



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. 31, No. 3 March 2019

This Month's Meeting . . .

Thursday, March 14th, 2019 at 8:00 PM

Phillips Auditorium

Harvard-Smithsonian Center for Astrophysics

Parking at the CfA is allowed for the duration of the meeting

Left Brains for the Right Stuff: Computers, Space, and History



Aldrin salutes the U.S. Flag. Courtesy of the
National Aeronautics and Space Administration

Our guest speaker for the March meeting will be Hugh Blair-Smith. Hugh will speak about his new book, *Left Brains for the Right Stuff: Computers, Space, and History*. He will answer the questions that he posed in his preface: "What made the Space Race possible? What made it necessary? How close a race was it? And what did it achieve?"

Hugh Blair-Smith was an engineer at MIT Instrumentation (later Draper) Laboratory from 1959 to 1981, designing guidance and navigation hardware/software for Apollo and fault tolerance software for the Space Shuttle. From 1982 to 2004, he joined a variety of small companies developing touch-screen user interfaces and mainframe performance monitors.

Coming out of retirement in 2007, he created design verification and runtime diagnostic software for a Lunar Reconnaissance Orbiter instrument. From 2008 to 2017, he presented papers at Digital Avionics Systems Conferences, two of which appeared in IEEE/AES. His book, *Left Brains for the Right Stuff: Computers, Space, and History* was published in 2015. In December 2018, he appeared in the PBS Nova program, *Apollo's Daring Mission*, celebrating the 50th anniversary of Apollo 8, the first to place men in orbit around the Moon. His next book, *Minot's Gifts*, is under construction. It will be a science fiction novel about the friendliest extraterrestrials ever to touch down at the classified Edwards Air Force facility, Area 51.

Hugh will have a few copies of his new book available for purchase and signing.

Please join us for a pre-meeting dinner discussion at House of Chang, 282 Concord Ave., Cambridge, MA. at 6:00 pm before the meeting.

President's Message . . .

It does seem that every month I receive a few emails promoting one thing or another related to Astronomy. Generally, I quickly peruse the email for any value before I forward it along to you or unceremoniously delete it. One such email arrived shortly before Christmas. In this case, I did not forward it along nor did I erase it. As a warning, the email pertained to a sensitive topic, a star naming service.

Marc of www.staracle.com introduced his web site for free star naming as a counter-weight to the commercial companies. He went on to write that over 100,000 stars have been named on his web site. Marc stated how we all know the name registration is not real as only the International Astronomical Union is charged with naming stars and solar system bodies. His experience with offering this service has been that many of the visitors to his site were very grateful for the opportunity to name stars for free. The registrants were from all walks of life, some in difficult life situations, or simply people who do not have a lot of money. It seemed that naming a star meant a lot to them even though it is not real, as Marc clearly states on his site. Free star naming gave them this opportunity at no cost.

So, I took the plunge even though I generally think this kind of idea is a bit hokey. I logged onto the website and registered using my email address. It was a simple process of naming a star for my boat Servus in the constellation Ares. Upon registration, I was pointed to my own page on the site that displayed a certificate listing the newly named star, its location in RA and DEC as well as the magnitude and UCAC3 identification number. The resolution was suitable for viewing on the website but too low when screen captured and expanded. I feel the majority of users would be satisfied with the screen representation. In order to download a high resolution image of the certificate, I was required to pay a nominal fee of \$5.00. Reluctantly, I ponied up the cash and downloaded the star chart. I found the resolution to be excellent and suitable for printing and gifting. Overall, I believe the experience was satisfying and never felt I was being fleeced.

In comparison, I visited another naming service, <https://star-name-registry.org>. The site was flashy with fancy graphics and lots of star naming packages. The entry level package at \$20 placed your named star in the registry with star charts and confirmation emailed to you. On the high end of the service, for \$90, an extra bright star gift set provides everything listed above with a gift boxed Star Name Deed in a wooden certificate frame. Suffice it to say, I did not splurge on naming a star with this service. At no point did I find on the website that this was not an internationally recognized naming. They did offer a guarantee in the unlikely event of a supernova, a new star would be assigned to you, free of charge!

