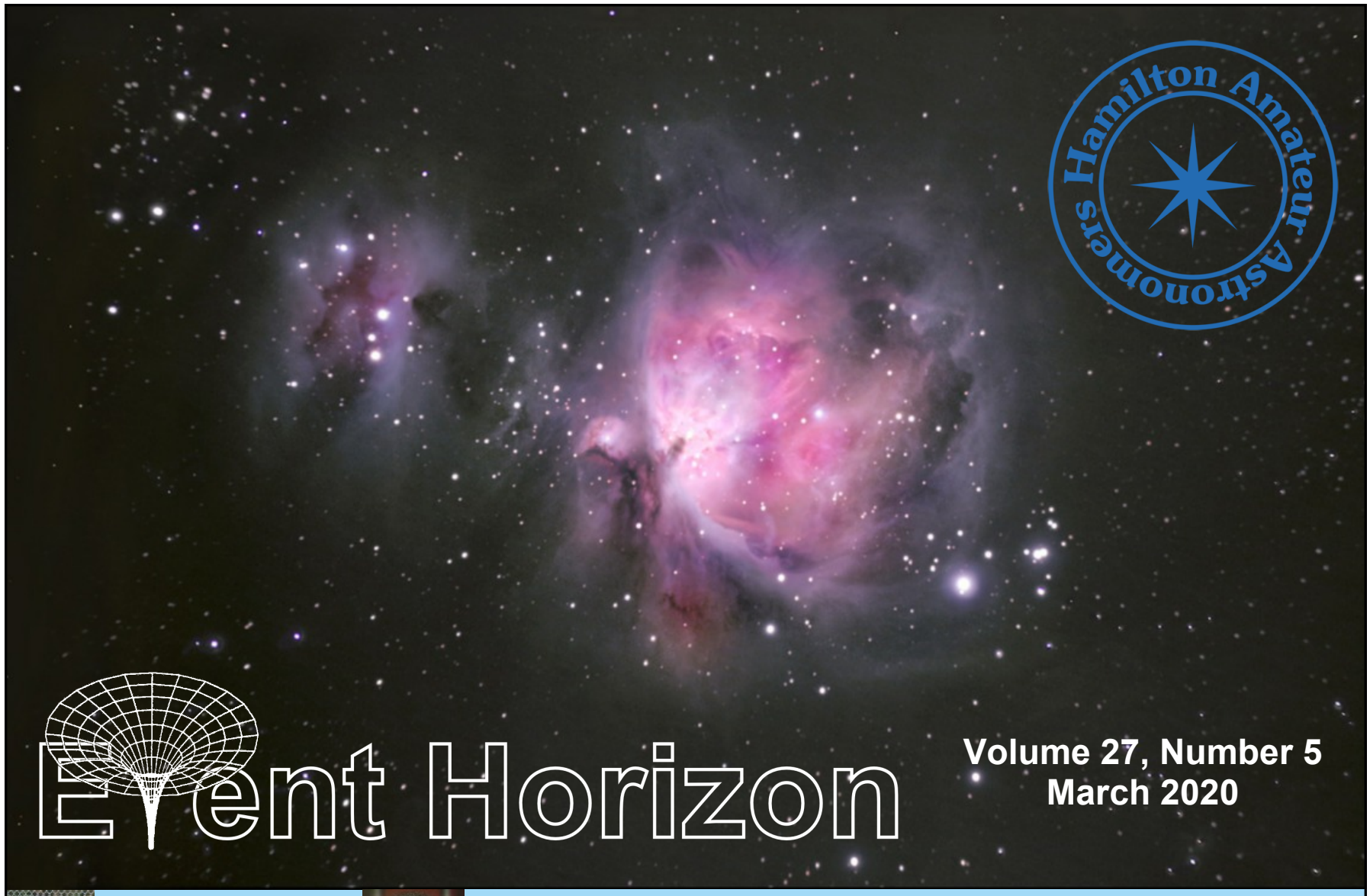


Event Horizon

Volume 27, Number 5
March 2020

From The Editor

March is here, and the temperatures & weather conditions are starting to moderate.

And hopefully, we will all see clear skies a bit more often as Spring sets in.

Enjoy!

Bob Christmas, Editor

editor 'AT'
amateurastronomy.org

Chair's Report by John Gauvreau

I won't tell you when the last time was that I had my telescope out, but I was recently reminded just how little use it gets in the winter. My equatorial mount requires me to enter the date I am using it, and it remembers that date for next time. So that means every time I turn it on it tells me the last time it was used. And when I set it up last Saturday, boy did it remind me that it had been a while! That doesn't mean that I hadn't been out; I really enjoy using my many binoculars here at home, including my newest ones, 100mm Garrett binoculars.

But my scope finally did see some action on Saturday when I went out to Binbrook Conservation Area with about 15 other members for a wonderful new moon observing session. There were lots of scopes and all kinds of different observing going on. There were new members enjoying their first visit to Binbrook, experienced members giving new scopes first light, a little astrophotography and a lot of good camaraderie and fun. It was great to get out under the winter sky and great to see everyone who came out. I am looking forward to lots more observing as the weather improves.

(Continued on page 2)

IN THIS ISSUE:

Chair's Report (continued)

February Meeting

Love was in the air for our general meeting on February 14th, or at least Valentines was in the slide shows of main speaker Bernie Venasse, who gave a comprehensive overview of double star observing, and Matthew Mannering with the Sky This Month. Both speakers included not only lots of good astronomy content, but good humour and Valentine messages. Thanks to both Bernie and Matthew for great presentations. The icing on the cake was a wonderful book review by Denise White. Her look into "Chasing New Horizons", about our exploration of Pluto, was her best talk yet. Thanks Denise!

March Meeting

Our March talk, on the 13th of the month, will be presented by *Robert Godwin*, founder of *Apogee Books*. Rob is the author of several books on space travel and exploration, and his talk will be a very personal one as he describes how he got interested in spaceflight and came to be such a competent historian of the Apollo program. He will also have some of the most recent titles from Apogee Books there for sale.

Public Observing Night

The evening of Saturday March 7th will be our first outing of the year. Weather permitting, we will be setting up our scopes at the Niagara Gateway Tourism Centre in Grimsby. If the weather doesn't cooperate then there is hot coffee inside and we can enjoy some good company and conversation. Everyone is invited to bring telescopes, binoculars, books or anything they would like to show to the public. This venue has always been one of our most successful sites and I am looking forward to a chance to set up my scope again. Hope you can make it.

