Reflections

The Newsletter of the Popular Astronomy Club

ESTABLISHED 1936

July 2023

REFLECTIONS from the President

Dino Milani

At the June membership meeting, I gave a presentation on *Accidents in Space* where moon landers crashed and rockets blew up. Accidents happen to people also.

In June, our president, Dale Hachtel had an accident while hiking. While Dale is expected to recover, he is very limited in what he can do for the next few months. So, while Dale is out, I will be taking over his duties until he returns, including writing this column.

I think I speak for all PAC members in wishing Dale the best and hoping that he does get well soon.

PAC members were very busy in June. On June 3, we held a solar observing event at the Giant Goose Conservation Area in Atkinson, Illinois, which went well.

June 17 was our Niabi Zoo astronomy night. The sky was cloudy, but we were still able to observe and photograph objects, and there were more than 50 visitors viewing the objects with us.

Also in June, Alan and Sara Sheidler attended the 2023 Mid States Region of the Astronomical League's Conference in Tulsa, Oklahoma. Believe it or not, the Tulsa Club also built a mobile observatory for their telescope. The inside is covered with hand-drawn images of space scenes, which show well during daytime presentations.

This is the third mobile observatory we have seen produced, with our club having the first, a club in California the second, and Tulsa the third.

Other club members made a number of observations and photographs which they shared with the club. This includes Roy Gustafson, Alan Sheidler, Rusty Case, Rolando Gamino and Byron Davies.

Al and Rusty were at the Paul Castle Observatory on June 21, the date of the summer solstice, and with a clear sky took a number of excellent astrophotos.

One of our goals as a science club is to provide the public with information about astronomy, and I believe we are doing this with our meetings, website, Facebook page, and public astronomy events.

Ou rpublic outreach program in July is very busy with five events.

The first event is July 1 at Illiniwek Campground. This is a popular event which could draw up to 200 visitors. Usually, we bring seven to ten telescopes and are busy all night.

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Reflections from the President

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The second and third events, on July 7th, are at the Silver Bell Hollow Alpaca Farm, and at Bishop Hill for a program titled "Native American Star Stories." We are covering both events with a number of telescopes at the alpaca farm and at least one at Bishop Hill.

The fourth event, on July 15, is our monthly Niabi Zoo Astronomy Night.

The fifth event, on July 25, is the DeWitt Public Library summer reading program stargazing event. This is a popular program which could attract more than 100 visitors.

On top of that, we keep receiving more requests for public events all over the area. Our events usually go well, so we are often asked to return. Each event allows us to share our knowledge and telescopic views of the sky with the public, who then learn to share our own enthusiasm with astronomy, as we enjoy sharing that knowledge with them.

It seems we are creating a more and more popular way to see the sky, so we need to *Keep Looking Up!*

Submissions to *Reflections* are always welcome! Send your photos, articles and other items to: levesque5562@att.net

ANNOUNCEMENTS / INFO

NCRAL Seasonal Messier Marathon Program

NCRAL's Seasonal Messier Marathon observing program is NOT designed to qualify observers for the Astronomical League's Messier Observing program; the two programs are unrelated and observing requirements are quite different. In the NCRAL program, the main requirement is to quickly observe and essentially check off items from one of four seasonal lists of Messier objects as noted in the section to follow.

NCRAL recognition will consist a suitable printed certificate and a 3⁄4-inch enameled star pin (a different color for each season). There will be no direct cost to the membership for participating in the award program; the cost of the program (pins, certificates, mailers, postage) will be borne by the Region as a benefit of affiliation. Relevant program documents are linked below

NCRAL Seasonal Messier Marathon Rules

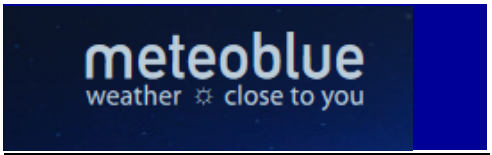
NCRAL SPRING Seasonal Messier List

NCRAL SUMMER Seasonal Messier List

NCRAL AUTUMN Seasonal Messier List

NCRAL WINTER Seasonal Messier List

H0W'S THE WEATHER?



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If you have questions or request, or want more information on PAC, send an e-mail to: popularastronomy-club@gmail.com

SUMMARY OF JUNE PAC MEETING

The Popular Astronomy Club held a general membership meeting at the Butterworth Center in Moline on June 12 at 7 p.m.