While I will not endorse any naming service, I did find good value with the Staracle site. If you feel the urge to name a star, I recommend you find the service that meets your needs. It was a fun way to spend a snowy morning indoors.

Note: Please consider participating as a club officer or volunteering as candidate for the Nominating Committee, contact me via email (president@atmob.org) or via phone (617-966-5221).

~ Tom McDonagh - President ~

Board Meeting Announcement . . .

An Executive Board meeting is scheduled for Thursday, March 7, at the Westford Clubhouse starting at 7:00 pm.

February Meeting Minutes . . .



Camille Carlisle *

Minutes of the 917th ATMob meeting held February 14, 2019 at the Harvard-Smithsonian Center for Astrophysics in the Phillips Auditorium. Club President Tom McDonagh called the meeting to order at 8:01 pm.

- President McDonagh called for a moment of silence in memory of NASA's Opportunity rover, which recently ceased to function after about 15 years on Mars. The rover travelled 28 miles and took over 200,000 images during its life.
- Treasurer Eileen Myers presented the Treasurer's Report.

- Membership Secretary Chris Elledge presented the Membership Report, showing 312 total memberships covering 405 Club members.

- Glenn Chaple presented the Observer's Report: He noted upcoming conjunctions of Venus and Saturn on February 18, of Jupiter and a crescent moon on February 24, and of Saturn and a crescent moon on March 1. This month's LVAS Observers Challenge object is NGC 2175 (a/k/a the Monkey Head nebula), a reflection nebula in Orion. Doug Paul spoke briefly about Comet Iwamoto (C/2018 Y1) which he had imaged.

Steve Clougherty gave the Clubhouse Report, noting that 19 Club members participated in the January 26 work party, which focused on the optical shop area and also painted the former evaporator room. He then described the numerous telescopes and eyepieces available for loan at the Clubhouse. The next work party is scheduled for February 16.

- Vice President Nugent presented the Outreach Report: He urged club members to observe the International Space Station (ISS) visually. He noted that it's possible to see ISS components, including the solar panel arrays.

He announced upcoming star parties:
Chenery Middle School in Belmont on March 12

The American Society of Mechanical Engineers (ASME) group at the Clubhouse on March 13

A troop of Girl Scouts at Acton Congregational Church on March 16.

- Secretary John Harrington read the minutes of the club's December meeting.
- Old Business: None.
- New Business:
President McDonough urged club members to consider joining the Nominating Committee.

Former *Sky & Telescope* Editor J. Kelly Beatty announced that he had old issues of *Astronomy* magazine available.

Secretary John Harrington announced that he had written a book entitled *Shallow Sky*, which profiles the world's leading amateur planetary imagers, describes the passions that motivate them, explains their tools and techniques, and details their contributions to solar system science. Among those profiled are Don Parker, Chris Go, Thierry Legault and Damian Peach. The e-book is available from Amazon and from Apple Books.

Mario Motta announced that he is launching a new website, mariomottamd.com, which is intended for both physicians and the lay public. It describes Mario's activities on behalf of the American Medical Association (AMA), including his legislative initiatives. One focus of the site is on the adverse effects of excessive night-time lighting on human health. There is also a section tab that has many superb sky images

for viewing taken from Mario's home observatory, from Messier to NGC to IC images.

Kelly Beatty spoke about proposed legislation that would create the Commonwealth's first state-wide lighting law and urged Club members to contact their legislators to support it. The legislation currently has 24 co-sponsors.

President McDonagh then introduced Camille Carlisle of *Sky & Telescope* magazine, who spoke on the subject of black holes. Camille announced that her presentation's goal was to dispel the terrible reputation of black holes as all-devouring celestial monsters.

In the first part of her presentation, Camille described black holes as incredibly dense objects ("celestial potholes") where massive amounts of matter warp the fabric of spacetime. Approaching light and matter must navigate this curving "landscape". She presented evidence supporting the reality of black holes, which includes not only the effects of their mass on the motion of nearby stars, but also the high-energy radiation emanating from their accretion disks and even gravitational waves produced by black hole mergers.