(Continued on page 3)

HAA Helps Hamilton

To support our community, we collect non-perishable food items and cash for local food banks at our general meetings. Please bring a non-perishable food item to the meeting or a donation of cash and help us help others.

Our donations go to Hamilton Food Share, which delivers them to various food banks around the Hamilton area.

If you would like to help or have any questions about this initiative, please contact the H.A.A.

Hamilton Food Share
Hunger. It's just unacceptable.

Masthead Photo: *The Sword of Orion, by John Gauvreau.*

This image includes the Great Orion Nebula (M42, 43) and the "Running Man" Nebula (NGC 1973,75,77). To obtain this stunning image, John took 60 1-minute exposures at ISO 1600 and 60 30-second exposures at ISO 800, through his 90mm William Optics Megrez 90 at f/6.3, with his Canon t3i, on his SkyWatcher AZ-EQ6 mount. Date: February 22, 2020. Location: Binbrook, ON.

Chair's Report (continued)

Bay Area Science and Engineering Fair

Each year the HAA involves itself with BASEF in a variety of capacities. For many, many years we have sponsored a special award for the best astronomy project. This year the club will be well represented by Bernie Venasse, Mario Carr and Chris Strejch, who will judge the projects and interview the students to determine a worthy winner. The club also contributes to the ongoing oversight of the event and finally, I will once again be participating in the student's activity morning by giving an astronomy related talk to inspire them.

The HAA has a special connection to BASEF this year with an honour bestowed on our own Michael Jefferson. There is more elsewhere in this newsletter, so for now, I can only say that it is very well deserved; BASEF couldn't have chosen a better ambassador. Please read the article about Michael, follow the link to BASEF's web page on him, and offer your congratulations when you next see him at a meeting. Well done Michael; the HAA couldn't be prouder!

Finally

In only 4 years, the path of totality for the 2024 total solar eclipse will cross parts of Hamilton. The club has committed to providing the best possible educational information for the public, educators, the media and fellow observers. This will include a wide variety of online materials that can be accessed or downloaded as needed. These materials will need to be in place by the start of the ongoing school year; namely September 2023. The time to start preparing this material is now. If anyone is interested in helping out, we encourage you to do so. You can be part of an effort that could benefit thousands of people and help them get the most out of a once in a lifetime experience. Please get in touch with me to be part of the team.

Enjoy the coming of spring and see you at one of the upcoming club events.

H.A.A.'s Loaner Scope Program

We at the HAA are proud of our Loaner Scope Program.

If you don't have a telescope of your own and want to make use of one for a month or so, you can borrow one of our fine loaner scopes.

Please contact Jim Wamsley, at:
905-627-4323
or e-mail Jim at:
secondchair 'AT' amateurastronomy.org

and we'll gladly get one signed out for you.

February Astrophysics Group Meeting Summary by Mike Jefferson

February 21, 2020

Present at this meeting were Doug Black, Doug Currie, Steve Germann, Peter Hui, Mike Jefferson and Ian Rabenda.

Doug Black opened the meeting by handing out a paper on the Stabler Spectrograph for our perusal. A new copy of Carroll's and Ostlie's astrophysics text has been purchased by us and it appears that it has not changed much since the first edition of 1996 or the second version following that one. We have decided that it is a well-written text for teaching purposes.

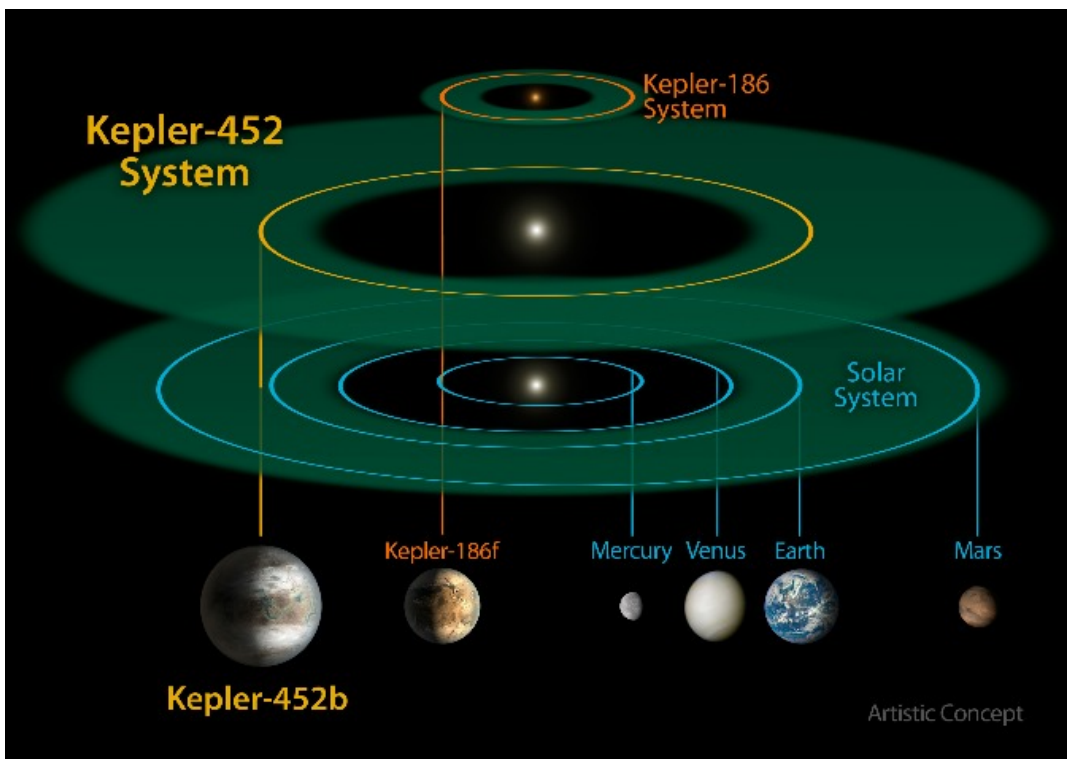
Doug Currie opened the presentations with a paper on the Sloan Digital Sky Survey's data releases. He has been looking at old and new data. This particular one is #16. He showed us the coordinates of data and used some examples, such as the Orion Nebula, to illustrate his presentation. Opening and using the data was his goal, and Steve got into it and showed us his analysis from 4 years of practice with it. Difficulties with its use did arise, but we found out how to work around these. Data release #16 has everything the earlier releases had - and more.