Nineteen (19) PAC members and guests were present for the membership meeting, with another eight joining the meeting via Zoom, including guests and members of other astronomy clubs in the region.

After calling the meeting to order, PAC President Dale Hachtel greeted the visitor, Michael Donatsch, who was invited to join the club. Dale also noted that a box of t-shirts had been brought to the meeting, and that new t-shirts were available both to PAC members who had yet to pick up a new t-shirt and anyone joining PAC.

A business meeting was then held. It was noted that total PAC membership, as reported to the Astronomical League, currently stood at 54. All 54 PAC members are also automatically members of the Astronomical League.

Dale noted that minutes of past meetings were posted in the *Reflections* newsletter as

stories (similar to this one). He asked for a motion that these minutes be approved. Roy Gustafson so moved, seconded by Dino Milani, and the motion passed.

Treasurer Michael Haney presented a financial report which showed a healthy club balance of $37,043.13 in total liquid assets. He said that the club was looking at investing part of this balance in one-year U.S. Treasury bills currently paying an interest rate far above that available in a standard savings or checking account. He proposed purchasing a $5,000 bill to start. Dale noted that PAC had no anticipated expenses that would prevent the club for making such a 12-month investment.

The club is in possession of a donated telescope (a Celestron 8SE) and will need to decide what to do with it. The telescope, which is about ten years old, has been tested and is ready for use.

Dale said that he had received an e-mail message announcing that "Asteroid Day" would take place on June 30. He had no further inform-

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The meeting featured a 'smorgasbord' of presentations. Dino Milani (above) presented on the topic of space accidents; Anne Bauer (below), assisted by Eva Davison and Pam Kollar, discussed how the Apollo space missions led to Earth Day; and Paul Levesque made a presentation on proper motion, showing how the view of stars from Earth, such as those forming the Big Dipper, has changed over the centuries.

June meeting

Continued from Page 3

ation to share, other than this seemed to be a bigger event in Europe.

The business meeting then adjourned, and the membership meeting proceeded with three "smorgasbord" presentations by members.

Paul Levesque's presentation was titled "Yes, The Stars Are Moving," and he noted that the presentation was inspired by a radio news story broadcast on NPR about precession, i.e. how the wobble in the Earth's axis causes the position of constellations and the North Star to shift over the centuries.

The story stated that "The stars do not move," but Paul noted that this, in fact, was incorrect. Stars have what is called a "proper motion," defined as how they move very slowly relative to one another when seen from Earth.

British astronomer Edmund Halley confirmed the concept of proper motion in 1718; two centuries later, Edwin Hubble confirmed that the entire universe was expanding, meaning that the stars and all other objects were in fact moving. Our own Sun is moving at about 500,000 miles per hour, which is fairly average.

Paul then displayed some examples of how familiar asterisms and constellations, such as the Big Dipper, Orion and Leo, appeared thousands of years ago, and will appear thousands of years in the future.

Anne Bauer gave a presentation in which she related an earlier presentation she gave at a piano recital at the Butterworth Center on April 22, which was Earth Day. Anne noted that Earth Day was inspired, in part, by the famous images of the Earth captured by Apollo astronauts while orbiting around and walking on the Moon.

Pam Kollar and Eva Davison assisted Anne in illustrating her presentation. Anne showed a photo of the young people assembled for the piano recital and said that the presentation was well received.

Dino Milani's presentation was on the topic "Accidents in Space," and also the problem of space debris. Some of the accidents occurred on the Moon, where probes sent by India and Japan failed to land properly and crashed on the lunar surface.

Dino then looked at the SpaceX launch on April 20, which aimed to place the high-powered Starship rocket into orbit but failed when the rocket experienced a "rapid unscheduled disassembly," i.e. it broke apart and exploded a few minutes following the launch.

One reason for the failure could have been that seven of the 33 boosters on the rocket failed to ignite, as clearly seen by images captured after the launch.

Space debris is posing a problem, and a private company is proposed a solution in the form of Starfish Otter spacecraft, which would go into orbit and clean up some of the debris before re-entering the atmosphere and burning up.

The smorgasbord presentations were followed by a display of member observations. Images captured by Byron Davies were shown, and Byron (via Zoom) explained how he had used software to enhance the images.

Some astrophotos captured by Al Sheidler using the donated telescope were shown, proving that the telescope was indeed ready to use and in good condition.