Camille described the two types of black holes: stellar mass (5-50 solar masses) produced by massive collapsed stars (supernovae) and supermassive (10^6 - 10^9 solar masses), whose origin remains unclear. The structure of a black hole is straightforward: an accretion disk and (sometimes) bipolar jets surrounding a very steep gravitational well, an ergosphere, and finally a massive singularity.

Camille then described the Milky Way's very own black hole: Sagittarius A*, a 4-million solar mass black hole. She noted that, despite this great concentration of mass, Sgr A*'s gravitational reach is only about 10 light years. There should be no stars in Sgr A*'s immediate vicinity, and yet there are. This presents the question: can black holes create stars? It seems so, and there are two formation theories: slingshot versus binary star mergers.

Finally Camille described current attempts to "see" a black hole. The Event Horizon Telescope, incorporating radio telescopes around the world, is attempting to image the warped and lensed radiation produced by a black hole's gravity. The European Space Agency's (ESA's) Laser Interferometer Space Antenna (LISA) mission will be a space-based gravitational wave observatory and should detect the signature of supermassive black hole mergers.

In closing, Camille noted that physicists continue their long quest to merge the theories of general relativity and of quantum gravity, which if successful would finally combine the physics of the large with that of the very small. Black holes allow us to push the frontiers of physics and address this question.

President McDonagh thanked Eileen Myers for providing the refreshments, and then adjourned the meeting at 9:32PM.

~ John Harrington, Secretary ~

Meeting Refreshment Assignment . . . 2019

Mar. – Glenn Chaple
Apr. – Chris Elledge
May – Al Takeda
Jun. – Bruce Berger
July – TBD

Meeting Recordings . . .

The recording of ATMob meeting #917 is available on YouTube: https://youtu.be/Bj9Lw_q-EWo

I would like to thank Camille Carlisle for giving her presentation and allowing us to record it.

This link is to the publicly available cut of the meeting recording. To view the original version of the meetings, please see the Announce Forum on the ATMob Website <https://www.atmob.org>

~ Chris Elledge – Membership Secretary ~

Membership Report . . .

I am pleased to welcome our newest members Christopher Martel and Evan Slater.

As of February 26th, 2019 we have 314 memberships covering 407 members. This is broken down as follows:

- 145 Regular Members
- 105 Senior Members
- 7 Student Members
- 54 Family Memberships covering 147 Members
- 1 Guest Member
- 2 Honorary Members

~ Chris Elledge – Membership Secretary ~

Clubhouse Report . . .



Dave Prowten installing shelves in the Telescope Room *

Our monthly work party was held on Saturday, February 16 under sunny skies with a total of 21 volunteers on hand. Fortunately we did not have snow removal to contend with this time, so we were able to accomplish a good deal of work inside the Clubhouse.

Continuing with our optical shop initiative, volunteers tackled the polishing room. Steve C. and Keira Mooney scrubbed the floor clean. Floor sealer was applied after the cleaning work was completed and the room is now ready for the installation of the clear plastic barrier which was acquired by Rich Nugent. Measuring 8-inches wide by 7-feet long, these heavy mil plastic strips will be hung from the ceiling in the old polishing room spanning the 10-foot width of the room. A corridor for pedestrian traffic will allow passage from the grinding room doorway to the barn hallway. This should be completed during the March work session.

Dave Prowten added a second coat of heavy duty floor paint to the former evaporator room floor. Dave also painted the pump room door after it was sanded by Bruno Leung. Pierre Fleurant cleaned and painted the trim and doorways in the front rooms, assisted by Corey and Keira Mooney.

The first floor telescope room was handled next. Three shelves were installed by Dave Prowten and Al Takeda. We now have space for all of the various items in that room, including eyepiece cases, finderscopes, focusers and other miscellaneous parts.

John Blomquist ran a busy machine shop during the work party. No fewer than four machining projects were being done under his guidance.

Many thanks to Pete Lento, Eileen Myers, Nina Craven and the rest of the lunch and clean up helpers.

The following Saturday several volunteers answered an announcement requesting help with moving the heavy steel and oak grinding table from the grinding room to the former evaporator room. This table, along with the gear box, shaft and pulleys will be the platform for the Mirror-o-Matic grinding/polishing machine now under construction thanks to Barry Jensen and Tom McDonagh.