Doug Black presented many stylized types of exoplanets. Some of these are very speculative: ice worlds; water worlds; hot Jupiters; potentially habitable exoplanets and planets near the habitable zones of different types of stars. Closer to home, in our solar system, Europa, Enceladus, Mars, Pluto, Titan, Earth and Venus have been shown to have water, in some form, or to possess other characteristics that would make them hospitable, or somewhat hospitable, to life as we know it.

Some answers to Enrico Fermi's question, "Where is everybody?", were as follows: just here, where was everybody, maybe we're the first and maybe we're not! This was an attempt to come to grips with why we seem to be alone in the universe.

The cost of astrobiology and the cost of researching such eccentric information was discussed.

Somewhere between 1196 and 2017 exoplanets or strange objects have been potentially discovered to date. TESS, SPECULOOS and ground-based inquiries are using transit photometry, radial velocity and other exotic techniques to ferret out exoplanet candidates.



Scale Comparison of the Kepler-186 & 452 Systems with our Solar System. Diagram Credit: NASA/JPL-CalTech/R. Hurt

The Kepler K-2 Search Space system has found an earthlike candidate in Kepler 452b. Many different Kepler planetary systems have been found. GAIA is searching and has 4108 confirmed planets. According to the NASA data file, 4116 have been located to date.

We thank the Blacks for the hospitality and refreshments and other astrophysics members for refreshment contributions. The next meeting will be on March 20, 2020 at Doug Black's. Please check with "Event Horizon" for confirmation or any potential changes before that date.

The Sky This Month for March 2020 by Bob Christmas

Normally, our Observing Director, Matthew Mannering, would be here, but due to personal reasons beyond his control, Matt had to bow out of writing The Sky for the E.H. this month.

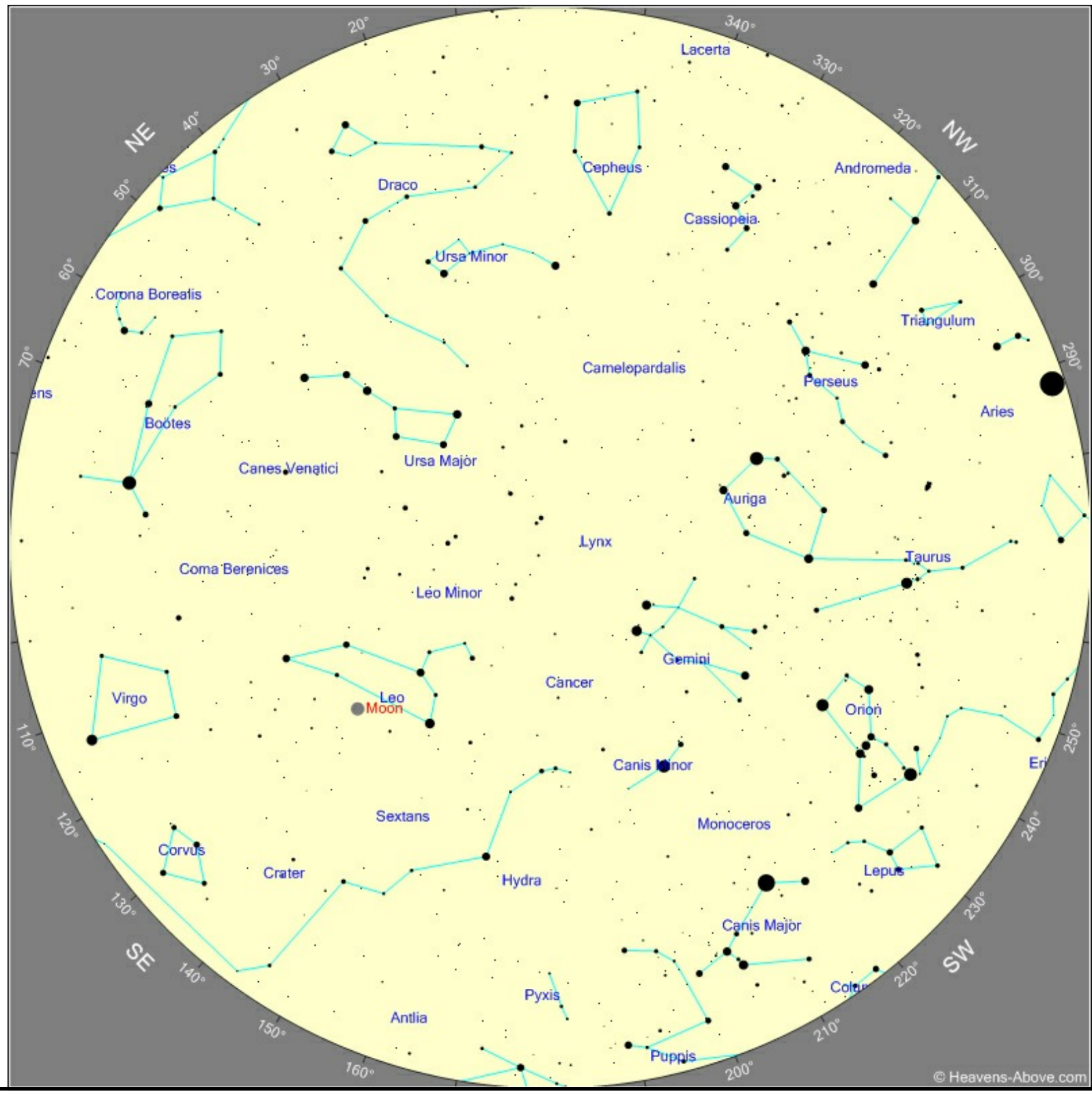
So, as I did for Steve Germann last October and November, I'm standing in as the "emergency goalie", so to speak.

This March brings quite a few events to the sky, primarily moon and/or planet conjunctions. We also welcome back Daylight Savings Time on March 8 and the Spring Equinox on March 20.