Dale then reviewed upcoming public outreach events, noting that the club had two events on July 7 (Silver Bell Alpaca Farm and Native American Star Stories in Bishop Hill) but would be able to cover both, thanks to Al,

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SUMMARY OF PAC BOARD MEETING

The board of the Popular Astronomy Club held a meeting via Zoom on Thursday, June 1. PAC President Dale Hachtel called the meeting to order at 7 p.m.

Those present were Past President / Observing Coordinator Alan Sheidler; Treasurer Michael Haney; Secretary Paul Levesque; and Observatory Director Rusty Case. Vice-President Dino Milani was absent due to a scheduling conflict; ALCOR Correspondent Roy Gustafson logged in via the local library and had to leave the meeting early.

Dale began the meeting by discussing some of the health issues both he and his wife had faced recently, noting that these issues had hindered his ability to take part in some club activities. Board members wished Dale the best and said they would help cover for him when necessary.

A Celestron 8SE telescope was recently donated to PAC. The telescope is about ten years old but apparently in good shape. Al said he had taken the telescope to Paul Castle Observatory the previous weekend and found that it had worked well.

Discussion then turned to what should be done with the donated telescope. Paul asked if it could be donated to a local library, where it could be checked out by patrons. (Several local libraries have telescopes which, in some cases, were donated and are maintained by PAC.) However, other board members noted that this telescope is too complex to serve as a library telescope, and that patrons who checked it out would be unable to operate it properly.

It was then suggested that the telescope be offered in a lottery among PAC members, as a means of encouraging more participation in club events. Greater participation would increase a member's chances of winning the telescope. Michael said that he would draft the guidelines for such a lottery and present it to board members. This idea could also be discussed at the next general membership meeting.

Popular Astronomy Club
Balance Sheet
As of April 30, 2023

	Apr 30, 23
ASSETS	
Current Assets	
Checking/Savings	
Business Special	45.44
Cash	0.66
Checking	31,162.92
Money Market	5,415.97
Savings	10.23
Total Checking/Savings	36,635.22
Accounts Receivable	
Accounts Receivable	100.00
Total Accounts Receivable	100.00
Total Current Assets	36,735.22
TOTAL ASSETS	**36,735.22**
LIABILITIES & EQUITY	
Equity	
Opening Balance Equity	9,422.33
Unrestricted Net Assets	27,157.64
Net Income	155.25
Total Equity	36,735.22
TOTAL LIABILITIES & EQUITY	**36,735.22**

Turn to pages 13-14 for detailed income and expense reports.

Dale then reviewed upcoming PAC events, including solar observing at Giant Goose Recreation Area on June 3 and Niabi Zoo on June 17, with a rain date of the 24th. Salem Lutheran Church in Moline has requested a PAC presentation at its upcoming Vacation Bible School, scheduled for June 27-29. A date during that timeframe will need to be selected, based on the availability of PAC members to lead the presentation.

A request has been received for a presentation on Native American Star Stories in

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Board meeting

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Bishop Hill on July 7. However, this is the same date as the PAC observing session at Silver Bell Alpaca Farm. Board members discussed how both events could be supported.

After discussing other upcoming events, Dale suggested that the next PAC board meeting be held on either September 9 or 10. Board members agreed to check those dates to see if they would work.

An order for 18 PAC sweatshirts has gone out to the Handicapped Development Center. More could be ordered at a later date. New PAC t-shirts are also available, both for new PAC members and current members who are up to date on paying their dues.

Michael presented a treasurer's report showing a healthy balance of $36,735.22 as of April 30. Board members again discussed various options for investing part of the balance in a long-term certificate or bond in order to accrue more interest than that paid in a savings or checking account. It was agreed that the club could invest $5,000 or more and still leave enough in liquid assets to cover any projected and unexpected expenses.

The rates paid for various certificates of deposit for various terms were presented, and the possibility of purchasing U.S. Treasury bills was discussed. A final decision was presented to the board for consideration.

Dale suggested that the June membership meeting include a summary of the recent convention of the North Central Region of the Astronomical League, but Al (who was at the NCRAL convention) noted that he would be absent for that meeting. The meeting will include a "smorgasbord" of member presentations, and members are encouraged to prepare presentations for the meeting.

Some members of the public who have attended the public observing sessions at Niabi Zoo have raised concerns about the lack of restroom facilities at these sessions. Dale said that a member of the hiking club had a porta-potty that he sometimes brought to hiking events, and that this might serve as a solution to the lack of facilities. Renting porta-potties is probably not a solution, due to high cost and because this may not be permitted by Niabi Zoo. Dale will further investigate the porta-potty issue and get back to the board.