Eric Johansson made tremendous progress constructing a table top grinding machine with much assistance from Barry. This machine will compliment the Mirror-o-Matic machine. It will allow one person to grind while another uses the other machine for polishing.

Next month we plan to continue our efforts in the optical shop. Volunteers will be needed to assist in constructing the plastic barrier in the polishing room area while others will be needed for shop set up work.

We would like to thank the following volunteers for all of their help during the February session:

Bruce Berger, John Blomquist, Paul Cicchetti, Steve Clougherty, Nina Craven, Chris Elledge, Pierre Fleurant, Jim

Gettys, Pete Lento, Bruno Leung, Phil Levine, John Maher, Vladislav Mlch, Corey Mooney, Keira Mooney, Eileen Myers, Phil Rounseville, John Stodieck, Joe Tansey, and Al Takeda.

Important Notice: Please check your email on the ATMob-ANNOUNCE list for mirror making sessions.

Clubhouse Saturday Schedule	
March 9	Nina Craven + Brian Maerz Messier Marathon # 1
March 16	George Paquin Tom Wolf
March 23	WORK PARTY # 3 ** Chris Elledge
March 30	Mike Hill Eric Johansson
April 6	Glenn Chaple + Dave Prowten Messier Marathon # 2, NEAF
April 13	Tom McDonagh Bill Toomey
April 20	WORK PARTY # 4 ** Art Swedlow

** Closing time for the Clubhouse is determined by the work crew

Clubhouse Evening Schedule	
Friday Night Educational Videos	7:00 pm - 10:30 pm #
Saturday Afternoon Mirror Making	ATMoB-Announce
Saturday Night Observing	7:00 pm - ##
# Closing time is determined by the organizers	
## Closing time is determined by the "A" members on duty.	

~ *Clubhouse Committee Chairs* ~
~ *Steve Clougherty, John Reed and Dave Prowten* ~

Sky Object of the Month . . .

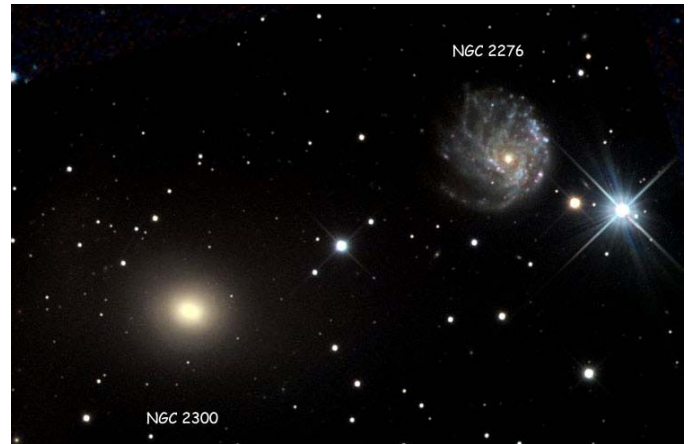
March 2019

Courtesy Observer's Challenge***

NGC 2300 – Elliptical Galaxy in Cepheus

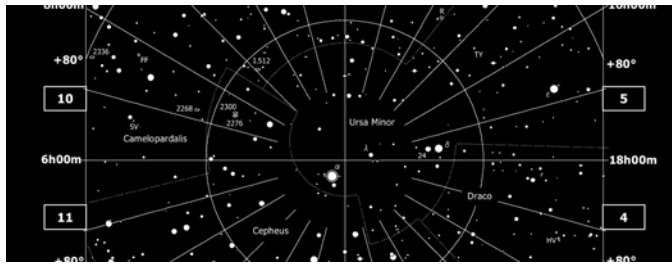
Magnitude: 11.0

Size: 3.2" X 2.8'