The Sky at a Glance

Here's an all-sky chart for *March 8, 2020, at 11:00 pm Eastern DAYLIGHT Time* as seen from Binbrook, ON. This chart was generated using the Heavens Above website. The stars in the sky rise and set about an hour earlier every half month later. On March 24, this will be the sky at about 10:00pm; on April 6, this will be the sky at about 9:00pm, etc.

(Continued on page 6)



The Sky This Month for March 2020 (continued)

The winter constellations, including *Orion*, *Canis Major*, *Taurus* and *Gemini* are still visible in the west, still fairly high up. And speaking of Orion, this is the second time in three months that a member image of the Orion Nebula and Sword is featured as the E.H. Masthead Photo. John Gauvreau's image is very worthy of being featured this month, as was Mike Hamilton's image in January. Also, the unusually-dim Betelgeuse continues to make astronomy news.

Looking in the opposite direction, constellations associated with Spring are getting higher up in the east, including *Leo*, *Virgo*, *Bootes* and *Hydra*. The Spring sky is very rich with galaxies, especially in Virgo, *Coma Berenices*, *Canes Venatici* and *Ursa Major*.

And if you're wondering what that big blob at the right side of the chart is, that's the planet *Venus*, which continues to get higher in the west in Aries, staying up in the evening sky for longer periods of time as this month progresses. And next month, on April 3, Venus will be right beside the *Pleiades (M45)*!

My source for all Moon and Planet info is the *RASC Observer's Handbook 2020*.

The Moon

Libration this month is as follows: The Northern limb will be most exposed on the 24th and the Southern limb on the 11th. The Western limb will be most exposed on the 5th and the Eastern limb on the 16th.

Phases this month:

- March 2 19:57 UT — 1st Quarter
- March 9 17:48 UT — Full Moon
- March 16 09:34 UT — Last Quarter
- March 24 09:28 UT — New Moon

Note that the Moon will have close *conjunctions* with the Beehive cluster (M44) in Cancer on the 6th (1.1°), with both Mars (0.7°) and Jupiter (1.5°) on the 18th, with Saturn (2°) on the 19th, and with the open star cluster M35 in Gemini *twice*, on the 4th (1.2°) and the 31st (0.9°).

The Planets

- *Mercury* emerges in the eastern morning sky, and its position gets more favourable as the month progresses, reaching its maximum apparent separation of 28° from the Sun on the 24th.

- *Venus* shines brightly high in the western evening sky all month. It reaches its maximum apparent separation of 46° from the Sun on the 24th.

- *Mars* is in the south-east morning sky near the Sagittarius-Capricornus border region. Watch for its triple-conjunction with Jupiter and Saturn between the 20th and the 31st (see charts on page 7).

- *Jupiter* is low in the south-east in the morning twilight. Mars passes within 0.7° of Jupiter on the 20th (see charts on page 7).

- *Saturn* is low in the south-east in the morning twilight just to the left of Jupiter. Mars passes within 0.9° of Saturn on the 31st (see charts on page 7).

- *Uranus* is in Aries and sets around 10 to 10:30pm EDT. Venus passes within 2° of Uranus on the 9th.

- *Neptune* is lost in the Sun's glare and is not observable this month.

(Continued on page 7)

The Sky This Month for March 2020 (continued)

A Triple-Conjunction of Planets in the Morning Sky

From March 20th until the end of the month, Mars joins Jupiter and Saturn just to the left of the Sagittarius Teapot in the south-eastern morning sky. This grouping will be best seen at about 5:30am just before morning twilight sets in. Here are Stellarium-generated charts for when Mars passes Jupiter on the 20th, and when Mars passes Saturn on the 31st.

(Continued on page 8)

The Sky This Month for March 2020 (continued)

Minor Planets

- *(4) Vesta* is in Taurus in the evening sky. At about magnitude 8.3, it should be visible in a small telescope, or even in binoculars. The Moon makes a very close pass, within 0.2°, of Vesta on the 29th.

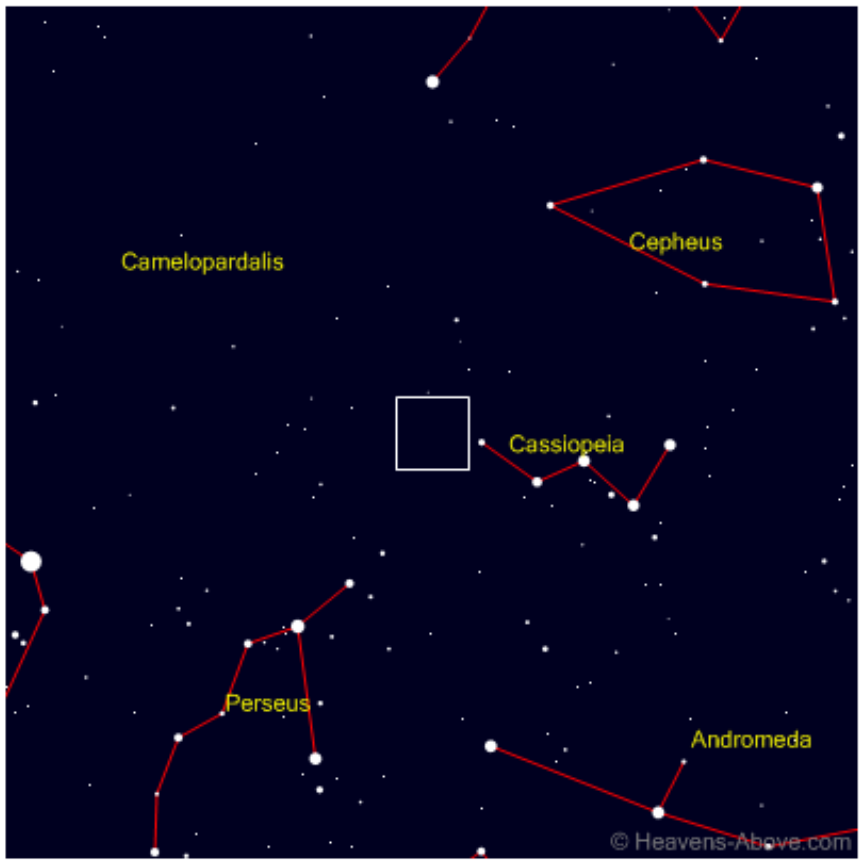
Comets

There is one comet out there now that's worth mentioning, *C/2017 T2 PANSTARRS*, in Cassiopeia this month, that will pass about 5° above the Heart Nebula around mid-month. Being circumpolar, it is in the sky all night. At about magnitude 9 however, you will need a telescope and a very dark sky to see it.

