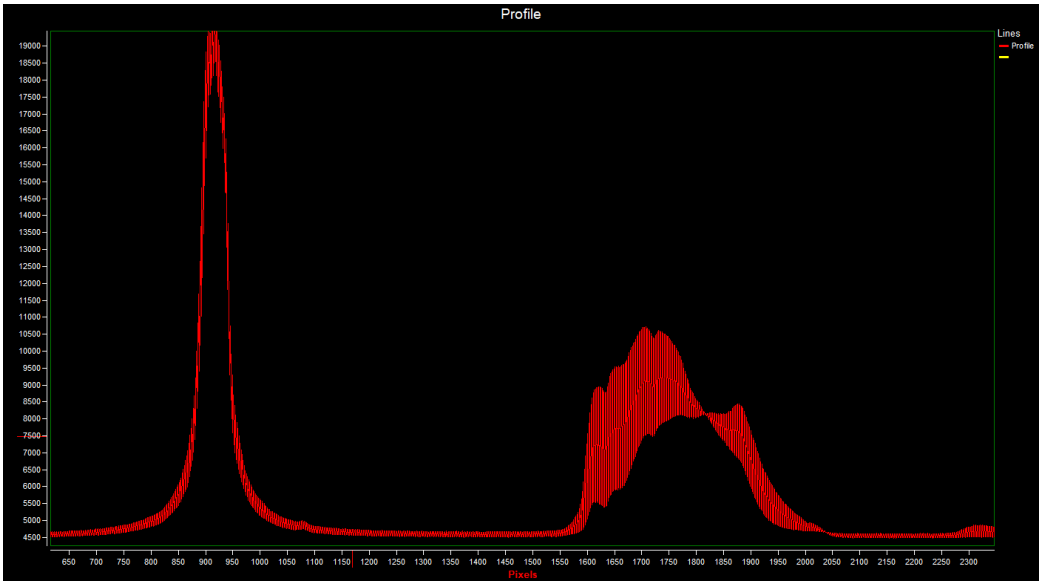
First light on the grating produced the following image of Vega through the PMSA mounted on my Celestron C8 with aperture of 203.2 and focal length of 2032mm (F10.)



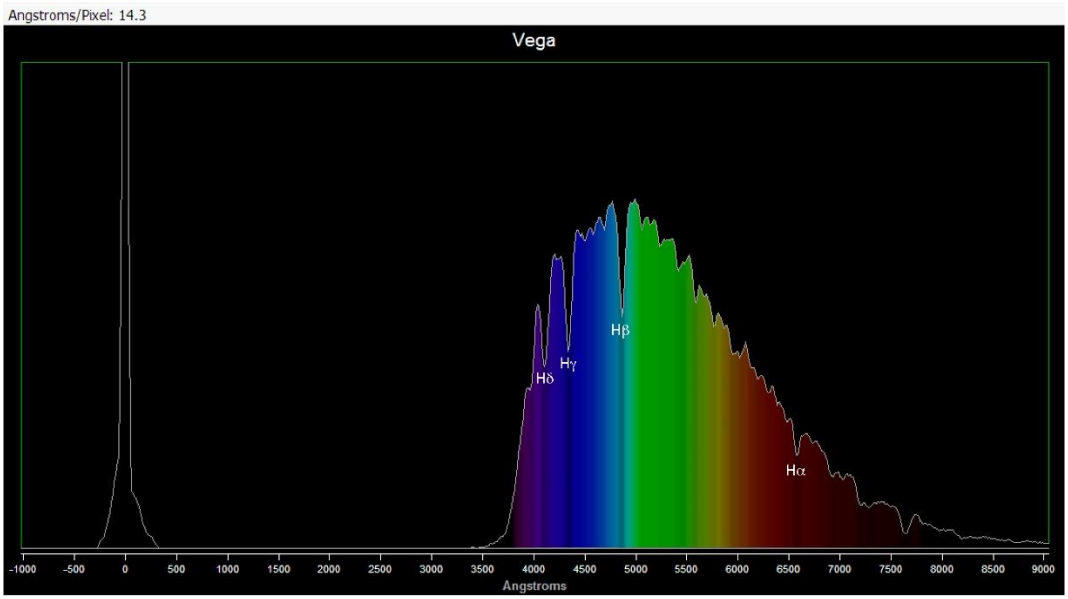
As you can see, over to the left is the image of Vega itself (referred to as the 0th order image) while the 1st order spectrum is closer to the middle of the frame. You can also see there's a 2nd order spectrum which is much fainter than the first. We're interested in analyzing the first order spectrum, of course. You can see from the spectrum there are absorption lines visible. The only downside of this setup currently is I'd like to get the grating closer to the sensor to get a wider spectrum so I can spread less Å per pixel.

