



STAR FIELDS

Newsletter of the
Amateur Telescope Makers of Boston
Including the Bond Astronomical Club
Established in 1934
In the Interest of Telescope Making & Using

Vol. 34, No. 5 May 2022

This Month's Meeting . . .

Thursday, May 12th, 2022 at 8:00 PM

[Zoom On-line Meeting](#)

All ATMoB meetings scheduled for the Center for Astrophysics (Harvard & Smithsonian) in Cambridge, MA have been **canceled indefinitely** due to concerns over the [coronavirus](#) outbreak.

We are holding virtual on-line meetings using the Zoom application. Please refer to the [ATMoB website](#) for future meetings. Members should check their email on the ATMOB-ANNOUNCE list for additional information. Please [select this Zoom link to attend the 952nd Meeting of the Amateur Telescope Makers of Boston.](#)

Final Report on UN Efforts on Light Pollution



Starlink trails from objects deployed during Flight 6 are seen in this panoramic view of the night sky. Photo by Mike Lewinski, licensed under CC BY 2.0

Our speaker this month is our own Dr. Mario Motta. Mario will discuss the current state of affairs regarding light pollution. He writes:

“In 2020, I was invited to represent the American Medical Association (AMA) to a United Nations (UN) conference that was sponsored by the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) whose main task is to review and foster international cooperation in the peaceful uses of outer space, as well as to consider legal issues arising from the exploration of outer space. The purpose was multifold, with 5 major sections.

- Protection of existing and future astronomical observatories
- Impact of satellite constellations
- Protection of radio astronomy
- Protection of dark sky oases
- Light pollution impact on the bio-environment

I was placed and worked in the bio environment section which encompassed both human health and environmental effects of light pollution. *Editor: Click on the [COPUOS report](#) to view the final document.*

I will present a summary of the landmark work, with emphasis on the bio environment that I worked on.”

Dr. Motta has been in practice at North Shore Medical Center in Salem, Massachusetts, since 1983. He is a graduate of Boston College, with a BS in physics and biology, and an MD from Tufts Medical School. He is boarded in and is a fellow of the American College of Cardiology and of the American Society of Nuclear Cardiology. He is an associate professor of medicine at Tufts University School of Medicine.

Dr. Motta has long been active in organized medicine, both in the American Medical Association (AMA) and in the Massachusetts Medical Society (MMS), holding a number of posts through the years. He is a past President of the MMS and was elected to the AMA council of Science and public Health where he had served 8 years, and then elected to the Board of Trustees of the AMA in 2018. Dr. Motta also has a lifelong interest in astronomy, and has hand built a number of telescopes and three observatories through the years to do astronomy research, including his entirely homemade 32-inch f/6 relay telescope located in Gloucester, MA.

He has been awarded several national awards in astronomy; including the Las Cumbras award from the Astronomical Society of the Pacific in 2003, and the Walter Scott Houston award from the northeast section of the Astronomical League, and in 2017 the Henry Olcott Award from the American Association of Variable star Observers (AAVSO). He has also served as a president of the Amateur Telescope Makers of Boston and is a current member. He has served as a council member and then president of the AAVSO. He has also served on the Board of the International Dark-Sky Association (IDA). Finally, in 2013 the International Astronomical Union awarded Dr. Motta an asteroid in part for his work on light pollution as well as amateur research, asteroid 133537MarioMotta.

As always, I'll open the Zoom meeting at 7:45 p.m. I hope you'll join us for Mario's informative and educational presentation!

~ Rich Nugent – President ~

President's Message . . .

As my time as president grows short, I want to emphasize the importance of actively observing the skies. And, as we all know, light pollution has made doing so more challenging, especially for the visual observers. We all started out as visual observers. Every beginner does.

Living in Framingham, MA my skies are, at best, magnitude 4.8 but, from the Clubhouse we routinely reach magnitude 5.2 in the darkest part of the sky. Long gone are the magnitude 6+ skies enjoyed by suburban observers. But this doesn't mean you should give up!