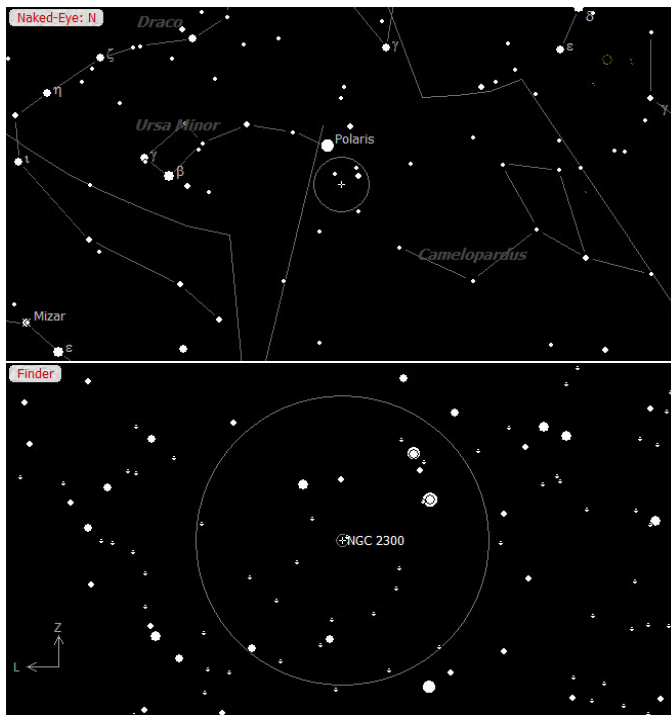
Carlos & Crystal Acosta/Adam Block/NOAO/AURA/NSF) cseligman.com (north is up)

Ask a veteran deep-sky observer to name an NGC object close to Polaris, and he or she will mention the open cluster NGC 188, located in Cepheus just 3½ degrees to its south. We can add this month's Observer's Challenge, the elliptical galaxy NGC 2300, which is equally close to the Pole Star.

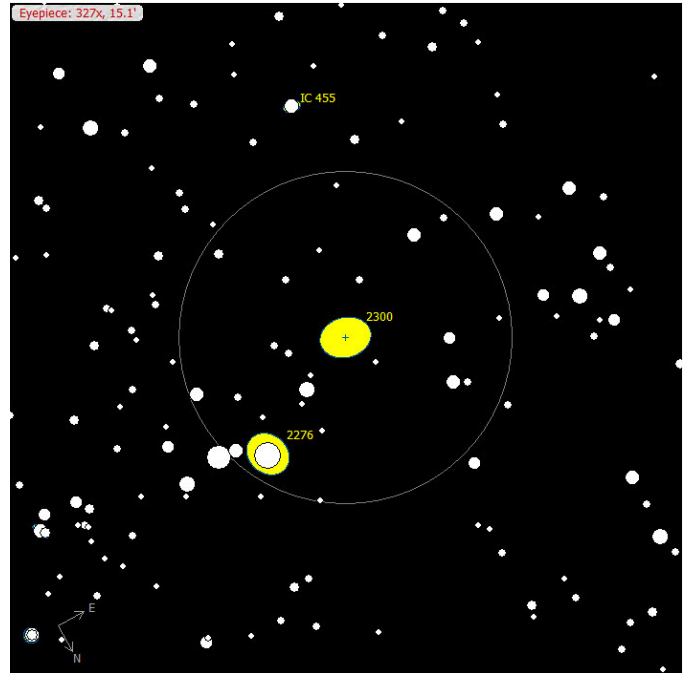


bristolweather.org.uk/galaxies

Before zooming in on NGC 2300, we need to look at its neighbor - the distorted spiral NGC 2276, which lies just 6.5' to the WNW. It's slightly smaller (2.6' X 2.3') and fainter (magnitude 11.6) than NGC 2300. NGC 2276 sports an unusual lopsided shape, which prompted Halton Arp to enter it as Arp 25 in his Atlas of Peculiar Galaxies. We need to include it in our discussion of NGC 2300 because Arp considered the NGC 2276/2300 pair-up (an elliptical-like galaxy and perturbed spiral) so noteworthy that he catalogued the duo as Arp 114.



bristolweather.org.uk/galaxies



All finder charts for 2300 and NGC 2276 from bristolweather.org.uk/galaxies

NGC 2300 was discovered by the French astronomer Alphonse Borrelly (of periodic comet 19P/Borrelly fame) in 1871. Its actual galactic type is debatable, some sources listing it as elliptical, others as lenticular (a spiral-less spiral). Under exceptionally dark skies, NGC 2300 may be glimpsed with a 6-inch telescope. Descriptive notes in Luginbuhl and Skiff's Observing Handbook and Catalogue of Deep-sky Objects describe their visibility in a 10-inch scope – NGC 2300 “faintly” and NGC 2275 “barely”. The two lie an estimated 110 to 120 light years away.