Here are finder charts generated from the Heavens Above website for *C/2017 T2 PANSTARRS* for March 15.

Comet C/2017 T2 PANSTARRS

Year 2020 Month March Day 15 Time 23:00:00 Update Reset to now



Coarse finder chart
(Field of view: 60°, Max. star mag.: 5)

Fine finder chart
(Field of view: 5°, Max. star mag.: 10)

You can keep track of comets currently in the sky, using 2 very useful websites:

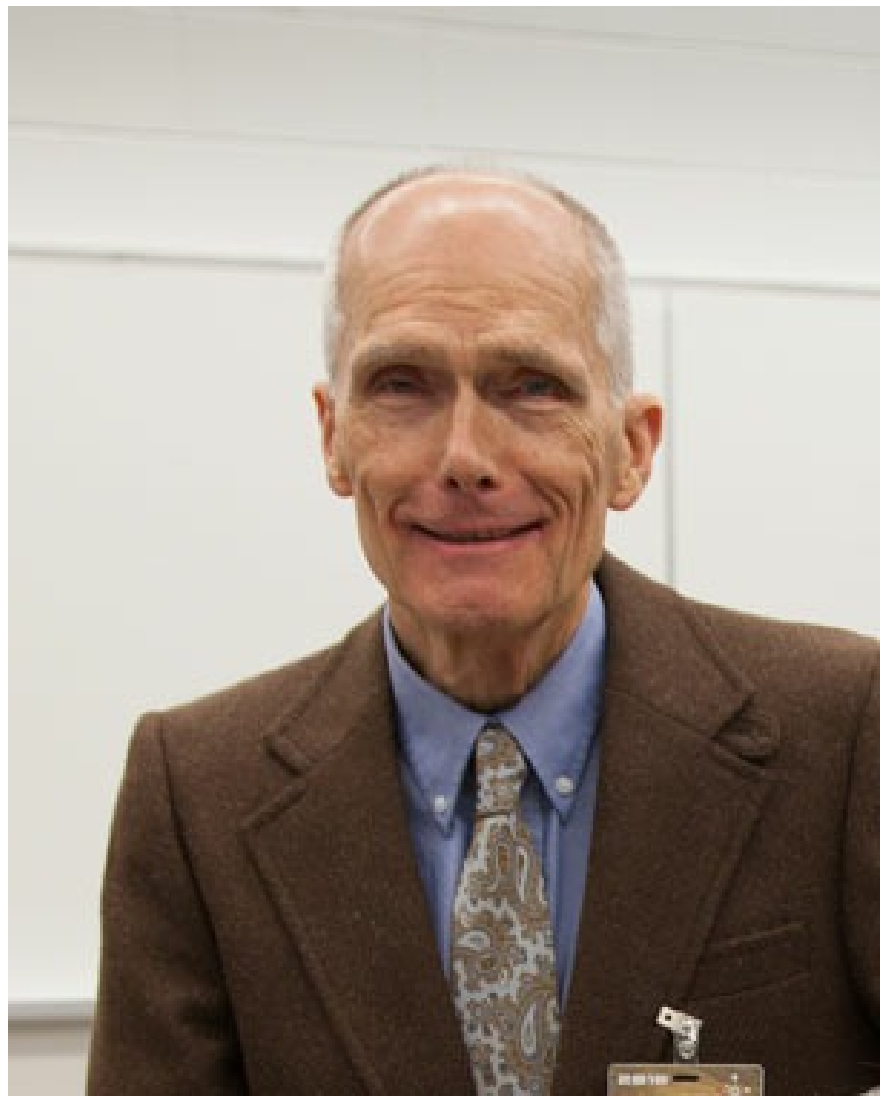
Weekly Information about Bright Comets: http://www.aerith.net/comet/weekly/current.html

Heavens Above's Comet Page: https://www.heavens-above.com/Comets.aspx

One last thing I will mention is that we're coming into the time of year when all 110 Messier deep sky objects are visible on the same night. Hence, it's "Messier Marathon" season.

Clear Skies, and Happy Observing everyone.

BASEF Honours Michael Jefferson



BASEF has bestowed a remarkable honour on one of our very own members.

The *Bay Area Science and Engineering Fair* is the regional science fair that attracts about 350 projects and 500 students from middle and high schools in the area. BASEF encourages these hundreds of students to involve themselves further with science and gives them not only the opportunity to win prizes for their work and advance to the national level, but puts them in touch with other students and teachers who can support their learning. The HAA's involvement with BASEF has been going on for many, many years and has involved many, many members over those years. I have volunteered for close to 10 years now and it is always rewarding.

My contributions though are small compared to those of Michael Jefferson, whose involvement stretches back 59 years. Michael is one of the founders of the HAA, has contributed to our club in more ways than I can count, and is someone I am happy to count as a friend (and have done so since the days even before this club was formed).

Michael has been named the very first member of the BASEF Alunmi Network, honouring those who have contributed to BASEF in not just a quantity of years, but of a quality that is exceptional and noteworthy.

Below is the transcript as it reads on BASEF's home page. Congratulations Michael on this well deserved honour.

— John Gauvreau

(Continued on page 10)

BASEF Honours Michael Jefferson (continued)

From BASEF:

https://www.basef.ca/launching-our-alumni-network-with-rocketman-mike-jefferson-basef-1961/

(Reprinted with permission)

Launching Our Alumni Network with Rocketman Mike Jefferson (BASEF 1961)

At the launch of the BASEF Alumni Network, we are delighted to announce Mike Jefferson as our first member. Mike was a participant in our first-ever fair in 1961 and he volunteers in the fair today, 59 years later. Mike epitomizes what it means to be an active alumnus of the fair. He participated with a project as a student and went on to have a long career but never forgot his BASEF past. His later work was even inspired by his original science fair project. He has now returned to us as a volunteer, facilitated the donation of a Special Award to the fair (Hamilton Amateur Astronomers) and presented it several times.

Here is his story. Be inspired!

