

First Light Lite

August 1, 2021

Jim Lynch – Editor

Message from the CCAS President

We are slowly fighting our way back from the restricted status that the pandemic has imposed upon us, but the word “slowly” stubbornly refuses to go away. In early summer, we thought that effective vaccines would free things up by fall, and that we could resume our old ways. I think you all know how that turned out.

But, even if slower than wished, we are still making progress, in parts by using that clever “Plan B” that we’ve come to love. We’ll discuss that below. And there is still some usual business, as you can see in the next sections. So, CCAS marches on, with the fife and drum playing loudly. As an esteemed colleague likes to say: “Onward!”

1) Elections

Elections were held at the July meeting, and the results were: President – Jim Lynch, Vice President – Ashish Dutta, Treasurer – Ken Brink, and CCAF Board Member – Janice Marks. The Secretary Position went unfilled, and if anyone would wish to volunteer for “interim secretary,” please let me know at my jlynch@whoi.edu email address. It is light duty, requiring only two or three hours a month, and you can “try it out” as an interim.

2) Membership and Dues

Last year, CCAS suspended all dues requests, due to the fact that the pandemic greatly limited our activities and so we didn’t think it fair to charge dues. This year, we are still limited, as covid still is a problem, and so are only asking for \$20.00 in dues, completely *voluntary*. These dues are used for speaker expenses, the “book program” for local high schools, and other such outside expenses. (The CCAF Foundation deals with our equipment costs, not CCAS.) We hope that you are enjoying the speaker program, and can be supportive of our book program for the schools, and so will chip in.

CCAS dues (checks made to CCAS) can be sent to:
Dr. Ken Brink
Cape Cod Astronomical Society
16 Greengate Road
Falmouth, MA 02540

3) Committees

The committees which we formed this February have started to come back to life! To refresh people's memories of what the committee's and their charters were, in a very brief form:

- a) Membership/Outreach – Recruiting new members Cape-wide, and making links to schools, organizations and clubs both on-Cape and off. We will actively recruit more people outside of our mailing list, i.e. the general public, when we can meet with them in person at star parties and activities, which *are* being planned for fall (see below).
- b) Programs/Content – Star party organization, special events, school program offerings, offerings for club members.
- c) Communications – Website, videos/podcasts, advertising of events and programs.
- d) Speaker Program – Finding invited speakers for CCAS meetings and also tracking other interesting talks that club members can access.

Our committee meetings are now being held together as a group via Zoom the third Tuesday of every month, and are posted on our website. Agendas and links will be sent to committee members beforehand. We still have room for anyone interested! (Only an hour long meeting!)

4) Ramping Up Our Activities (Plan B update)

As stated, over the past (almost) year and a half we have been working from Plan B, rather than having clear-cut directions to follow. We managed to keep our lecture series going, thanks to Zoom and some very generous speakers, but our star parties vanished (with the exception of some gracious, intermittent invitations to George Silvis' personal observatory via Zoom.) Our school efforts were limited to

our “book give-away” program linked to the monthly Zoom lectures. These Plan B initiatives have kept us going, but it has been at the expense of personal interaction with the public and the students, and even between our usual club members. Our equipment at Werner Schmidt Observatory sat gathering dust for many months, with only periodic maintenance visits.

To reiterate, when the vaccines became available, we like many others, thought that there would be a clear end to the pandemic and that we could resume business as usual, i.e. the pre-pandemic norm. Alas, that seems to have been a bit too optimistic. We *will* ramp up our activities, yes, but a bit more cautiously than we had anticipated. Let me elaborate.

Lecture series

We have some excellent speakers lined up through November (see below), and more that we are contacting, so that finding good – no, make that *great* - speakers is not the problem. Rather, getting back to live lectures is the uncertain piece. We have traditionally had our talks at the Dennis-Yarmouth HS library, with occasional forays to the Falmouth Public Library, but due to the restrictions on crowd size, lecture halls have been shut down through the summer, and their opening up in the fall is now tentative. The delta variant of covid is making facility administrators reconsider their opening plans, and so we won’t be able to announce whether or not our talks will “go live” until September at the soonest. We *will* announce the lecture venues (Zoom or live) via the website and in this newsletter, so look at those for the latest information. We are also looking at recording of our lectures in the future, and posting them on our website.