I was about 12 years old when the astronomy bug bit me. My parents bought me a small telescope which had an internal Barlow and, by extending the eyepiece tube, I could increase the magnification. The telescope was designed to be used for terrestrial observations, but my youthful enthusiasm didn't let that limit me! I don't have any notes from that era, but I'll bet the Moon was one of the few objects I could observe. Planets must have come next and then, deep sky objects. In those days I was alone in my interest. My only resource was the Worcester Public Library and I read everything I could on the subject. I also frequented the now long-gone Ephram's Bookstore on Franklin Street, just around the corner from the library. There I would comb through stacks of old *National Geographic* magazines looking for any articles on astronomy. My paper route earnings gave me the means to keep adding to my collection. One book I found there was a little red volume, *A Field Book of The Stars* by William Tyler Olcott. It listed the constellations by season and was filled with information about the stars and planets.

My first "real" telescope was a 60mm Sears refractor on an equatorial mount, with setting circles! I already knew about setting circles and followed the guidelines for using them in the Sears supplied handbook. I remember setting the telescope behind our house and aimed the right ascension axis towards Polaris. At least I had the good sense to practice finding bright stars first. After several sessions of failing to find 1st magnitude stars I decided there must be an easier way. I decided I would simply learn the sky. I dug out my little red book and let Olcott show me the way. Between New England weather, schoolwork, and my parents' reluctance to allow a 12-year-old outside at night, it took me nearly two years to figure out and learn the constellations visible from my backyard. They remain good friends to this day! Today, I do know how to use setting circles and I even use them occasionally, but I still enjoy picking my way across the sky, star-hopping all the way. I was now ready to go deeper! That little red book showed only 21 Messier objects, and the Double Cluster in Perseus. M36 is unlabeled, and both M36 and M38 are plotted incorrectly in my edition. But, once I discovered Sky Publishing and *Sky & Telescope* magazine, there was no holding back. I purchased a Messier Card and a copy of *Norton's Handbook and Star Atlas*. In the 1960's, Norton's gave the biggest bang for your buck. My 15th edition volume boasted "8000 stars, clusters, nebulae, and lists of 500 interesting objects." You probably have an edition of

this classic on your bookshelf. Go find it and enjoy everything it has to offer!

For star-hopping your finder scope becomes a critical piece of equipment! When I was 15 I acquired an 8-inch reflector! I don't recall if it came with a finder scope but my dad had brought home a Project Moonwatch telescope which I soon cannibalized to make a finder. (I know, I know!) Its low power, wide field was perfect for the job. Back then, my skies reached to nearly 6th magnitude! Streetlighting consisted of incandescent bulbs under a corrugated, metal rain shield. Remember those? I had plenty of stars to hop from. Today, finding faint stars with your unaided eyes is challenging, so finding a star to begin each star-hopping adventure is a bit more challenging. Today, my first tool is my green laser. Always mindful of passing planes, I use the laser sparingly. It's like placing your finger on a star chart. My one equatorially mounted telescope uses Telrad finders. They are great to use, but just remember to turn them off after each observing session! Once I'm in the ballpark, my star charts help me to determine a path to my quarry. Here's when it becomes important to "Know thy finder!"

I always use right angle, correct image finders. No mental untangling of the view is required! And I use large aperture finders. My 3-inch refractor has a 2-inch finder! For medium-aperture scopes I use 80mm finders and my 20-inch Dobsonian has a 90mm scope as its finder. Some of my finder eyepieces have crosshairs, some do not. I collimate my scopes before each use and that means the finder needs to be re-aligned. Place a bright star in the telescope first, and then bring the finder into alignment. Check and tweak if necessary. The finder doesn't have to be aligned perfectly, as long as you know where your target should be. Most finders offer a generous, 5-degree true field of view. With any telescope the true field of view is the eyepiece's apparent field of view divided by the magnification it provides. If your finder accepts eyepieces, you will have to calculate or measure its true field of view and decide which eyepiece makes the most sense.

I have a slew of star atlases! My favorite paper atlas is *Interstellarum*, but I never use it at the telescope. Instead, I prefer the digital atlas, Sky Safari Pro. It goes very deep – certainly beyond what any of my telescopes can show and, for star-hopping, I can set the field of view and adjust the magnitude limit to match what I can see with my finder. Now, I look for pairs, triangles, or asterisms of stars that let me move from one field to the next and, before I know it, I'm on the correct location. Now remember, it's easy to get lost! I sometimes offer the wisdom of experience: "If the star fields don't look right, you're probably looking in the wrong place." I go back to my starting point and try again. One tip is to pay attention to the star colors. Sky safari offers colored stars and spectral types. If my guide star is supposed to be white but it's orange, then I'm looking at the wrong star! You can be taught how to star-hop, but personal experience is key. So, be patient and practice, practice, and then practice some more!