" *My association with BASEF began at the first fair, in 1961. That would be the year I was in Grade 10. But, let's go back even further. I was born in Hamilton in 1945, spent my first year of life in England when my father, who had served in the RAF, was demobilized from Ferry Command and we returned to Canada. When I was in Grade 6 (in Ancaster in 1956) the American Space Programme and its rivalry with the Soviet Union were just emerging. There was a space venture in my future. Bell Telephone had just come out with a series of science programmes and Disney had completed the first of his programmes on "Rockets and Space" - "Man in Space". Within the next two years, "Man and the Moon", "Mars and Beyond" and other science programmes were to appear for our eager young eyes and minds.*

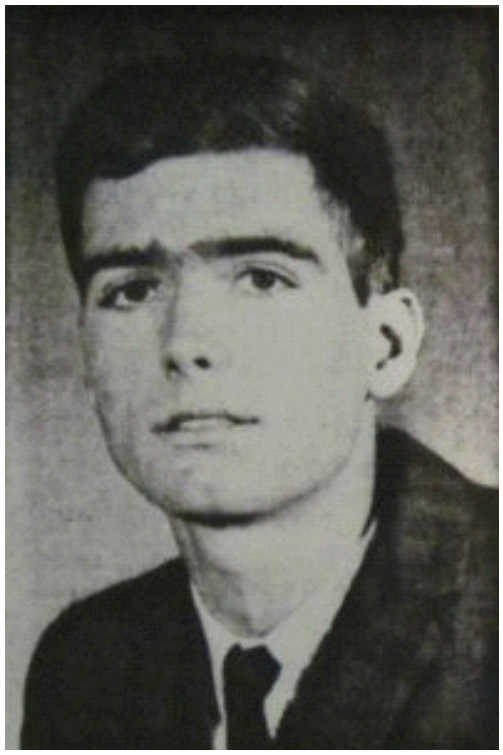
My friends and I formed a space and astronomy club under the watchful eye of our much-loved Grade 6 teacher, Mr. Clarke, a Welshman. He was always asking how our rocket experiments were coming along as we desperately tried to invent fuels to get craft off the ground. We used everything from catapults to Jet-X's to black powder (which we successfully manufactured from substances available (then!) at the local drug stores) and we succeeded with some minor launches, failing to injure or blow ourselves up. (Today, I have Estes rockets - far safer - which I intend to set off as soon as I can find some time to do it). One of us was lucky enough to be given a 40 mm Unitron-Polarex refractor for his birthday. My parents gave me a good student microscope for Christmas. I believe the thinking was that I would get more use out of that than a weather-dependent telescope. We wrote letters to Wernher von Braun, and his assistants would write back to us. If you have ever seen "October Sky", aka, "The Rocket Boys", that was us. People in those times were very much impressed with science and its findings. They believed in the experts and were not inclined to look upon new discoveries as "fake news" or utter other such put-ddowns of the experts. If something was appearing on television that pertained to school curricula, teachers would ask students who had a television set if it would be possible for a child without one to come over to their place and

40 mm Unitron-Polarex refractor
A $75 telescope, about a weeks wages in 1956, would cost about $720 in 2020.

(Continued on page 11)

BASEF Honours Michael Jefferson (continued)

watch the programme with them. Such was the case with Bell Telephone's "Hemo the Magnificent" and some of its other presentations. Everyone came to school ready to discuss the theme. Everything went along like this in my Grade 7 and 8 years.
Then, I was in high school. There was still enough of the above in us that classmates would write poems about us in the yearbook:



Mike in high school

"Alan, Mike, Bill and Gerry are ours,
Four boys who love to look at stars."

We were never labelled "space cadets" or anything like that. Things looked good for us in Grade 10. We were very fortunate to have Mr. Park (a science teacher) offer to start a science club in 1960. We started a project to create an astronomical telescope. This instrument was to be ready for the BASEF of 1961. However, it was not! We ordered the materials too late and did not have enough man-hours available to get the main mirror beyond rough grinding. We did enter it as an incomplete project. And we did garner an honourable mention!
The most memorable things about the fair were the noisy 'acoustics' in the Hamilton Armouries, where it was held, and the giant Van de Graaf generator (it was about six feet tall) entered by Cathedral Boys High School. Safety was not much of a consideration in those days! When they turned that thing on, it was as if the Saturn 5 was lifting off for the Moon! They formed a human pyramid with the football team on the bottom (floor), the cheerleaders on top of them, and the 'brains' behind the project at the apex. He clutched a 48" fluorescent bulb in one hand and touched the generator's 3' diameter ball with the other! The bulb lit up! What a demonstration! I don't know how well they did – mostly show and not much science – but they broke all modern safety rules and records! Today, it would have to sit there silent and unplugged.
As the next years of high school passed, I became immersed in assignments, homework, tests, exams and studying. There was not much room left for science pursuits of any kind and it faded from my life quite considerably.
After my university BA and my year at Hamilton Teachers' College, my elementary teaching career led me 'back to' science fairs. These were mostly within the school and/or board settings. The county science fairs were simply on-the-spot bridge-building contests between teams of students, over in less than one day. Then, as now, the rigidity of the school curriculum made it very difficult for students to participate in science fairs in addition to their mandatory school work. It is nice today to see so many students benefiting from the wonderful learning experience at BASEF, working independently, or with professional people, parents or laboratories. You just can't keep a self-starter down!
About the early 1980's my interest in space re-surfaced and I joined the Royal Astronomical Society of Canada Hamilton Centre. It was like being reborn! I ended up acquiring astronomical equipment and I helped found the Hamilton Amateur Astronomers (which has quite a close connection with BASEF).
About 2002 I became very interested in the 'puzzle' of spectra (of stars, the sun and planets). I wanted to know how these revealed information about objects in the sky, about absorption lines, emission lines, grotrian diagrams, stellar classifications, etc. So, today, I not only enjoy the sky, I also analyze the light that it shines down on us.
Somewhere close to my retirement from teaching, in 1999, I decided to get involved with BASEF again and I have served on the committee as a Merit Judge, a Special Awards Judge (with the Hamilton Association for the Advancement of Literature, Science and Art {The Da Vinci Award}), as an advisor with the Hamilton Amateur Astronomers and a BASEF Safety Instructor and Safety Officer. It has been a great experience and I have loved every minute of my participation in it. I think my life and its charmed childhood, prove beyond any doubt that you don't have to be a professional scientist to enjoy science and nature! "