So what now? I need some software to process the image into something I can compare to a reference image to see how I did with Vega. RSPEC (https://www.rspec-astro.com) from Field Tested Systems, LLC. is pretty much the best software out there for use with the Star Analyser but at $109US it's not cheap. Alternatives are the free Visual Spec by Valerie Desnoux (http://www.astrosurf.com/vdesnoux) and ISIS by Christian Buil (http://www.astrosurf.com/buil/isis/isis_en.htm.) ISIS is as difficult to use as it is powerful, and VSPEC was rather fussy about file formats so I ended up installing a 30 day trial of RSPEC to see how it works, and later purchasing a full license.

Here's my result on Vega:



Compared to a spectrum from Robert J. Vanderbei at Princeton taken with a SA and processed with VPSEC (https://vanderbei.princeton.edu/images/NJP/spectra.html) there's some issues with my version, probably related to focus, but I see that there's hints of the H δ, H γ, and H β lines that appear in much the right spots, so I think the grating is doing it's thing.



Stay tuned for some further articles about my experiments in Spectroscopy. We have the very special pleasure of welcoming Tom Fields of Field Tested Systems, author of RSPEC, to give us a talk on spectroscopy at our April meeting! In the meantime, if you have any questions please feel free to contact me on the forums. See you there!

From the Winnipeg Centre Workshops

Paul Paradis

A DIY dovetail and side by side telescope platform for my GM 8 equatorial mount. The 3 inch wide, 7 inch long " D type" dovetail is constructed from 3 1/4 inch thk. oak planks glued together and sized on a table saw. The aluminum strips on the dovetail surfaces are bonded using two part epoxy. The platform is made with half inch baltic plywood. I am presently putting together an 11 inch version.

Gord Tulloch

After a member of the Facebook ATM group posted wondering what to do with it, Gord managed to swing an incredible deal on this 24” x 2” thick Pyrex military surplus mirror. Currently the mirror is F2 (!) and has a coating that has seen better days, but it will soon disappear anyway as Gord intends to regrind the mirror to a more manageable F3.3 and build a dedicated Electronically Assisted Astronomy (EAA) scope for outreach purposes. First step is to remove the coating by bathing it in Ferric Chloride, which dissolves the aluminum, then put the blank in front of a TV (which provides polarized light) and view it with a variable polarizing filter to ensure the Pyrex has no major strains in it that would release during figuring and spoil the mirror. Given the this was a mirror already, this is unlikely, but it’s good to check before putting the many hundreds of hours of work required to make a mirror out of this blank.

Sylvia Graca

Sylvia has started building a structure in her back yard to protect her telescope but let her open and close it quickly to maximize observing opportunities. Looking forward to your progress Silvia!

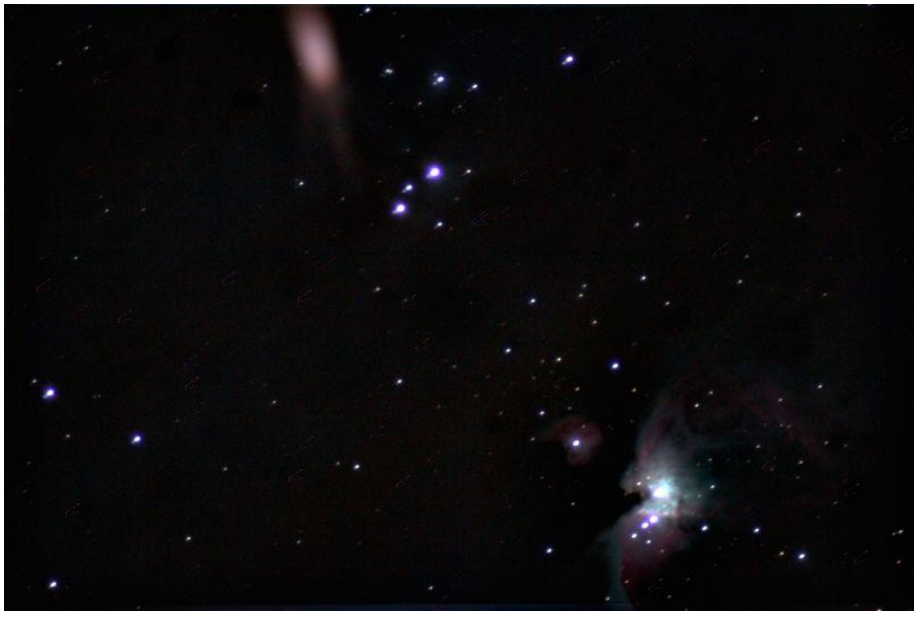
Members Image Gallery

Mike Karakas took this amazing Mars image Nov 4, 2020 on a night with 7/10 seeing with a Celestron C11 at F30 on NEQ6 mount, a ZWO 224 MC with Baader UV/IR cut filter, captured with Firecapture, processed with Autostakker, Registax, Winjupos and PhotoShop