Paul asked if PAC was interested in putting together a basket for the raffle at Festival of Trees, a holiday event held the week of Thanksgiving. Board members said they were interested, and Paul said he would contact Festival of Trees and get back to the board.

With no further business, the board meeting adjourned at 8:15 p.m.

June meeting

Continued from Page 4

who has agreed to bring a scope to Bishop Hill. The July 1 public observing event at Illiniwek State Park is expected to attract a large crown, and the local hiking club plans to hike to the park's overlook to observe sunset before coming down to observe the night sky.

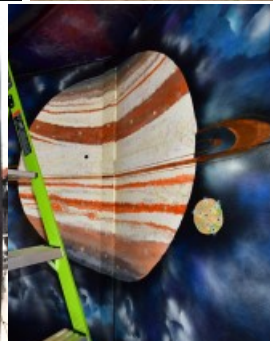
Dale announced that the next general membership would include a presentation on "Extreme Astronomy" by Chuck Allen, vice-president of the Astronomical League.

A recording of the meeting is available on YouTube via the following link: https://youtu.be/krlLNNPvf3w.

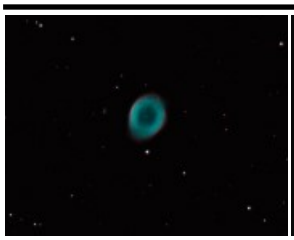
The meeting adjourned at 8:25 p.m. The next membership meeting is scheduled for July 10 at the Butterworth Center and via Zoom.

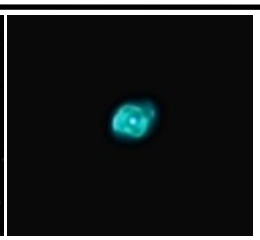
MEMBER OBSERVATIONS
& CLUB ACTIVITIES

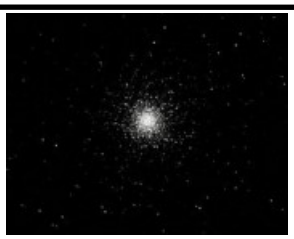
PAC's monthly public observing session at Niabi Zoo on June 17 attracted more than 50 people who enjoyed views of Venus, Mars, some double stars, the Ring Nebula (M57), and the Hercules Cluster (M13; pictured). Clouds and wildfire smoke did obstruct the view a bit, and prevented Alex Holt from working on NCRAL's spring Messier Marathon. Along with Alex, PAC member present included Tim, Hugh and Mary Holt, along with Rolando Gamino, Dan Cusack, Wayland Bauer, Rusty Case, Eva Davison, Mike Haney, Madeline Morrell, Mike Morrell, Pam Kollar, Dale Hachtel and Al Sheidler.



The PACMO may, as far as we know, be the first mobile observatory of its kind, but it's not the only, as Al and Sara Sheidler found when they attended the Mid States Region of the Astronomical League's 2023 conference in June in Tulsa, Oklahoma. During the conference, Al and Sara toured a mobile observatory operated by the Astronomy Club of Tulsa. The inside of this mobile observatory is decorated with paintings of various astronomical objects.







These images taken by Byron Davies during June show (from left) the Ring Nebula (M57), the Cat's Eye Nebula (NGC 6543) and the Hercules Cluster (M13). Great work, as always!

MEMBER OBSERVATIONS
& CLUB ACTIVITIES

Roy Gustafson has been busy taking astrophotos, both day and night. The greyscale image of the Sun, showing a number of sun-spots, was taken on June 13. On June 26, while he was in Minnesota, Roy used his iPhone to capture a solar image showing prominences. Not long after darkness fell on June 20, Roy caught this image on the road outside his home in Orion showing the Moon and Venus.