NASA Night Sky Notes

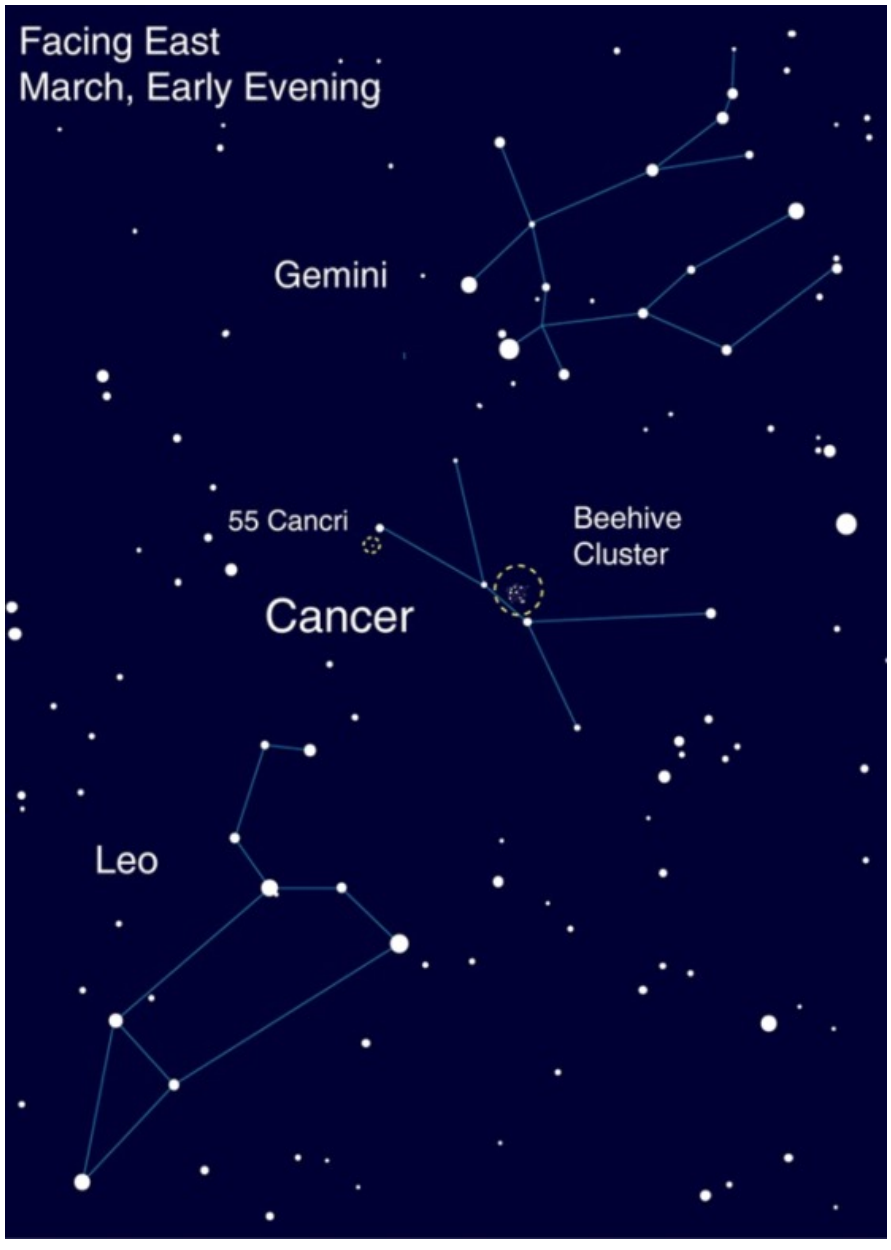
This article is distributed by NASA Night Sky Network.

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach.

Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

Dim Delights in Cancer

By David Prosper



Look for Cancer in between the "Sickle" or "Question Mark" of Leo and the bright twin stars of Gemini. You can't see the planets around 55 Cancri, but if skies are dark enough you can see the star itself. Can you see the Beehive Cluster?

Cancer the Crab is a dim constellation, yet it contains one of the most beautiful and easy-to-spot star clusters in our sky: the **Beehive Cluster**. Cancer also possesses one of the most studied exoplanets: the superhot super-Earth, **55 Cancri e**.

Find **Cancer's** dim stars by looking in between the brighter neighboring constellations of Gemini and Leo. Don't get frustrated if you can't find it at first, since Cancer isn't easily visible from moderately light polluted areas. Once you find Cancer, look for its most famous deep-sky object: the **Beehive Cluster**! It's a large open cluster of young stars, three times larger than our Moon in the sky. The Beehive is visible to unaided eyes under good sky conditions as a faint cloudy patch, but is stunning when viewed through binoculars or a wide-field telescope. It was one of the earliest deep-sky objects noticed by ancient astronomers, and so the Beehive has many other names, including Praesepe, Nubilum, M44, the Ghost, and Jishi qi. Take a look at it on a clear night through binoculars. Do these stars look like a hive of buzzing bees? Or do you see something else? There's no wrong answer, since this large star cluster has intrigued imaginative observers for thousands of years.