So, where does one begin? If you own a computerized, go-to telescope you're all set. Once the scope is aligned, it will find objects for you. Just be warned, these scopes can be finicky and sometimes that leads to frustration! If you have setting circles, you can use them to find objects. Just be warned, they're notoriously inaccurate so know before you go: they'll get you in the right area, maybe! A star-hopper just needs ambition, an adequate finder scope, and a good star atlas. I find it's important to feel a sense of purpose at the telescope, so I set goals and make an observing plan. Maybe your goal will be to bag all 110 Messier objects or the 400 brightest Herschel objects. There are plenty of bright, NGC objects and even some of the IC objects are within reach. Roger Ivester and Sue French continue to offer monthly challenge objects. If you want more, Roger has been publishing monthly challenge reports online for a dozen years so there's plenty there to keep you busy. The annual *RASC Handbook* has lists of deep sky objects and the Astronomical League offers awards for completing their observing programs. Their lists are online. When you observe, don't forget to take notes and make sketches of what you see. There's no reason to race through your objects. Take your time. Let the sky show you what it will and most of all...have fun and enjoy the beauty of the night sky. Best wishes for clear skies, my friends!

~ **Rich Nugent – President** ~

April Meeting Minutes . . .



Mary McIntyre on Zoom. *

ATMoB 951st Meeting Minutes April 14, 2022

Rich Nugent presented the President's welcome. There are six candidates for three positions on the Executive Board's Nominating Committee: Maria Batista, Glenn Chaple, Steve Clougherty, Julie Kaufmann, Laura Sailor, and John Stodieck. Please vote for the Nominating Committee until April 17th via website or postal mail.

Covid update: At present, we feel it is time to resume Friday / Saturday Clubhouse duty, restart mirror grinding, and hold work parties.

- Alva Couch presented the Secretary's report, including a summary of the wonderful talk at the March meeting by John

Briggs about wintering over and doing astronomy at the South Pole Station.

- Eileen Myers presented the Treasurer's report, and reported inflows from membership dues, library telescope sales, and Amazon smile donations.
- Chris Elledge presented the Membership report and welcomed new members Larry Ciummo, Timothy Coull, Patrick Dubela, and Alan Zhao.
- Glenn Chaple and Rich Nugent presented the Observer's report. There will be a conjunction of the planets Jupiter and Venus which will be 0.5 degrees apart before dawn on April 30. This is a great opportunity to observe these in daylight. Looking ahead, there is a total lunar eclipse on May 15-16.
- The April Observer's challenge is NGC 3079. Images were contributed by Mario Motta, Mark Helton, Doug Paul, and Chris Elledge. The May observer's challenge is Messier 106. We look forward to your pictures of this, which may be submitted to Rich Nugent or Glenn Chaple via electronic mail.
- Steve Clougherty presented the Clubhouse report. The first work party of the spring will occur on Saturday April 16 starting at 10 am. We need to fill in potholes and remove the snow fence, and need volunteers to sort through donated equipment. Three Telrads require repairs. During the work party, the Clubhouse committee chairs will review the "A-member" list of those folks who have Clubhouse keys and can open and close the Clubhouse.
- Alan Sliski presented the Mittelman-ATMoB Observatory (MAO) report. A Serial-to-USB converter failed and prevented the roof from closing. Fortunately there was no damage to the telescope from the light drizzle that was occurring at the time. This will be replaced this Saturday, along with installing a deck for observatory access. There is a plan to install heaters onto the roof rails to mitigate a problem with freezing that keeps the observatory roof from moving. Chris Elledge used the MAO to take a picture of the galaxy IC 2574 (the Coddington Nebula).
- Rich Nugent presented the Outreach report. On Saturday April 9th at the New England Sci-Tech center, volunteers modified 12 telescopes for distribution to the Boston Public Libraries. Each telescope has a plaque crediting ATMoB for supplying the telescope and maintaining it.
- Maria Batista presented the Website Committee Report. Usability tests are underway for members and non-members. If you are interested in participating, please contact Maria Batista.
- Old business: <https://smile.amazon.com> is a great way to donate to ATMoB while shopping on Amazon.