***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 either [Roger Ivester \(rogerivester@me.com\)](mailto:rogerivester@me.com) or [Fred Rayworth \(fred@fredrayworth.com\)](mailto:fred@fredrayworth.com). To find out more about the Observer's Challenge or access past reports, log on to rogerivester.com/category/observers-challenge-reports

~ Glenn Chaple ~

Outreach Report . . .

Our most popular star party season is upon us and the events are beginning to stack up. Please consider volunteering for one or more events even if you never have before! It's important to register on the club's event page so we know we have enough telescopes for the size of the crowd expected.

Please keep in mind that, in today's world, liability issues should be considered. I do not recall ever hearing of an issue in the past but the risk factor is not zero. We are currently working on extending the club's insurance policy to provide liability coverage for our members at events beyond the Westford Clubhouse and the CfA but the policy is not yet in place. Please consider your risk tolerance when deciding to volunteer. I will

keep the membership up to date on the progress of the extended coverage policy.

An important thing to remember is that the Amateur Telescope Makers of Boston doesn't run or own the star parties we attend. We have been invited by the school or organization to support the event by providing telescopes and/or setting up displays. We do have the responsibility to provide a safe environment for the folks in attendance. To help minimize the risk of liability issues I've put together some guidelines to follow when you volunteer at these events.

Be courteous and professional at all times. Remember, most of the folks looking through your telescope have never done so before. Make it easy for them by using an eyepiece through which the image is easy to find. Kids will touch your telescope so you may have to relocate the object you're viewing over and over again. Be patient.

Your equipment (especially your eyepiece) might look pretty rough by the end of the night. Don't use expensive eyepieces at star parties.

Use a telescope that has its eyepiece close to the ground. This minimizes the use of multi-step ladders.

Do not run power cords to your telescope. They can be trip hazards.

Mark or protect any part of your equipment that someone might walk into. Counterweight shafts can be covered with a tennis ball. Tripod legs or the base of a telescope can be outfitted with red lights.

Use green lasers sparingly and be in control of the laser at all times. NEVER hand your green laser over to any of the star party attendees!

It goes without saying but DO NOT lift a child to your telescope eyepiece! If they aren't tall enough then they can't look through the scope.

Have a brief explanation of your telescope and the object you are showcasing. Expect lots of questions and don't be embarrassed to answer with "I don't know."

By using common sense and good judgment we can provide a safe and enjoyable experience for star party attendees. Let me know if you have any questions, comments, or helpful suggestions.

Here are the March star parties we've been asked to support:

- Tuesday, March 12: Chenery Middle School, 95 Washington Street, Belmont, MA (7:00-9:00 p.m.)
- Wednesday, March 13: American Society of Mechanical Engineers (ASME), Westford ATMob Clubhouse (7:00-9:00 p.m.)

- Saturday, March 16: Brownie Troop, Acton Congregation Church, 12 Concord Rd, Acton, MA (6:30-9:00 p.m.)

~ Rich Nugent - Vice President and Outreach Chair ~

Astronomy Day . . .

New England Sci-Tech plans to host a public Astronomy Day event on Saturday, May 11, at 16 Tech Circle, Natick. Details are still being worked out, but plans include indoor astronomy activities and planetarium shows as well as outside telescopes. Anyone wishing to participate in the planning stages should contact Bob Phinney or Rusty Moore at info@nescitech.org.

~ Submitted by Bob Phinney ~

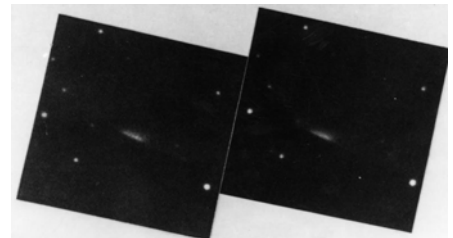
Skyward . . .

