First Light Lite

June 1st, 2025

Jim Lynch – Editor

Message from the CCAS President

May was a quieter month as far as CCAS club activities were concerned. We did not have a star party, as the good weather window coincided with the Memorial Day holiday. And we also did not have a workday, as a number of the usual participants were away on travel.

But life went on. We had a great talk (more on that below) and also made some solid progress on the dome automation project. Regarding the latter, we have now ordered and received the equipment needed to have the dome slew automatically to the position the main scope is in. This will allow us to control the scope from the main room below, rather than from upstairs dome area in the dark and cold. Life will be simpler! A crew to install this equipment in the next few weeks is being organized by Observatory Director Charlie Burke, and we're hoping that installation will be complete by mid-summer.

And we *are* planning normal activities in June! Our star party window will be the week of 23-27 June, our third Wednesday CCAS/CCAF business meeting the 18th of June, and the workday on either the 17th or 19th, depending upon which has better weather. We also have another great talk lined up, on June 5th by Dr. James Dottin III from Brown University, who will be talking about the origin of our Moon. So, it should be an active month!

Newsletter/First Light History

Violet Zitola recently provided me with some club history which I think you might find interesting! Take a look below…

Lily Seely is still with the club, as is Violet, and I'm hoping I can talk them into a club history article or two. I know Violet has shared these pictures with a number of people already, and I'd like to see more of these! Our history goes back 40 years, which is nothing to sneeze at!

CAPE COD ASTRONOMICAL SOCIETY

AN ASSOCIATION OF AMATEUR ASTRONOMERS
WEST HYANNISPORT, MA
(617) 771-2269

* NEWS CIRCULAR-12/21/85 *

The Cape Cod Astronomical Society is a group of amateurs formed to share a common interest in astronomy. We meet twice monthly: an informal gathering on the fourth Sunday of the month at a members home, and at the Cape Cod Museum of Natural History in Brewster on the second Thursday of the month, for a regular meeting and an evening program consisting of a speaker and/or slide show. Both meetings begin at 7:30 PM, and interested members of the public are encouraged to attend. Call Lili Seely, acting president, for details at 771-2269.

* INFORMAL "GET TOGETHER" & POT LUCK SUPPER. *

Our next informal meeting is this Sunday, December 29th, 7:30 PM at Lili Seely's home in West Hyannisport, where we'll all get a chance to meet members and socialize a bit. We welcome newcomers to come chat with others of their interest in observing, photography, or just plain learning more about this great hobby. We have members with all levels of interest and experience, from the curious inexperienced to the seasoned veterans, so you'll be sure to enjoy meeting and talking with others. It's suggested you bring a food dish to share with others; an appetizer, hot-dish, dessert, what have you. Lili will provide a punch, and you may bring the beverage of your choice. If you haven't been to a meeting at Lili's, please call 771-2269 for directions. And bring a friend! We'll see you there...

* NEXT MEETING AT THE MUSEUM-JANUARY 9TH. *

Meeting at the Museum of Natural History in Brewster (second Thursday of the month) should prove beneficial to the growth of our club. The staff has kindly allowed us the use of an excellent screening room and meeting area, lending an atmosphere of professionalism to presentations. All members are encouraged to present their interest or experience to the club via the evening program; it's a great opportunity to let others in on <u>your</u> area of interest in astronomy. You needn't be an expert on astrophysics or cosmology: we'd like to hear about you're interest in the moon, constellations, or observing techniques, or whatever you've learned about your area of interest. Club members and the museum have slides and other materials to aid you in your presentation if needed. Harry Rockwell is our program chairman. Call him at 487-1072.