First of a trio of images from Sheila Wiwchar is M81 20x3mins exposures at iso6400 on a Canon 60da wirh a Meade 14"LX200R on an Astrophysics 1200 GTO

Sheila Wiwchar also captured M1 The Crab Nebula (top) with 30x2mins exposures, and the Bubble Nebula (bottom) at 20x2mins, all at iso6400 on a Canon 60da on a Meade 14"LX200R mounted on an Astrophysics 1200 GTO

Scott Young - The Orion Nebula, a huge star-forming region. This is a stack of images from the same video camera I was using for my Mars images, and it's not really supposed to work for this kind of stuff, but I'm pleasantly surprised! Tech details: Orion 80mm EON refractor, QHY5-III-224C camera. 0.6-second exposure, stack of 1,000 frames. No dark subtraction (which is why you can see little trails of hot pixels here and there).



Abdul Al Manni - Dustin Haertel persuaded me to go out and try to do longer exposures, so here is the results, M42 with a roughly aligned Orion 120mm f/8.3 refractor on Celestron ASGT, 10 images each 30 seconds, iso 400 with Canon T3i, stacked and processed with Sequator

Bryan Stach - Here is a picture that was taken back in September [of M31]. It just one image with no stacking. The only things touch was the contrast. Here are the specs. Canon 6D, 70-200 telephoto lens(At 200mm), ISO 12800,F5.6.

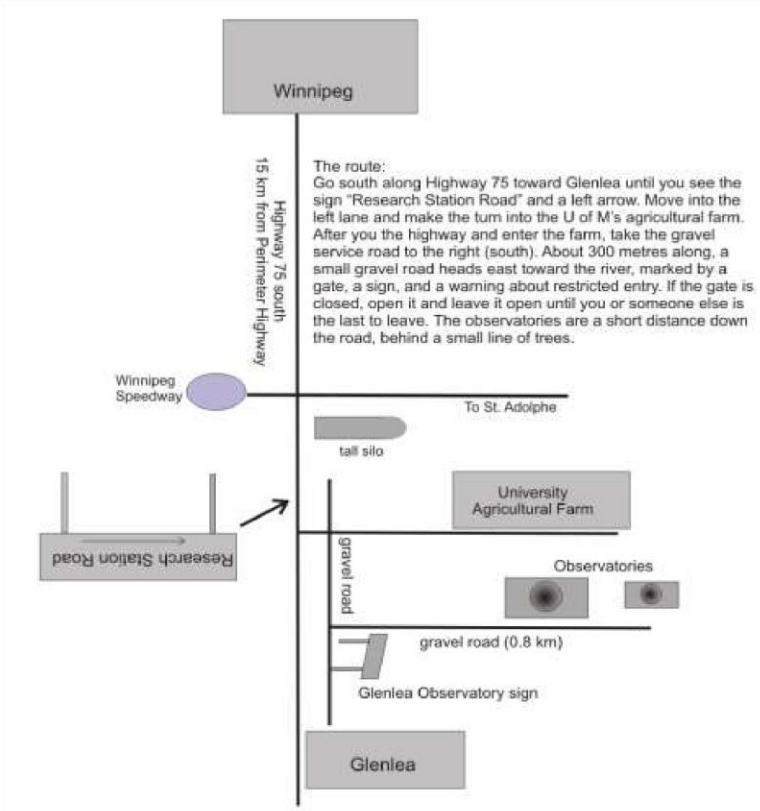
Sheila Wiwchar - Christmas came early!! I'm super excited to play with this imaging camera for solar, lunar and planetary... whole new field of imaging!! We set camera to solar scope and tested through the window as there was lots of learn! Looking forward in next while to getting it out and getting up close to capturing some crazy detail of our solar system neighbors! Camera ZWO ASI224MC Solar scope ha Lunt LS60t

*Scott Young - *VERY* minor lunar eclipse this morning [Nov 30]. Beautiful calm night, but still cold. Video on Facebook.*

Dustin Haertel - This is 2 exposures. 1 of 300 seconds and 1 at 30 seconds iso 400.

Sheila Wiwchar: Here is my composite image of the Geminids meteor shower from last night. (Dec13-14). It was the best shower I have seen!! I used 3 camera on the night, 2 wide field on fixed tripod at about 12mm and one tracked at 20mm for pano of foreground and tracking radiant. The best part was sitting all cozy in many blankets and just watching the show! We packed it in at about 2 with frozen body parts(. Minus 31 windchill but so worth it!!

Finding the Observatory



The Winnipeg Centre maintains a working observatory and warm room at the University of Manitoba's Research Farm. The observatory contains a 30 cm Meade telescope on a fork mounting. Members of the Centre may sign out the use of this telescope provided they have first taken a short instruction course on its use.