- New Business: There was a brief discussion of options for viewing the 2024 total solar eclipse, with more options to be documented as they are found.

Our speaker for the evening was Mary McIntyre who gave us a workshop on astronomical sketching.

Mary took us through hands-on exercises in astronomical sketching via a split-screen view, including a view of a feature as it might appear in a photograph or through an eyepiece, and a step-by-step demonstration of how to sketch that view on paper.

Exercises included sketching sunspots, the lunar crater Archimedes, and M42 in Orion. Each of these exercises demonstrated how much the act of sketching forces one to notice details that one might miss by passively observing a feature. Sketching a shadow on the Moon makes one notice how a shadow exposes the shape of the feature that makes the shadow. Subtle features can be drawn by subtle means, e.g., a cotton swab rather than a pencil. Inverting the Orion nebula black-to-white allows a pencil to show white colored stars, while a cotton swab allows one to express nebulousity, and “star hopping” can be used to position stars relative to others already in the drawing. All of these exercises help one to develop a habit of paying attention to the delicate detail the sky has to offer.



A few lunar crater sketches by members. *

~ *Alva Couch – Secretary* ~

Meeting Recordings . . .

The recording of ATMob meeting #951 is not available publicly. To view the member only recording of the meeting please see the Announce Forum on the ATMob Website <https://www.atmob.org/forums> or ask me for a link (membership@atmob.org)

~ *Chris Elledge - Membership Secretary* ~

Nominating Committee Selected . . .

The 2022 Nominating Committee has been elected by an on-line vote. This year's results are:

Maria Batista - Committee Chair
Steve Clougherty
Glenn Chaple

We'd like to remind the membership that it is election season, and that any member may request to be added to the ballot. Board positions available include 5 officers and 2 Members at Large. Brief descriptions for all positions are below and a more in-depth description and list of duties is available online at <https://www.atmob.org/officer-roles> (you must be logged in to view the page).

President:

Presides at all meetings of the members and of the Executive Board and is a voting member of all committees, except the nominating committee.

Vice President:

Assists the president and takes over his/her duties where necessary.

Treasurer:

Oversees the financial affairs of the club at the direction of the Executive Board.

Membership Secretary:

Responsible for managing the membership records for the club.

Secretary:

Conducts all official correspondence at the direction of the President and Executive Board. Keeps a record of all monthly meetings and Executive Board meetings.

Member at Large:

Represents the membership at Executive Board meetings. Thus, the responsibilities are primarily to attend Executive Board meetings and deal with Executive Board issues.

If you are interested in running, please reach out to any nominating committee member.

Thank you and clear skies!

~ *ATMoB Nominating Committee* ~

~ *Maria Batista, Glenn Chaple, and Steve Clougherty* ~

Membership Report . . .

I am pleased to welcome our newest members: Patrick Dubela, Jay Jones, William Kazman, Ann Westerheim, Hank Keating, Richard Martino, and Alan Zhao.

As of May 1st, 2022 we have 347 memberships covering 438 members. This is broken down as follows:

- 144 Regular Members
- 138 Senior Members
- 11 Student Members
- 52 Family Memberships covering 143 Members
- 2 Honorary Members

Please contact me if you need any help with renewing or logging into the website.

~ *Chris Elledge – Membership Secretary* ~

Clubhouse Report . . .



(L-R) Chris Elledge, Alan Sliski and Bruce Berger building the MAO platform *

After a 3 month shutdown due to the COVID-19 Omicron variants the April work session was held on Saturday the 16th with a total of 25 ATMoB members and friends in attendance. We appreciate the effort made by those volunteers who helped us accomplish our projects.

After being absent for months, a thorough cleaning and vacuuming of the first floor was undertaken.

A large crew was outside spreading and raking gravel to fill in the potholes in the driveway. Another group removed the snow plow “keep away” markers and poles.

We started and ran our rider mower and the two powered push mowers, one of which could not be started.

Cleaned and organized the glass room and took an inventory of mirror making supplies

A staircase and small porch was constructed for easier maintenance access to the Mittelman-ATMoB Observatory enclosure.