First Light

VOL. 5 NO. 10 | NEWSLETTER OF THE CAPE COD ASTRONOMICAL SOCIETY | OCTOBER, 1990

We're happy to present the members of the Cape Cod Astronomical Society with a freshly designed newsletter and a new title. From the beginning the newsletter has served to keep us informed of current astronomical events and club news. Past editors spent many hours preparing each issue and to them we owe a debt of gratitude. We hope to continue the trend, and in these and subsequent pages we'll include reports from several different sources, amateur as well as professional. Borrowing an aphorism, we want to emphasize that "all astronomy is local." As the membership grows, we hope you'll make use of club programs, and at the same time, will develop interests of your own. If you approve, then let us know, and if you have something to contribute or an idea you'd like to share, then send it to First Light, P.O. Box 56, Harwich, MA 02645.

Astronomers use first light as an occasion to test the accuracy of a new telescope. If the optical system is functioning well, for example, it will produce a star image with 85% or more of the light concentrated in the center of a small disk. We experienced first light early one evening in July, 1986 when, having tightened the Serrurier trusses and spread the last coat of blue paint, we carried the club telescope from the workshop to an adjacent field, and pointed it towards Mars. There wasn't even a spotting scope on board. Richard Zitola sighted along the edge of the mirror box, while Harry Hammond adjusted the eyepiece and looked. The polar ice cap stood out almost immediately, and we could see small, dark shadings on the planet's central meridian. But it was also evident that the mirror had a serious defect; less than 50% of the light fell in the center. It turned an otherwise steady image into an misshapened fuzz of light whenever we pointed it toward a bright object. Only recently have we taken steps to correct it. Despite that it turned out to be an excellent telescope for deep sky objects and we've used it frequently for comets and asteroids.

So here it is, First Light.

* By rough estimates, we attracted a crowd of 200 people to the star party at the Coast Guard station during Eastham's Windmill Weekend. Just before sunset we'd set up on the leeward side of a large, white building and with the ocean below us and to the east, pointed our telescopes over the salt marsh. Paulette Cliff and Barbara McManus toured the sky picking out familiar deep sky objects. Among the most popular were the Ring Nebula in Lyra and, the globular cluster, M13, in Hercules, host to nearly a million stars. The club telescope was aimed at Comet Levy the entire evening, allowing everyone a second and third look to satisfy their curiosity. Harry Rockwell pointed out the constellations, and we turned from time to time to watch the waning gibbous moon rise over the sea. Earlier in the day Barbara, Scott Kennedy and I had handed out club flyers to everyone who'd stopped to look at our display, and we'd drawn curious spectators while observing the Sun's photosphere, dotted with a dozen or more tiny sunspots.

* At the meeting on October 4th, Cynthia Pease will present a slide show entitled "Finding the Stars Through Lore and Legend." Cynthia is a sidewalk astronomer who lives in Falmouth and writes a weekly newspaper column, "The Passing Scene", for the Falmouth Enterprise. Astronomy is one of her favorite themes and she writes frequently about it. The meeting begins at 7:30 p.m. with a business session, followed by refreshments, and the evening program.

* The Society recently joined the Astronomical League. Those of you who are interested can receive the League's quarterly newsletter, Reflector, for $1.55 a year. It features articles from the newsletters of groups across the country and is a good investment. Eight people have signed up thus far.....

Hybrid Meetings and Coming Speakers

Our hybrid meeting format has been working out reasonably well, allowing us both an in-person H&K dinner and DYHS meeting and also a remote Zoom link for those who can't attend the live event. The upcoming meetings will mostly be in this format. *Check the newsletter and website for month-to-month variation.*

As to speakers, we have a pretty darn good roster lined up for summer. Let's go through that list!

Last Month's Speaker: Ms. Sarah McCandless, NASA JPL

Date: May 1st via Zoom and at DYHS at 7:30 PM (speaker remote)

NOTE: I owe Sarah an apology! She had sent me some PowerPoint notes for an extended precis of her excellent talk, but I did not get to them until today and then saw that the permission to use the files had expired two weeks ago. If I can get them again, I will send a writeup as a separate email to the club! Her talk gave a wonderful overview of the engineering side of satellite/ instrument launches, and how carefully addressing some very fussy seeming considerations can be absolutely critical to a mission's success!