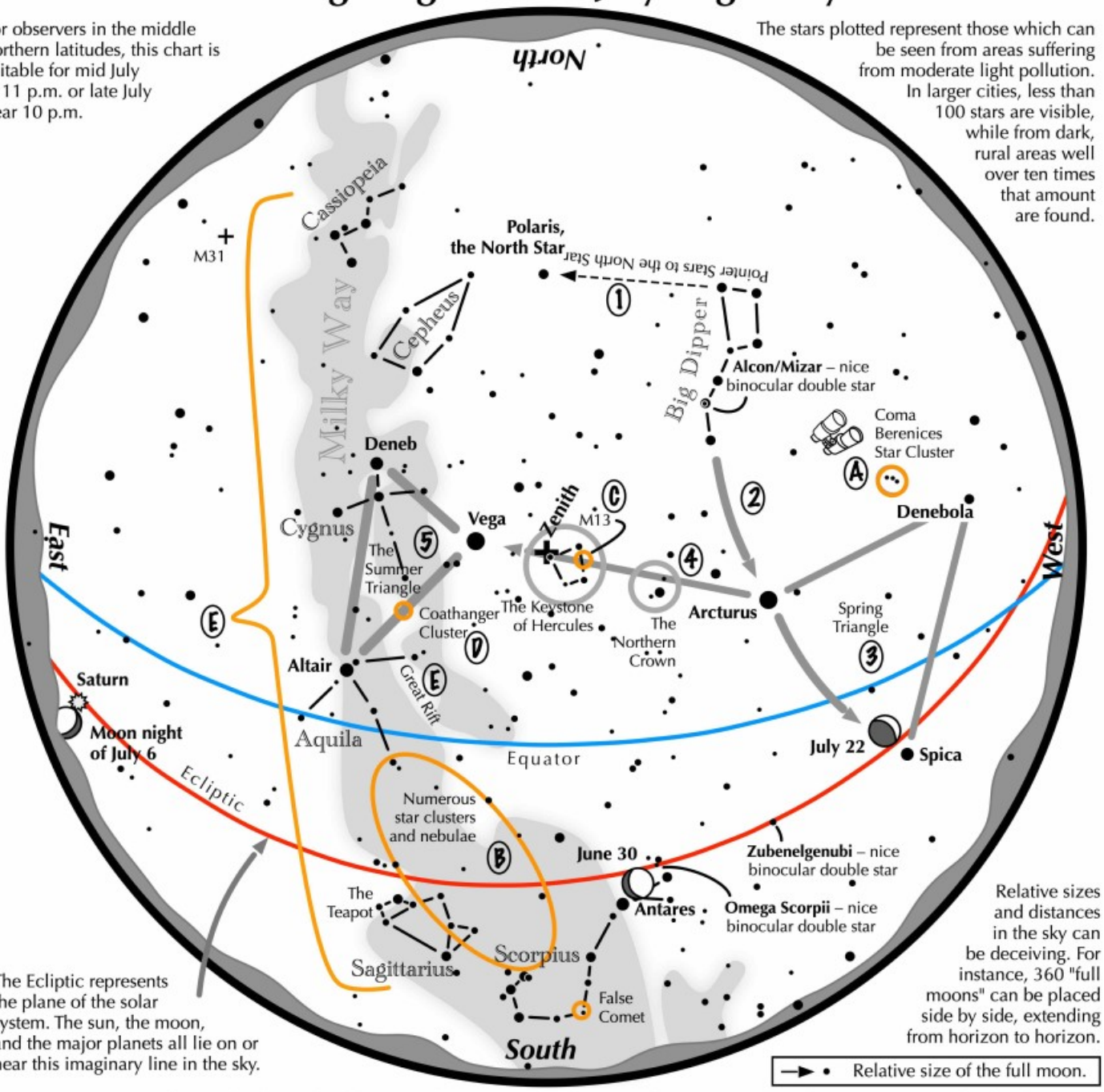
June 3 was a sunny day, perfect for solar observing, and that's what PAC did at an outreach event at Giant Goose Conservation Area in Atkinson. Dale Hachtel, Al Sheidler and Tim, Hugh and Alex Holt all came out for the event, during which this image of the Sun was captured.

PAC's public observing session at Eldridge Public Library attracted nearly 100 guests. Rusty Case, Eva Davison, and Al and Sara Sheidler were the club members who supported the event, and who dodged clouds to observe the Moon, Venus, Mars, Polaris and Mizar. Thanks to Terry Oftedal for helping to set up the PACMO telescope, and big thanks to Emily Haage from the library for inviting PAC and making advance arrangements.

Navigating the mid July Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid July at 11 p.m. or late July near 10 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→• Relative size of the full moon.

Navigating the mid July night sky: Simply start with what you know or with what you can easily find.

1. Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
2. Follow the arc of the Dipper's handle. It first intersects Arcturus, the brightest star in the July evening sky, then continues to Spica. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
3. To the northeast of Arcturus shines another star of similar brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The
4. Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
5. High in the East lies the Summer Triangle stars of Vega, Altair, and Deneb.

Binocular Highlights

A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
B: Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
C: On the western side of the Keystone glows the Great Hercules Cluster, containing nearly 1 million stars.
D: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
E: Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.