The Meade provides outstanding views of the night sky. Its large aperture collects more than 1800 times as much light as the human eye. It is capable of magnifying more than 500 times under favourable conditions.

The warm room provides a convenient place for members to take refuge from winter temperatures and summer mosquitoes, or to wait out a passing cloud. The building also provides desk space and lighting for planning a night's observing session. A cement pad in front of the warm room and observatory provides a convenient space to place members' telescopes while conducting personal observing programs.

Etiquette requires that you approach the observing site with your headlights off if that's possible on your model of car. Headlights should remain off, but you can still use your parking lights to drive. Proceed slowly, and be careful about parked cars along the road, or people walking. If you cannot turn off your headlights, make a cardboard or garbage bag mask to dim the lights. You might wish to turn around at the end of the road so that you are facing the direction back toward the highway at the end of the evening.

Remember to close the gate if you are the last one to leave.

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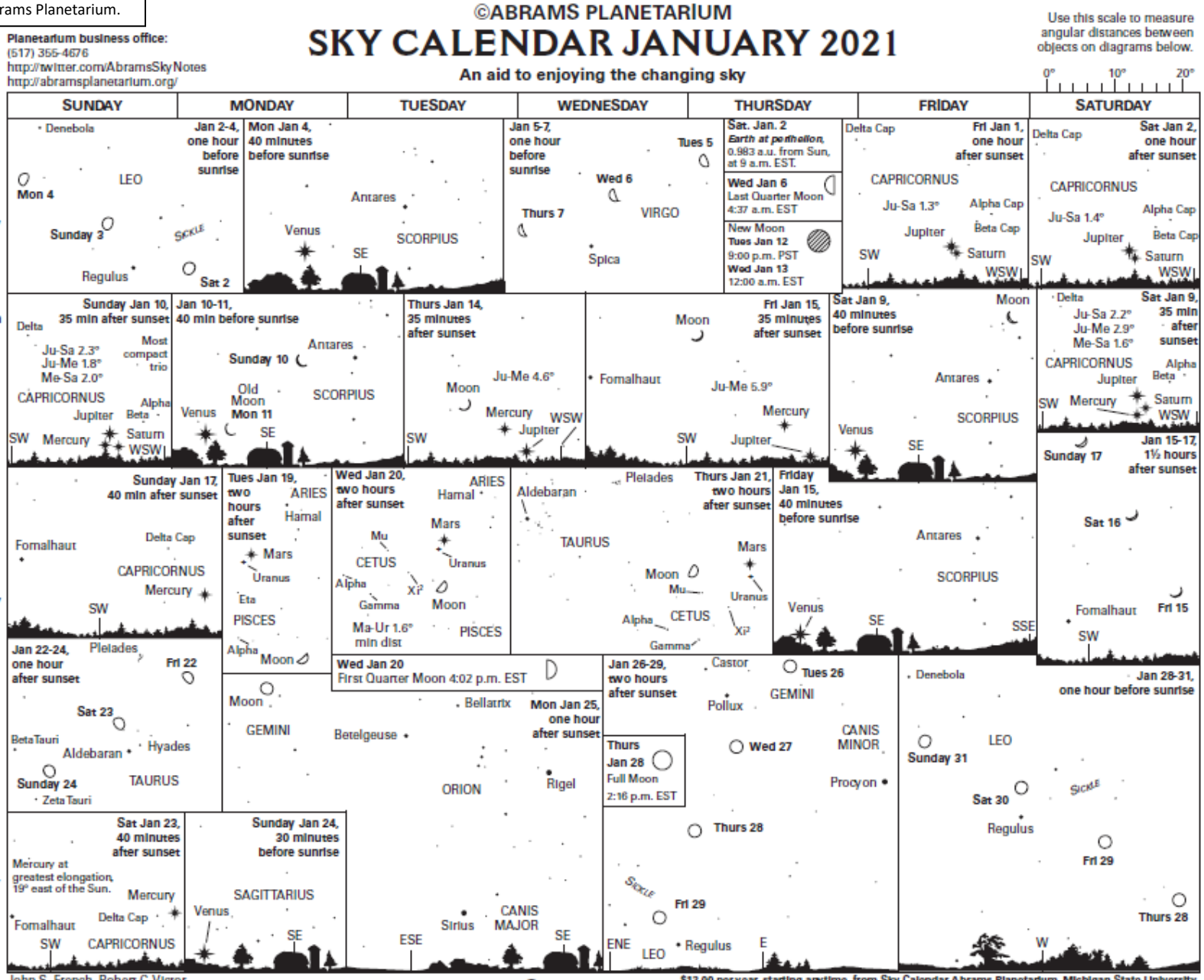
SKY CALENDAR JANUARY 2021