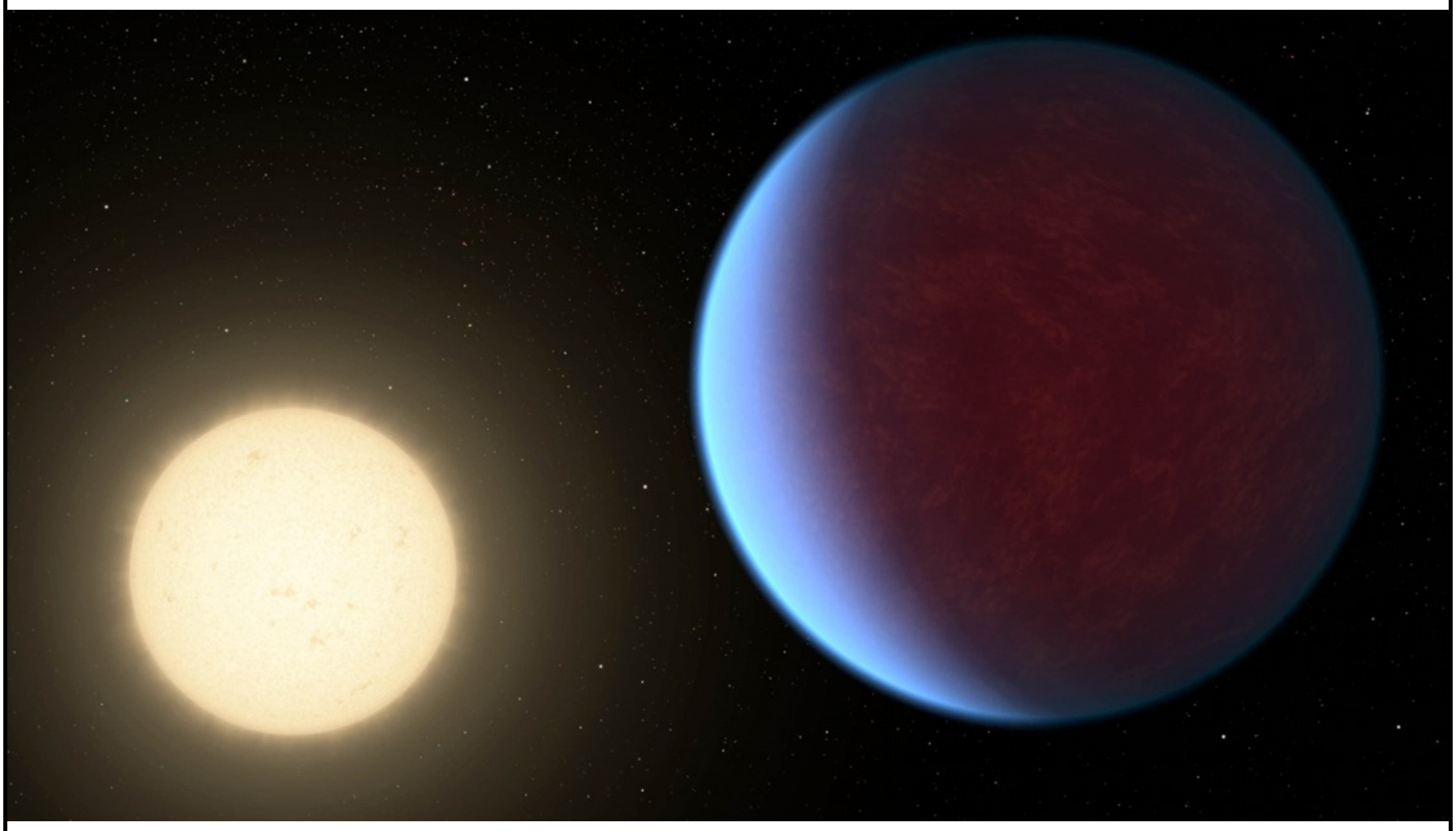
55 Cancri is a nearby binary star system, about 41 light years from us and faintly visible under

(Continued on page 13)

excellent dark sky conditions. The larger star is orbited by at least five planets including **55 Cancri e**, (a.k.a. Janssen, named after one of the first telescope makers). Janssen is a "super-earth," a large rocky world 8 times the mass of our Earth, and orbits its star every 18 hours, giving it one of the shortest years of all known planets! Janssen was the first exoplanet to have its atmosphere successfully analyzed. Both the Hubble and recently-retired Spitzer space telescopes confirmed that the hot world is enveloped by an atmosphere of helium and hydrogen with traces of hydrogen cyanide: not a likely place to find life, especially since the surface is probably scorching hot rock. The NASA Exoplanet Catalog has more details about this and many other exoplanets at bit.ly/nasa55cancrie.

How do astronomers find planets around other star systems? The Night Sky Network's "How We Find Planets" activity helps demonstrate both the transit and wobble methods of exoplanet detection: bit.ly/findplanets. Notably, 55 Cancri e was discovered via the wobble method in 2004, and then the transit method confirmed the planet's orbital period in 2011!

Want to learn more about exoplanets? Get the latest NASA news about worlds beyond our solar system at nasa.gov.



Artist concept of 55 Cancri e orbiting its nearby host star. Find details from the Spitzer Space Telescope's close study of its atmosphere at: bit.ly/spitzer55cancrie and the Hubble Space Telescope's observations at bit.ly/hubble55cancrie

Credit: NASA/JPL-Caltech

The Summer “Impromptu” Star Party

A brand new Star Party is coming this summer to Southwestern Ontario.

This new Star Party is to be held this July at the *Backus Heritage Conservation Area* near Port Rowan and Long Point, in Norfolk County, Ontario.

The conservation area has camping, washrooms, showers, swimming, and a large field from which to observe with no lights to interfere.

For more information, contact Dan Copeland:

dan ‘AT’ dancopeland.ca

Information is also available from these links:

https://www.facebook.com/JulySISP

https://www.facebook.com/events/440504859974733/

William J. McCallion Planetarium

McMASTER UNIVERSITY, HAMILTON, ONTARIO

- **Public shows every Wednesday (7:00pm)**
- **Public transit available directly to McMaster campus**
- **Tickets $7 per person; private group bookings $150**
- **Different shows every week**
- **Upcoming shows include:**
  - **Mar 4: Introductory Astronomy for Kids — Solar System (5:45pm, 7pm)**
  - **Mar 11: Celestial Shadows (7pm, 8:15pm)**
  - **Mar 18: Introductory Astronomy for Kids — Solar System (*1pm*)**
  - **Mar 18: Across the Universe (7pm, 8:15pm)**
  - **Mar 19: Introductory Astronomy for Kids — Galaxies (*1pm*)**
  - **Mar 25: Backyard Astronomy (7pm, 8:15pm)**
- **For more details, visit www.physics.mcmaster.ca/planetarium**

UPCOMING EVENTS

March 7, 2020 - 7:30 pm - 11:00 pm — *Public Stargazing Night* at the Niagara Gateway Tourism Centre, Grimsby, ON.

March 13, 2020 - 7:30 pm — *HAA Meeting* at McMaster Innovation Park, 175 Longwood Road South, Hamilton, ON. Our main speaker will be *Robert Godwin* of Apogee Books. Everyone is welcome.

April 17, 2020 - 7:30 pm — *HAA Meeting* at McMaster Innovation Park. Everyone welcome.

2019-2020 Council

Chair	John Gauvreau
Second Chair	Jim Wamsley
Treasurer	Ann Tekatch
Digital Platforms Director	Christopher Strejch
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The Harvey Garden HAA Portable Library

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