By David Levy, February 2018

March 23

In 1963, while living as a patient at the Jewish National Home for Asthmatic Children in Denver, I strolled outside on the evening of March 23 to observe the evening sky. The sky was brilliant and clear that evening so long ago as I set up my small first telescope, Echo, and proceeded to sketch a portion of the Milky Way as it shone in the sky over Denver. It was a silly and immature project of no particular value whatsoever, but it was important to me, and it resulted in a small chart of the winter Milky Way.

Over many years, the particular date of March 23 has brought many treasured memories to my personal life and my skywatching life. Late in 1988 I began studying the behavior of TV Corvi, a certain variable star that had been discovered in 1931 by Clyde Tombaugh, the same person who discovered Pluto. On the evening of March 23, 1990, TV Corvi erupted again like a nova, brightening from fainter than magnitude 19 to magnitude 12, an increase of almost 250 times in brightness in just a few hours. Even though it has gone through outbursts of energy many times since then, one of those outbursts also took place on another March 23.



Discovery photos for Comet Shoemaker-Levy 9. Courtesy of David Levy.

All these events paled in contrast to what happened next. On March 23, 1993, Gene and Carolyn Shoemaker and I, while observing from Palomar Observatory, took the two photographs of a region of sky that led to our discovery of Comet Shoemaker-Levy 9. Sixteen months later, the 21-odd pieces of that tidally disrupted comet collided with Jupiter, the largest planet in our solar system, in what is now regarded as the mightiest collision

ever witnessed by humanity. This event captured the attention, and the imagination, of the world, and was directly responsible for inspiring many people to become interested in the breathtaking majesty and behavior of the universe.

The fact that my youthful map of the Milky Way, a new variable star, and one of the most interesting comets in the history of science (according to scientists around the world), all began on March 23, left a most lasting impression on me regarding that special date. In the nonastronomical parts of my own life, on March 23, 1992, I typed a postcard to Wendee Wallach, a teacher in Las Cruces, New Mexico. It was my not very romantic way of asking her out on a date. At the time it was just a coincidence that the letter was written on that particular date. But five years later, it was not a surprise, therefore, that Wendee and I were married on March 23, 1997.

There is a special reason that March 23 recurs in this way. The various astronomical happenings associated with this date comprise not just a single part of astronomy, like a planet, a comet or a star that suddenly changes in brightness, but almost the whole gamut of what can happen in the sky, from a comet that collides with a planet, to a unique variable star, and on to the vast expanse of our galaxy across the night, and how all these things relate to the happiest parts of my personal life. The date reminds me once again of how exciting and unexpected the night sky can be.

Editors Note: David Levy has discovered 23 comets and along with collaboration with Eugene and Carolyn Shoemaker he discovered Shoemaker-Levy 9. He also discovered or co-discovered 61 minor planets. He was a contributing editor to Sky and Telescope magazine, Sky News, Astronomy magazine, Science Editor for Parade magazine, and is the author or editor of 34 books. He won an Emmy in 1998 as part of the writing team for the Discovery Channel documentary, Three Minutes to Impact. He currently writes a monthly blog for his local newspaper and astronomy group.

~ Submitted by Mario Motta ~

Update on Learning Opportunities at the Clubhouse . . .

I would like to thank John Maher, who over a span of 11+ years ran Friday evening and Saturday afternoon learning events at the Clubhouse.

At all began in 2007, when for several months John taught or lead Saturday afternoon lectures and seminars on the Meade DSI Astrophotography Software, followed by RSpec (Real-time Spectroscopy) discussion groups. Then he spearheaded and presided over the club's ongoing Friday Evening Free DVD Lectures. John single-handedly ran these events, opening the Clubhouse, setting up the viewing room, keeping those in attendance on schedule, and closing down the Clubhouse, so that many of us could learn from him, or view The Learning Company's astronomy, physics and weather DVDs. John, we again thank you for taking such good care of us. Over the years a true family spirit developed. The Clubhouse felt like a home, with a living room where members each had their "reserved" chairs. New attendees were warmly included. We have all

learned so much due to John's sense of responsibility and caring. DVD classes will resume in April.