Astronomical League *www.astroleague.org/outreach; duplication is allowed and encouraged for all free distribution.*

July 2023

Astronomy in The Old Testament

As an undergraduate student at Acadia University, in the Canadian maritime province of Nova Scotia, my geology professor was trying to teach us about the water cycle. Despite reams of published evidence, the best document he could come up with was this beautiful line from Ecclesiastes:

"All the rivers run into the sea,
Yet the sea is not full,
Unto the place whither the rivers go,
Thither they go again."

Dr. George Stevens' comment had a profound impact on me. First, as a budding young scientist, it opened my mind to the relationship between the night sky and Scripture; second, later as my passion for the arts grew, it reminded me of how ancient peoples viewed the night sky.

From the "11 stars" symbolizing Jacob's brothers, to the line in Amos about "the seven stars" of the Pleiades, to the aggressive tone with Job (9:5-8):

"Who removeth the mountains, and they know it not, (possibly referring to the evolution of the Earth); *Who maketh the Bear, Orion, and the Pleiades? Who shaketh the Earth out of her place* (a big earthquake or a major comet impact), *Who commandeth the Sun, and it riseth not (*if it rises during an when only a thin crescent of sunlight rose).

This is not to mention Joseph's dream "the Sun and the Moon and eleven stars bowed down" (Genesis 37:9-10.) It must have been a very cloudy or hazy night if all he saw was 11 stars instead of the nearly 4,000 stars he could have seen from his obviously dark location.

After a lecture I gave in 1994 at my childhood synagogue, Shaar Hashomayim in Montreal, the associate rabbi pointed out how the ancient Israelites followed astrology, right from the line "*And let there be lights in the heaven, to divide the day the day from the night; and let them be for signs, and for seasons, and for days and for years."* (Genesis 1.14)

The rabbi went on to emphasize that these people never worshipped the stars, but they followed astrology out of interest and fun. Full disclosure: Like most people who observe the night sky, I do not follow astrology, but perhaps unlike most of them, I do appreciate that, were it not for the thousands of years of meticulous records kept by ancient astrologers, we would probably have no real astronomy, nor a Webb telescope, this evening in 2023.

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In the book of Genesis, Joseph dreams of the Sun, Moon and 'the 11 stars' bowing down to him, just one example of astronomical objects appearing in the Old Testament.

Find a ball of stars in the July sky

French astronomer Charles Messier cataloged over 100 fuzzy spots in the night sky in the 18th century while searching for comets – smudges that didn't move past the background stars, so couldn't be comets.

Too faint to be clearly seen using telescopes of the era, these objects were later identified as nebulas, then as distant galaxies, and as star clusters as optics improved. Messier traveled the world to make his observations, assembling the descriptions and locations of all the objects he found in his Catalog of Nebulae and Star Clusters. Messier's work was critical to astronomers who came after him, who relied on his catalog to study these little mysteries in the night sky and not mistake them for comets.

Most easily spotted from the Southern Hemisphere, one "faint fuzzy" was first cataloged by another French astronomer, Nicholas Louis de Lacaille, in 1752 from southern Africa. After searching many years in vain through the atmospheric haze and light pollution of Paris, Charles Messier finally added it to his catalog in July 1778. Identified as Messier 55 (M55), this large, diffuse object can be hard to distinguish unless it's well above the horizon and viewed far from city lights.

But July is great month for getting your own glimpse of M55 – especially if you live in the southern half of the U.S. (or south of 39°N latitude). Also known as the "Summer Rose Star," M55 will reach its highest point in northern hemisphere skies in mid-July.

Looking toward the south with binoculars well after sunset, search for a dim (magnitude 6.3) cluster of stars below the handle of the "teapot" of the constellation Sagittarius. This loose collection of stars appears about two-thirds as large as the full Moon.

A small telescope may resolve the individual stars, but M55 lacks the dense core of stars found in most globular clusters. With binoculars, let your eyes wander the "steam" coming from the teapot-shaped Sagittarius (actually the plane of the Milky Way Galaxy) to find many more nebulas and clusters.

As optics improved, M55 was discovered to be a globular cluster of over 100,000 stars that formed more than 12 billion years ago,

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The highly detailed image above shows an image of the central portion of the M55 star cluster taken by the Hubble Space Telescope. M55 is found just below Sagittarius, as seen in the map to the left.

M55 cluster

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early in the history of the Universe. Located 20,000 light years from Earth, this ball of ancient stars has a diameter of 100 light years.