Here are the members who attended on the 16th of April: Bruce Berger, Rodrigo Carrillo, Wenhan Chang, Paul Cicchetti, Steve Clougherty, Tim Coull, Alva Couch, Joe Dechene, Chris Elledge, Pierre Fleurant, Ed Los, Eric Johansson, Dick Koolish, John Maher, Vladislav Mlch, Corey Mooney, Keira Mooney,

Rich Nugent, John Reed, Phil Rounseville, Beatriz Sanchez, Alan Sliski, Al Takeda, Joe Tansey and Christine Zacharer.

The next Clubhouse work session is scheduled for Saturday, May 14, starting at 10 am.

~ *Clubhouse Committee Chairs* ~

~ *Steve Clougherty, John Reed and Dave Prowten* ~

Observer's Challenge** . . .

May, 2022

Messier 106 Spiral Galaxy in Canes Venatici

Magnitude 8.4

Size 18.6' x 7.2'



Planewave CDK17, f/4.5, QHY600M camera, 120x60s L, 30x60s sR, V, B, about 3.5 hr. total integration. Mittelman-ATMoB Observatory. Image processing by Chris Elledge.

M106 was a late entry in the Messier Catalog, having been added by the American-Canadian astronomer Helen Sawyer Hogg in 1947, 130 years after Messier's death. It was originally discovered by Messier's contemporary Pierre Méchain in 1781, who quite likely would have added it to a future edition of Messier's Catalog.

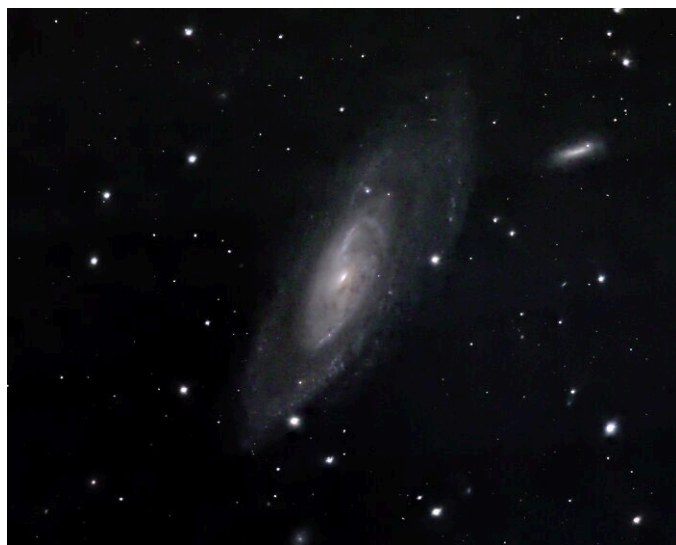


32-inch f/6, ZWO ASI 6200 camera, about 1.5 hour total integration. North is left. Image by Mario Motta

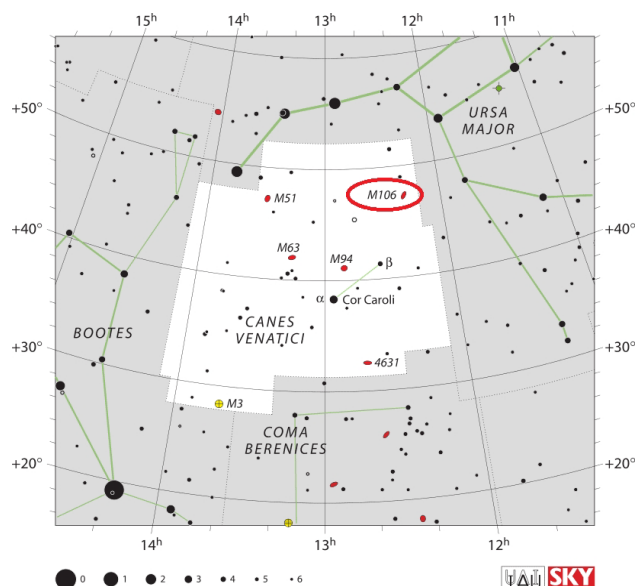
The 2000.0 celestial coordinates for M106 are: RA 12h18m57.5s, Dec +47°18'14". I found it by star-hopping 5 degrees ESE from the second magnitude star Phecda (gamma [γ] Ursae Majoris) to 5th magnitude 5 Uma. A hop 3 degrees south and slightly west brought me to 5th magnitude 3 Uma. M106 was spotted just 2 degrees further south.