An aid to enjoying the changing sky

Evening Planets: **Jupiter** and **Saturn** start the month low in the southwest. **Mercury** overtakes them Jan 9 to 11. Jupiter is pulling away from Saturn after their historic conjunction last month. The next Jupiter-Saturn conjunction will be October 31, 2040. The gas giant pair drops from view by mid-month. Saturn and Jupiter will reëmerge from the sun's glare in the morning sky next month. **Mercury** forms a triangle with Jupiter and Saturn on January 10. Afterwards, Mercury climbs higher and away from Jupiter and Saturn. Mercury remains visible low in the southwest for the rest of the month. January 23, Mercury is at greatest elongation, 19° east of the Sun. **Mars** shines brightly high overhead all month. **Mars passes Uranus** January 20 with the Moon close by. Earth is moving away from Mars. Mars is 84.3 million miles away from Earth on January 1 and 111 million miles away on January 31. Uranus is 1.798 billion miles from Earth January 1 and 1.844 billion miles away on January 31.

Morning planet: Venus is still easy to spot low in southeast at start of the month. Venus is lost in Sun's glare late in the month. On what morning can you last spot Venus? Venus will be at superior conjunction with the Sun on March 26, 2021. Venus will reëmerge into the evening sky in late April.

The **Quadrantid meteor shower** peaks **January 3, 2021**. Look for "shooting stars" in the predawn sky. This shower's radiant is north of the constellation Boötes the Herdsman.



John S. French, Robert C. Victor
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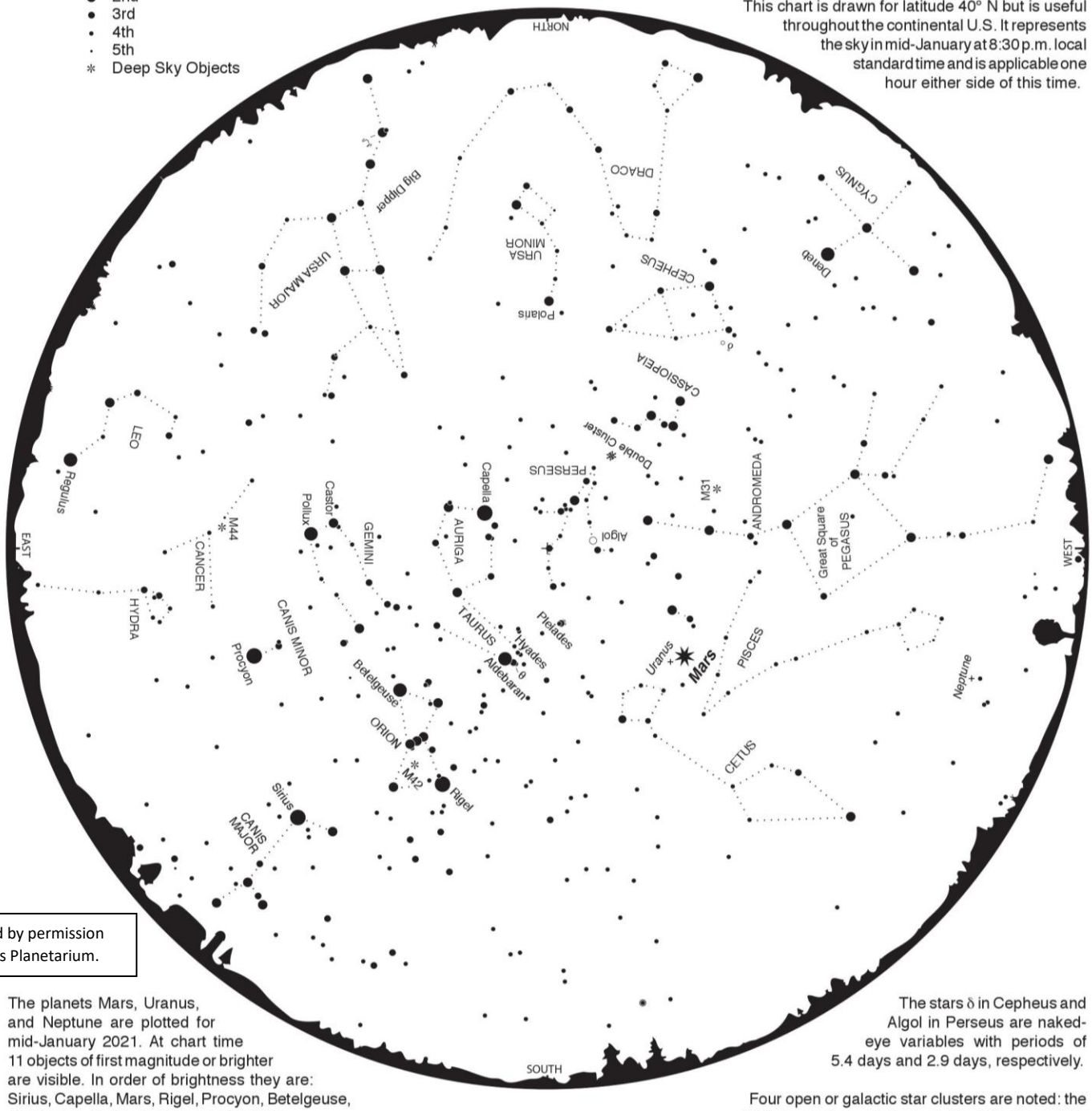
January Evening Skies