Bio: Sarah Elizabeth McCandless works for NASA's Jet Propulsion Laboratory (JPL) as a navigation engineer. She likes to say that makes her an "interplanetary Google Maps"! She develops multi-mission software tools, and performs operational as well as pre-launch orbit determination analyses.

She is currently the Orbit Determination Lead for Lunar Trailblazer and is actively supporting Europa Clipper and NEO Surveyor. She has supported a number of other flight projects including Artemis I, Mars 2020, and Psyche. She earned a B.S. in aerospace engineering and a minor in French at the University of Kansas and an M.S. in aerospace engineering from the University of Texas. Outside of work, Sarah Elizabeth enjoys flying Cessna 172s, hiking, and reading. Fun Fact: she's visited 47 of the 63 US National Parks!

Title: Detect to Protect: NASA's NEO Surveyor Mission

Abstract: Earth has been bombarded by asteroids and comets for billions of years, and will continue to be impacted in the future. The Near-Earth Object (NEO) Surveyor mission is a NASA Observatory designed to discover and characterize these objects—we want to find them before they find us! This infrared space telescope will be surveying the sky for five years to find objects in the most Earth

like orbits that potentially pose the largest hazards. Over the course of its survey, NEO Surveyor will discover hundreds of thousands of new NEOs, significantly improving our understanding of the probability of an Earth impact over the next century. Come join us and learn about this exciting next step in planetary defense!

Resources:

- NEOS mission page
  - https://science.nasa.gov/mission/neo-surveyor/
  - https://www.jpl.nasa.gov/missions/near-earth-object-surveyor/
- Live Cleanroom Webcam
  - https://science.nasa.gov/mission/neo-surveyor/live-from-the-clean-room-building-neo-surveyor/
- Planetary Defenders movie
  - https://plus.nasa.gov/video/planetary-defenders/
- Eyes on Asteroids
  - https://eyes.nasa.gov/apps/asteroids/#/home
- NASA Planetary Defense
  - https://science.nasa.gov/planetary-defense/
  -

This Month's Speaker - Dr. James Dottin III, Brown University

Date: June 5th (via Zoom and at DYHS at 7:30 PM (speaker live))

Title: Endogenous, yet exotic, sulfur in the lunar mantle

Bio: I am a geochemist who focuses on measuring and evaluating the causes of sulfur isotope variations in Ocean Island Basalts (OIBs), Martian meteorites, pallasite meteorites, and a variety of lunar materials. The overall goal of my research is to understand how sulfur is processed on various solar system bodies by determining the dynamic interplay of volatiles with a planets' interior, surface, and atmosphere. Ultimately, I aim to use the detailed constraints of sulfur cycling on planets to identify the broad evolution of planets throughout their respective histories.

Abstract: The leading hypotheses for the origin of the Moon call for a giant impact event between proto-Earth and a separate impactor (Theia). The efficiency of mixing material among these two planetary bodies remains a subject of debate. Inefficient mixing during this process could leave behind remnants of the composition of the proto-Earth and/or Theia. The sulfur isotope composition of primordial components that survived this impact event could be used to place constraints on early solar nebula chemistry and the distribution of S components throughout the early solar system, as well as the efficiency of mixing during the giant Moon-forming impact event. This study presents anomalous sulfur isotope data from lunar rocks, that indicate the presence of either (1) exotic chemistry and crustal recycling during the early evolution of the Moon or (2) material that was not well mixed during the giant Moon-Forming impact event.

July talk POSTPONED TO Aug 21st!!!