At magnitude 8.3, M106 was easily seen as an oval-shaped patch of light in my 3-inch f/10 reflector at 30X. A bright, irregularly-shaped nucleus was visible in my 10-inch f/5 reflector and a magnification of 141X.

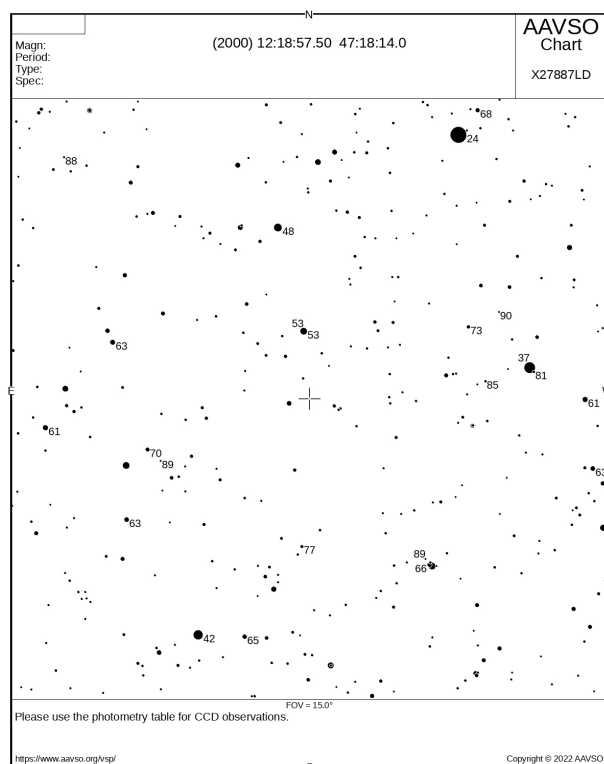
M106 is classified as a SABbc type galaxy, a form intermediate between spiral and barred spiral galaxies. Due to its energetic nucleus, likely a result of activity generated by a massive central black hole, it is also classified as a Seyfert galaxy. It lies approximately 24 million light years away. With a diameter of 133,000 light years, M106 is similar in size to the Andromeda Galaxy.



Canon Ra, 1200mm f/8.0 lens, ISO 1600, 120 x 2min. = 4hrs total exposure, 1/3 scale. N up. From a Bortle ~7 location. Image by Doug Paul



From messier-objects.com – adapted from IAU/Sky&Telescope chart



Created using AAVSO's Variable Star Plotter. Numbers indicate stellar magnitudes, decimals omitted. Magnitude 2.4 star is Phecda (gamma [γ] Ursae Majoris). Stars plotted to 9th magnitude. North is up in this 9 by 7 degree field.

**The purpose of the Observer's Challenge is to encourage the pursuit of visual observing. It is open to everyone who is interested. If you'd like to contribute notes, drawings, or photographs, we'll be happy to include them in our monthly summary. Submit your observing notes, sketches, and/or images to Roger Ivester (rogerivester@me.com). To find out more about the Observer's Challenge or access past reports, log on to <https://rogerivester.com/category/observers-challenge-reports-complete/>.

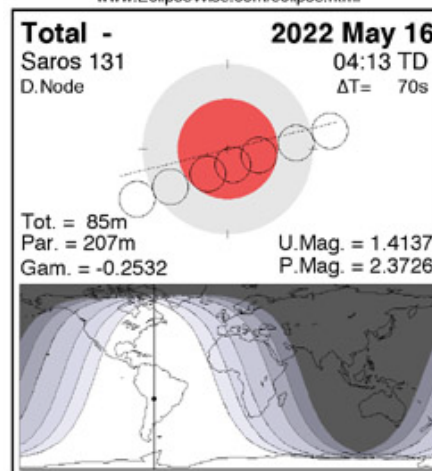
~ Submitted by Glenn Chaple ~

Lunar Eclipse on May 15-16 ...

21:31 EDT - 02:51 EDT

Mid Eclipse: 00:13 EDT

www.EclipseWise.com/eclipse.html



Thousand Year Canon of Lunar Eclipses
©2014 by Fred Espenak

Skyward . . .

By David H. Levi
May 2022

Pegasus



Pegasus. Image by David Levy.