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This chart is drawn for latitude 40° N but is useful throughout the continental U.S. It represents the sky in mid-January at 8:30 p.m. local standard time and is applicable one hour either side of this time.

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The planets Mars, Uranus, and Neptune are plotted for mid-January 2021. At chart time 11 objects of first magnitude or brighter are visible. In order of brightness they are: Sirius, Capella, Mars, Rigel, Procyon, Betelgeuse, Aldebaran, Pollux, Deneb, and Regulus.

Our usual monthly maps are designed for stargazers just beginning to find their way around the sky. This month's map is useful for serious stargazing from dark locations. It contains many more stars, inclusive to magnitude 4.5, and some fainter stars as needed to complete patterns or assist in locating special objects.

A selection of double stars (labeled with Greek letters) and "deep sky objects" is also plotted. All are visible with modest equipment; most are within the range of the unaided eye or binoculars. The double stars, in order of decreasing angular separation, are ζ in Ursa Major, and θ in Taurus.

The stars δ in Cepheus and Algol in Perseus are naked-eye variables with periods of 5.4 days and 2.9 days, respectively.

Four open or galactic star clusters are noted: the Pleiades or Seven Sisters, and the Hyades, both in Taurus; the Double Cluster in Perseus; and M44, the Beehive or Praesepe, in Cancer.

M42 is the famous Orion Nebula, a gas cloud out of which stars are forming. M31 is the Andromeda Galaxy, a collection of 300 billion stars located 2.5 million light years from Earth. Look for both with unaided eye and binoculars from a dark location.