Next, we would like to report on the Friday, March 1st class at the Clubhouse. This was a new experience for most of us in attendance. We would like to thank Corey Mooney (and his wife Keira) for being our tour guide through a virtual reality flight around the Milky Way galaxy and nearby galaxies. Standing in a huge Milky Way galaxy, head in the dust lanes, eyes on stars and satellite galaxies, was an amazing effect.

We played with virtual reality, painting magnificent universes with colors, lines and particles. We created, changed and destroyed patterns to see gravitational effects. Each person who tried it became totally immersed. It was so relaxing. You forgot where you were.

We chose, created and grabbed familiar massive stars, throwing stars at other stars, creating our own super novae, watching the shells of gas spread out.



Experiencing VR. (L-R) Kai Cai and Corey Mooney. Image by Eileen Myers

We demolished the Earth, I mean, we watched the effects of throwing Jupiter sized planets at the Earth, bombarding Jupiter with moons, all the time watching how the laws of physics affected the resulting debris. What fun, and what a learning experience. This evening's virtual space tour gave a visual insight into how easily our planet Earth could be destroyed, and that we must find ways to protect it!

~ Eileen Myers- Treasurer ~

**Correction: January 2019, Clubhouse Report:
Marsha Bowman helped with the New Year's Eve party setup.
Thank you Marsha!**

Editor: * Photos by Al Takeda unless otherwise noted.

**April Star Fields DEADLINE
Sunday, March 24th**

**Email articles to Al Takeda at
newsletter@atmob.org**

Articles from members are always welcome.

POSTMASTER NOTE: First Class Postage Mailed March 3, 2019

Amateur Telescope Makers of Boston, Inc.
c/o Chris Elledge, Membership Secretary
99 College Ave
Arlington, MA 02474
FIRST CLASS

EXECUTIVE BOARD 2018-2019

PRESIDENT: Tom McDonagh (617) 966-5221

VICE PRES: Rich Nugent

SECRETARY: John Harrington

MEMBERSHIP: Chris Elledge (781) 325-3772

TREASURER: Eileen Myers (978) 456-3937

MEMBERS AT LARGE: Maria Batista (617) 347-3730

Alan Sliski

Al Takeda (508) 494-7877

PAST PRESIDENTS:

2015 - 18 Glenn Chaple (978) 597-8465

2012 - 14 Mike Hill (508) 485-0230

COMMITTEES

CLUBHOUSE: John Reed (781) 861-8031

Steve Clougherty (781) 784-3024

David Prowten (978) 369-1596

OBSERVING: Bruce Berger (978) 387-4189

NEWSLETTER Al Takeda newsletter@atmob.org

PUBLIC OUTREACH

COMMITTEE CHAIR: Rich Nugent starparty@atmob.org

STAR PARTIES: Bernie Kosicki

Laura Sailor

John Harrington

How to Find Us...

Web Page www.atmob.org

MEETINGS: Held the second Thursday of each month (September to July) at 8:00PM in the Phillips Auditorium, Harvard-Smithsonian Center for Astrophysics, 60 Garden St., Cambridge MA. For INCLEMENT WEATHER CANCELLATION see 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 open every Saturday from 7 p.m. to late evening. 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 attendance varies with the weather. It is wise to call in advance: (978) 692-8708.

Heads Up For The Month . . .

To calculate Eastern Standard Time (EDT) from Universal Time (UT) subtract 4 from UT.

Mar 6 New Moon

Mar 10 Daylight Savings Time begins

Mar 14 First Quarter Moon (Moonset at midnight)

Mar 20 Full Moon, Vernal Equinox

Mar 28 Last Quarter Moon (Moonrise at midnight)

Mar 29 Saturn 0.05 degrees North of the Moon (05 UT - 01 EDT)

Apr 5 New Moon

Apr 11 Mercury at greatest western (morning) elongation (28 deg)

Apr 12 First Quarter Moon (Moonset at midnight)