In the late summer of 1964 I was leaving the Observatory of the Royal Astronomical Society's Montreal Centre with some friends, one of whom was David Zackon. I asked the group if they would like to drop by my house to observe with a 3.5-inch reflector. Before they had a chance to answer David upped the ante by asking if we'd like to come by his house to look through an 8-inch reflector.

When we arrived at his place, we found a very competent 8-inch reflector with a focal ratio of 7. It gave us wide field views of Jupiter and Saturn plus a few other nice things to see. It was rather pleasant. Just a week later, David telephoned me to invite me for a second look. As we used the telescope to view Saturn, David was adjusting one of the mount's large bolts. As I looked at Saturn I remarked, "I think that's Titan," after seeing one of the planet's large moons. David looked up toward me and said, "No, it is still loose."

David told me that he was soon to leave for his university year, and each year he had a tradition of lending the 8-inch to someone who would use it. He then began asking me a few questions, and I told him that I had observed most of the planets, especially Jupiter.

"And the Moon, I suppose."

"Yes. And just a few weeks ago I completed the Lunar training program."

"The whole program? All three hundred craters?"

"Yes, and the 26 (lettered A to Z) mountain ranges, valleys, and the Straight Wall."

"You did all this with a 3 1/2-inch telescope?"

"Yes."

"David, you've just borrowed an 8-inch telescope."

It is difficult to describe the feeling of joy I felt as the new telescope and I returned home and I spent the rest of the night getting acquainted with it. The following day I decided to name it Pegasus, after the large satellites that NASA was launching at the time in on their new Saturn 1 rockets. When my grandfather found out about this a few days later he was thrilled. "I am especially proud of David, he said, "for having the insight to know that you would put it to good use."

Over the next several months Pegasus was used heavily. When David returned from school, Constantine Papacosmas, another good friend, suggested that my parents purchase the telescope for me. David agreed, and we settled on a \$400 price for it.

On December 17, 1965, I used Pegasus to begin my comet searching program. Twenty-two years later, on the evening of October 11, 1987, Pegasus and I discovered Comet C/1987Y1.

The name Pegasus has since been attached to other fine Pegasus telescopes. One of them is a large 20-inch belonging to Lario Yerino from Kansas City. I used this fine telescope one autumn while attending the Heart of America Star Party.

The third Pegasus belongs to Carl Jorgensen, one of my closest friends and someone I have known since 1963. He brings it each year to our Adirondack Astronomy Retreat in the mountains near Lewis, NY. Under the peaceful and beautiful Adirondack sky, when my left eye touches the eyepiece of this telescope, my mind wanders back to those earlier years when I began using my Pegasus during the springtime of my life.

~ Submitted by Mario Motta at the request of David Levy ~

Editor: * Photos by Al Takeda unless otherwise noted.

June Star Fields DEADLINE
Sunday, May 22nd

Email articles to Al Takeda at
newsletter@atmob.org

Articles from members are always welcome.

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How to Find Us...

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MEETINGS: Zoom On-Line Meetings until further notice. Meetings held the second Thursday of each month (September to July) at 8:00 PM. For meeting details go to www.atmob.org and check your email on the ATMOB-ANNOUNCE list.

CLUBHOUSE: Latitude 42° 36.5' N Longitude 71° 29.8' W

The Tom Britton Clubhouse is currently closed. It is the white farmhouse on the grounds of MIT's Haystack Observatory in Westford, MA. Take Rt. 3 North from Rt. 128 or Rt. 495 to Exit 33 and proceed West on Rt. 40 for five miles. Turn right at the MIT Lincoln Lab, Haystack Observatory at the Groton town line. Proceed to the farmhouse on left side of the road. Clubhouse phone #: (978) 692-8708.

Heads Up For the Month . . .

To calculate Eastern Daylight Time EDT subtract 4 from UT.

Apr 30 New Moon, Venus 0.2 degrees South of Jupiter

May 6 Eta Aquariid Meteors peak

May 8 First Quarter Moon (Moonset at midnight)

May 15-16 Total Lunar Eclipse, (21:31 EDT - 02:51 EDT)

May 16 Full Moon

May 17 Moon at perigee

May 22 Last Quarter Moon (Moonrise at midnight)

May 26 Venus 0.2 degrees North of Moon

May 29 Jupiter 0.6 degrees North of Mars

May 30 New Moon

Jun 7 First Quarter Moon (Moonset at midnight)