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SKY CALENDAR FEBRUARY 2021

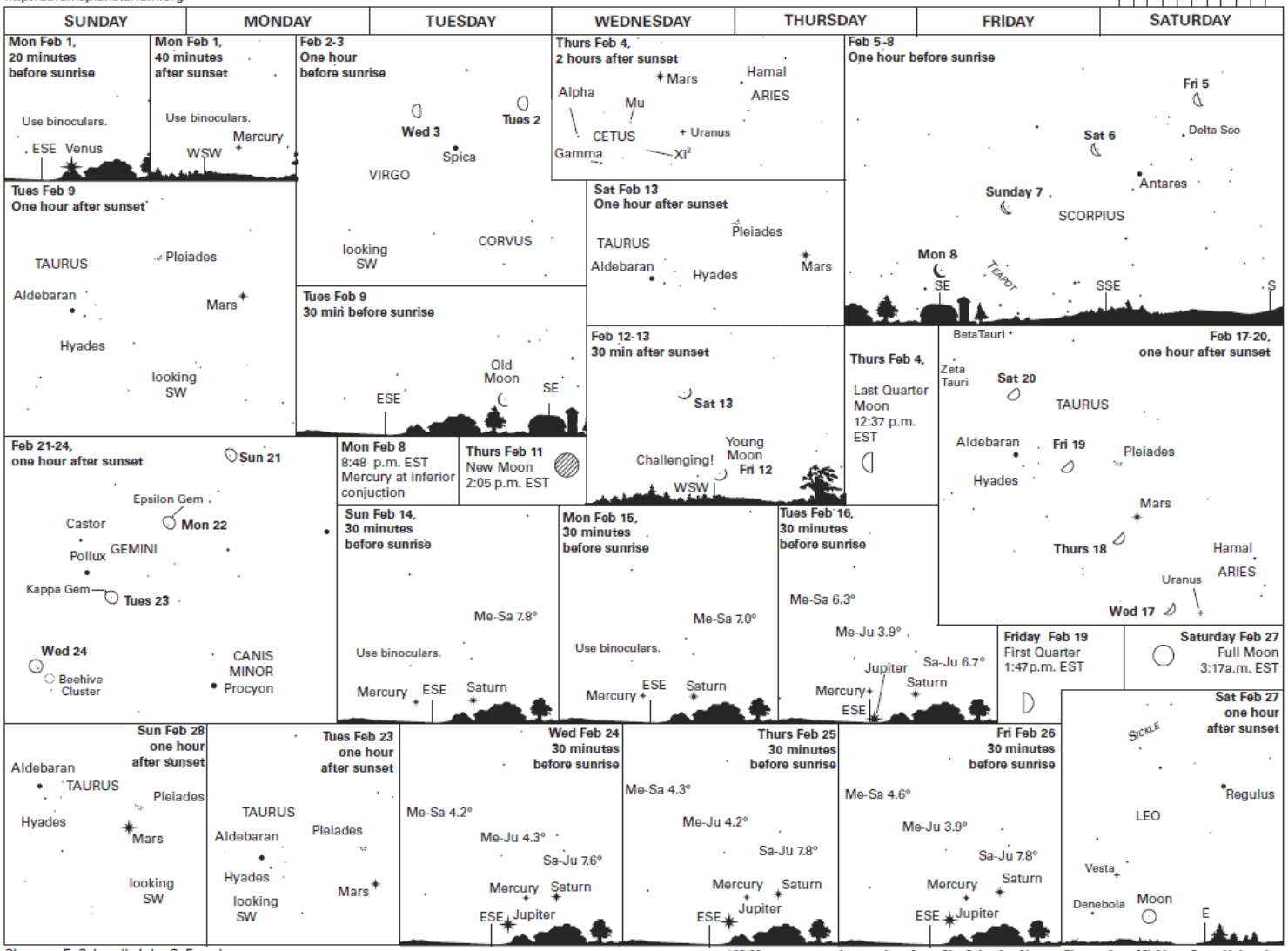
An aid to enjoying the changing sky

Evening Planets:

Mars will be easily visible throughout the month after sunset and begins the evenings quite high between 60° and 70° degrees in altitude an hour after sunset. Watch the red planet move across the sky from West to East each night. It begins the month in the constellation of Aires the Ram and and ends the month in Taurus the Bull. It will be passing the pleiades at the end of the month and will continue on a path between the Pleaiades and Hyades clusters into the next month.

Mercury begins the month barely visible shortly after sunset. and sinks from view quickly. On February 8th at 8:48 p.m. EST, Mercury will be at inferior conjuction, marking its transition from an evening to a morning planet. The closest planet to the sun will reappear in the morning sky by mid-month. Mercury will first be seen with Saturn in the morning sky. They will be joined by Jupiter as the month moves on. Look for all three planets together just before dawn in the second half of the month. Mercury and Jupiter will become closer while Saturn and Jupiter continue to pull apart after their conjucation in December 2020.

Binoculars: Binoculars will be helpful to find faint Mercury when it's near the sun. In early February, Mars will be near Uranus. Use the four stars of head of Cetus to help locate the seventh planet with binoculars. The full moon will be near the asteroid Vesta at the end of the month for a challenge.



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February Evening Skies

This chart is drawn for latitude 40° north, but should be useful to stargazers throughout the continental United States. It represents the sky at the following local standard times:

Late January	10 p.m.
Early February	9 p.m.
Late February	8 p.m.
Early March	7 p.m.

This map is applicable one hour either side of the above times.