Recently, NASA released a magnificent image of M55 from the Hubble Space Telescope, revealing just a small portion of the larger cluster. This is an image that Charles Messier could only dream of and would have marveled at!

By observing high above the Earth's atmosphere, Hubble reveals stars inside the cluster impossible to resolve from ground-based telescopes. The spectacular colors in this image correspond to the surface temperatures of the stars: Red stars being cooler than the white ones, and white stars being cooler than the blue ones. These stars help us learn more about the early Universe.

Discover even more here: www.nasa.gov/feature/goddard/2023/hubble-messier-55

The Hubble Space Telescope has captured magnificent images of most of Messier's objects. Explore them all here: www.nasa.gov/content/goddard/hubble-s-messier-catalog/

Linda Shore

This article is courtesy of NASA's Night Sky Network program, which supports astronomy clubs and is dedicated to outreach. Visit night-sky.jpl.nasa.gov to learn more.

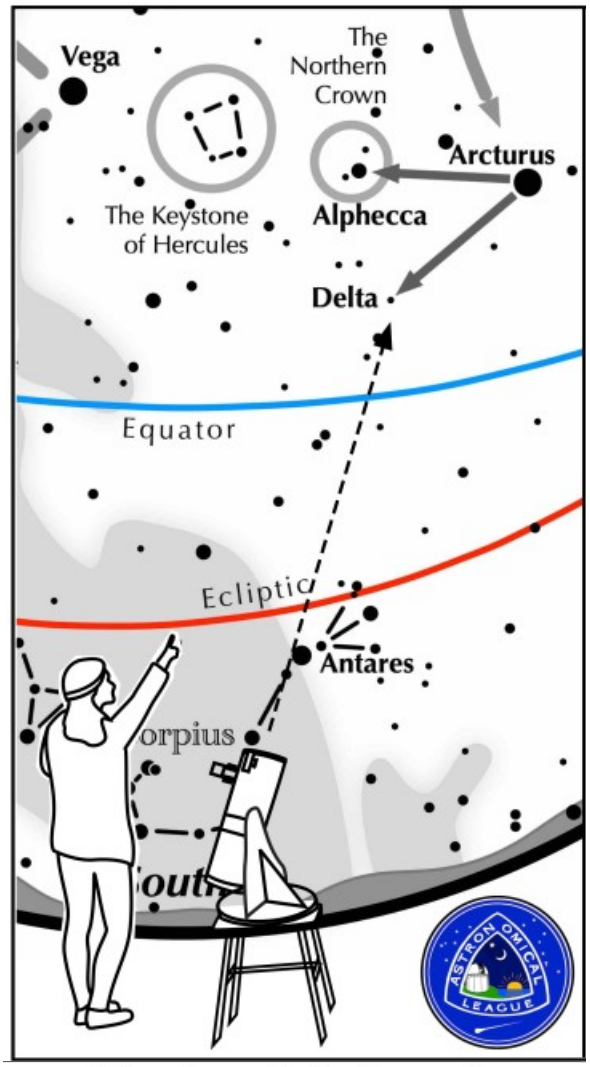
Old Testament

Continued from Page 10

I shall end here with a quotation from Psalm 19, with a new line added for fun, courtesy of Peter Collins:

The Heavens declare the glory of God,
And the firmament showeth his handiwork.
Day unto day uttereth speech,
And night unto night revealeth knowledge
(So long as the sky is clear.")

ASTRONOMICAL LEAGUE DOUBLE STAR CHALLENGE



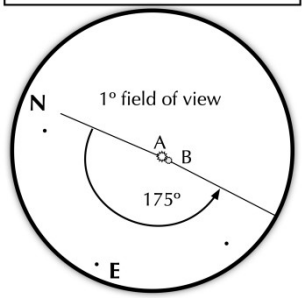
Other Suns: Delta Serpentis

How to find Delta Serpentis on a July evening

Find bright Arcturus, nearly overhead. To its northeast is a similarly bright star, Vega. One-third the distance between the two is Alphecca. Delta Serpentis lies the same distance from Arcturus as Alphecca, but to the southeast.