Speaker: Dr. Avi Loeb, HSCfA, Topic TBD

Bio: Abraham (Avi) Loeb is the *Frank B. Baird, Jr., Professor of Science* at Harvard University and a bestselling author (in lists of the New York Times,Wall Street Journal, Publishers Weekly, Die Zeit, Der Spiegel, L'Express and more). He received a PhD in Physics from the Hebrew University of Jerusalem in Israel at age 24 (1980-1986), led the first international project supported by the Strategic Defense Initiative (1983-1988), and was subsequently a long-term member of the Institute for Advanced Study at Princeton (1988-1993). Loeb has written 9 books, including most recently, *Extraterrestrial* and *Interstellar*, as well as over a thousand scientific papers (with h-index of 131 and i10-index of 614) on a wide range of topics, including black holes, the first stars, the search for extraterrestrial life and the future of the Universe. Loeb is the Director of the Institute for Theory and Computation (2007-present) within the Harvard-Smithsonian Center for Astrophysics, and also serves as the Head of the Galileo Project (2021-present). He had been the longest serving Chair of Harvard's Department of Astronomy (2011-2020) and the Founding Director of Harvard's Black Hole Initiative (2016-2021). He is an elected fellow of the American Academy of Arts & Sciences, the American Physical Society, and the International Academy of Astronautics. Loeb is a former member of the President's Council of Advisors on Science and Technology (PCAST) at the White House, a former chair of the Board on Physics and Astronomy of the National Academies (2018-2021) and a current member of the Advisory Board for "Einstein: Visualize the Impossible" of the Hebrew University. He chaired the Advisory Committee for the Breakthrough Starshot Initiative (2015-2024) and

served as the Science Theory Director for all Initiatives of the Breakthrough Prize Foundation. Click here for Loeb's essays on innovation.

August 7th – Dr. Tony Stark, HSCfA. (An old friend of CCAS)

Bio: See next month's FLL! (Has appeared a few times before!)

Topic: "The Shapes of Galaxies Past and Present"

Abstract: When we could only see nearby galaxies at low redshift, astronomers were concerned with understanding the shapes of galaxies as a result of the physical processes within them: ellipticals, spirals, and "irregulars". I'll discuss a project I did on this topic a half-century ago, at the suggestion of two great names: Martin Schwarzscild and S. Chandrasekhar. New, powerful telescopes are now showing us the formation of galaxies back in time at high redshift --- they're very different, and there are aspects we don't understand, but are working on as active research.

September 4th - Dr. Mario Motta.

Bio: Also see next month's FLL (appeared earlier this year)

Topic: Building and Using his 32" Telescope

This is a ***Stellar*** list of speakers, and we are fortunate that they are willing to donate their time to speak to us. I hope everyone will Zoom in, and if possible also join us at H&K for our pre-talk dinners!

Directions to Dennis Yarmouth HS and Werner Schmidt Observatory

For information on the location of our Dome behind Dennis-Yarmouth High School, click on the purple button "Old Website" and once there, click on "Meeting Location" viewing the two maps that are there: external for the Dome, and internal to locate the high school library where meetings are held.

For meetings, drive along the south entrance road and go around behind the main building. Park in the lot about halfway down the building and go in the back door and turn down the hall to your left to find the library.

For Star Parties at the Dome, drive in the north entrance road all the way past the north side of the main high school building, through a gate, and on to park near our Dome. You can (and should) park on the grass there.

H&K directions

CCAS hosts a dinner gathering for the speaker (if available), members and friends on meeting nights (just before the meeting) at the South Yarmouth Hearth & Kettle restaurant at 5:45pm; (the meetings begin at 7:30 at D-Y.) Please join the group to dine and talk about all things interesting, especially astronomy, before our meeting. The H&K is at 1196 Rt 28, South Yarmouth, about a half mile west of the Station Avenue/Main Street intersection with Rt 28 (stop light). **NOTE:** Since Covid, we have a mix of fully remote and hybrid in-person+ remote meetings. Check the newsletter and/or website to see what the format is each month! There are no dinners when the meeting is fully remote.