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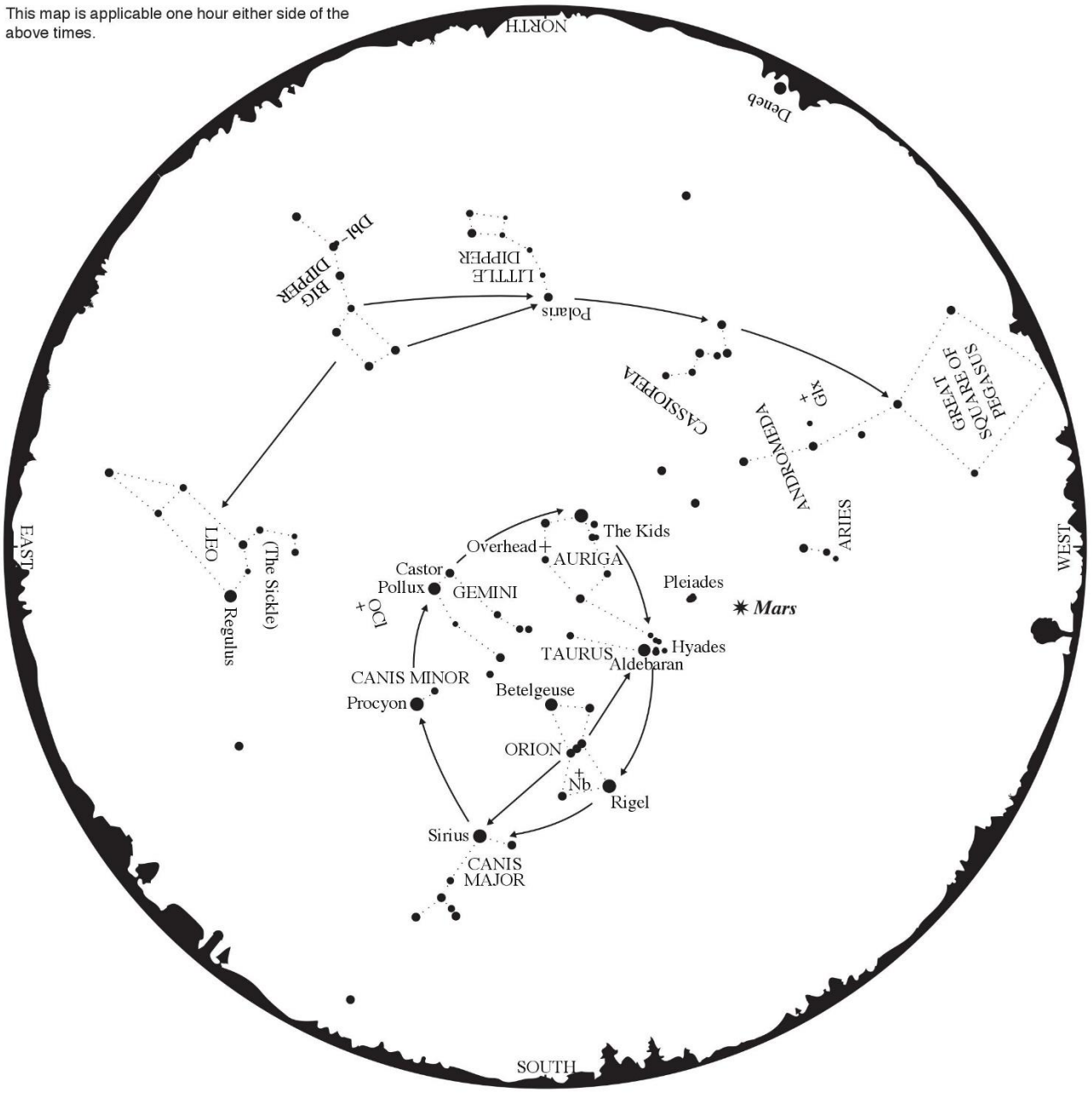

The planet Mars is plotted for mid-February 2021. At chart time 10 objects of first magnitude or brighter are visible. In order of brightness they are: Sirius, Capella, Rigel, Procyon, Betelgeuse, Mars, Aldebaran, Pollux, Deneb and Regulus. In addition to stars, other objects that should be visible to the unaided eye are labeled on the map. The double star (Dbl) at the bend of the handle of the Big Dipper is easily detected. The famous Orion Nebula, a cloud of gas and dust out of which stars are forming, is marked (Nb) in that constellation. The open or galactic star cluster (OCl) known as the "Beehive" can be located between the Gemini twins and Leo. The position of an external star system, called the Andromeda Galaxy after the constellation in which it appears, is also indicated (Glx). Try to observe these objects with unaided eye and binoculars.

—D. David Batch

Comets in January and February

This section lists all of the comets that are prominent in the sky, the visual magnitude and the declination of the comet. Brighter comets (lower magnitude) at higher declinations (higher h) are the best candidates to observe.

Month	Evening			Midnight			Morning		
	Comet	Mag	h	Comet	Mag	h	Comet	Mag	h
2021 Jan	**C/2020 M3 (ATLAS)**	**10**	**77**	**C/2020 M3 (ATLAS)**	**10**	**79**	C/2020 M3 (ATLAS)	10	14
	141P/Machholz 2	**11**	**49**	**398P/2020 P2 (Boattini)**	**12**	**47**	C/2019 N1 (ATLAS)	12	6
	88P/Howell	**11**	**25**	**29P/Schwassmann- Wachmann 1**	**13**	**31**			
	398P/2020 P2 (Boattini)	**12**	**72**						
	29P/Schwassmann- Wachmann 1	**13**	**79**						
2021 Feb	**C/2020 M3 (ATLAS)**	**12**	**77**	**C/2020 M3 (ATLAS)**	**12**	**53**	C/2020 M3 (ATLAS)	12	4
	88P/Howell	**12**	**19**	**398P/2020 P2 (Boattini)**	**13**	**47**	**C/2017 K2 (PanSTARRS)**	**13**	**56**
	141P/Machholz 2	**12**	**53**	141P/Machholz 2	13	5			
	398P/2020 P2 (Boattini)	**13**	**78**	29P/Schwassmann- Wachmann 1	13	8			
	29P/Schwassmann- Wachmann 1	**13**	**68**	C/2017 K2 (PanSTARRS)	13	1			
	C/2020 N1 (PanSTARRS)	**13**	**60**	C/2020 N1 (PanSTARRS)	13	1			

Data courtesy of Seiichi Yoshida (http://www.aerith.net/comet/future-n.html)