Delta Serpentis
A-B separation: 4 sec
A magnitude: 4.2
B magnitude: 5.2
Position Angle: 175°
A & B colors: white

Suggested magnification: >60x
Suggested aperture: >3 inches



Popular Astronomy Club
Income & Expense Detail
February through April 2023

Date	Name	Memo	Amount
Ordinary Income/Expense			
Income			
Donation			
Member			
3/27/2023	Michael Morrell	Deposit	10.00
Total Member			10.00
Program			
2/26/2023	John Deere Middle Sch...	Popular Astronomy Club Observing	200.00
3/15/2023	City of Moline	Moline Library 1/18/23	250.00
4/20/2023	Kewanee Central School	Popular Astronomy Club Observing 4/18/23 Kew...	100.00
Total Program			550.00
Total Donation			560.00
Interest Income			
2/28/2023		Deposit	3.56
2/28/2023		Deposit	0.04
3/31/2023		Deposit	3.97
3/31/2023		Deposit	0.05
4/30/2023		Deposit	0.04
Total Interest Income			7.66
Membership			
Family Member			
3/27/2023	Madeline Morrell	Deposit	7.50
Total Family Member			7.50
Regular			
3/7/2023	Janet Parker	2023	20.00
3/7/2023	Steve Young	2023	20.00
3/27/2023	Michael Morrell	Deposit	17.50
Total Regular			57.50
Total Membership			65.00
Sales			
3/15/2023	Dino Milani	T-Shirt	17.00
Total Sales			17.00
Total Income			649.66
Expense			
Banquet Exp.			
2/2/2023	Riverfront Grille	Deposit for 2023 Banquet	100.00
Total Banquet Exp.			100.00
Equipment			
2/2/2023	Alan Sheidler	LX200 Repair	231.50
Total Equipment			231.50
Honorarium			
2/16/2023	Jim Plaxco	2/13/23 Program	50.00
Total Honorarium			50.00
PACMO			
Rent			
4/11/2023	Sun-Rys Distributing C...		306.00
Total Rent			306.00
Total PACMO			306.00
Total Expense			687.50
Net Ordinary Income			-37.84
Net Income			**-37.84**

UPCOMING EVENTS

Date: July 10, 2023
Event: Membership meeting @ 7 p.m.
Location: Butterworth Center / Zoom
Program: 'Extreme Astronomy' by Chuck Allen, Astronomical League Vice President

All these events, dates and times are tentative and subject to change! Please check your emails for any updates and changes!

UPCOMING EVENTS

- **July 1:** Illiniwek Campground public observing session *(July 8 rain date)*
- **July 7:** Silver Bell Alpaca Farm public observing session
- **July 7:** Native American Star Stories, Twinflower Inn, Bishop Hill
- **July 10:** Membership meeting, Butterworth Center. Subject: Extreme Astronomy
- **July 15:** Public observing at Niabi Zoo
- **July 25:** DeWitt Public Library 'Stars and S'Mores,' Westbrook Park
- **August 12:** Annual PAC Picnic *(no regular monthly meeting)*
- **August 19:** Public observing at Niabi Zoo

July PAC meeting goes to extremes

CHUCK ALLEN

"Extreme Astronomy" will be the topic of the feature presentation at the July membership meeting of the Popular Astronomy Club. The meeting, on Monday, July 10, will be held at Moline's Butterworth Center and available online via Zoom.

The presentation will be led by Chuck Allen, vice-president of the Astronomical League. During the presentation, Chuck will discuss telescopes, space travel, planets, moons, mountains, stars, galaxies, clusters, and black holes.

These objects will be examined in a quest to find ones that are the largest, highest, closest, furthest, hottest, coldest, most massive, brightest, and darkest. A number of "firsts" in astronomical discoveries and manned and unmanned space flights will also be highlighted.

Popular Astronomy Club
Income & Expenses
January through April 2023

	Jan - Apr 23	Jan - Apr 22
Ordinary Income/Expense		
Income		
Donation		
Member	260.00	7,000.00
Misc.	0.00	250.00
Program	800.00	36.00
Total Donation	1,060.00	7,286.00
Interest Income	11.65	0.18
Membership		
Family Member	7.50	0.00
Regular	87.50	195.00
Total Membership	95.00	195.00
Misc. Inc.	0.00	200.00
Sales	17.00	0.00
Total Income	1,183.65	7,681.18
Expense		
Banquet Exp.	100.00	0.00
Castle Observatory	301.00	301.00
Equipment	271.40	0.00
Honorarium	50.00	100.00
PACMO		
Rent	306.00	306.00
Total PACMO	306.00	306.00
Reimbursement	0.00	200.00
Total Expense	1,028.40	907.00
Net Ordinary Income	155.25	6,774.18
Net Income	155.25	6,774.18