Star Parties

Our WSO star parties have been shut down during the pandemic, but there actually is a light at the end of the tunnel, it seems. Pending the successful submission of paperwork to the DY Regional School District, we will be able to host events at the Werner Schmidt Observatory (WSO) come September, and indeed we have planned dates for the star parties, which will be posted in this newsletter and on the CCAS website.

The star parties will be of a somewhat changed nature, however. Due to the Δ variant hanging around, these events will be strictly outside (so dress warmly!) and will be a combination of “electronically assisted astronomy” and “binocular astronomy.” Between the two, and some “docent style” lecturing by club members, we can still show you the stars and planets, with the power of our main 12” telescope in the dome, some smaller scopes deployed outside, and binoculars, which often give the best view of wide field objects. These methods allow great views, but will also keep you safe, as there will be no common touching of equipment and no indoors exposure.

Let me elaborate on that last paragraph. “Electronically assisted astronomy” (EAA) is a fancy phrase for stacking electronic camera images (most usually taken through a telescope) in real time. It produces some spectacular images when used correctly, and indeed we showed some from our 12” scope in a past issue of our newsletter. We have only to cable the images to a TV monitor outdoors to be ready for this for our dome scope.



Fig. 1. Image of the M51”Whirlpool Galaxy” made in two minutes using “EAA,” i.e. quick stacking of images, from the 12” Planewave telescope at WSO. The hazy “fuzz” surrounding the image is the result of doing quick processing, as opposed to the more careful processing that one does to make very high quality astro-images.

As to using this technique with smaller scopes, there are also some advantages, as smaller apertures see a wider field of view, and many night sky objects are quite large in extent. Small scopes, combined with the great amplification that CCD and CMOS cameras give, and combined with stacking gain, can show some of these wider features. (The Veil Nebula in Cygnus, an older supernova remnant, is one object that is currently prominent in the night sky, for example.) We are adapting the same software that we use in the larger scopes to our smaller ones, and should have this ready for the fall. I should mention that our impetus to do this with small scopes came from an excellent talk by Mark Johnson from the Phoenix Astronomical Society on July 15th. Mark has graciously let us distribute the Powerpoint presentation he gave, and I'd encourage you to look at it!

“Binocular astronomy” is a well-established part of amateur astronomy these days, and gives a very visceral view of the sky. It doesn't have the amplification that EAA has, but there are many bright objects in the sky, and for anyone wanting to get a feel for our Northern Hemisphere night sky and how it changes with the seasons, it is the first order thing to do.

With EAA, widescreen TV monitors will be placed outdoors, and so one can just look and listen. For binocular astronomy, we will have a few pairs of “loaners” that can be given to a family group, but we can't allow common distribution of a pair or two as we did in the past. We'd ask that people “BYOB” (bring your own binoculars) if they have a pair available. We also will have posted safety rules, as dictated by the state and town, which we all must follow. We don't like being restricted any more than anyone else, but safety has to be the first consideration.

School Projects and Activities

As mentioned, we will have to discuss with the local schools (DYHS, BHS, Sturgis) what is possible and what is not this fall. We do have some very interesting projects available, and hope that we can work with the students on them soon. Of course, our book give-away for the students will continue this fall, as a component of our lecture series. And we *always* have projects available for members to try, which we are updating on our website!

5) Day of Astronomy

This September 18th, we have planned a Day of Astronomy event at the Werner Schmidt Observatory (WSO) for the public and our club members and friends. During the day, we will have live demonstrations, talks, and many great astronomy based items to give to our visitors, including books, globes, posters, and a raffle of a four inch telescope with an equatorial mount. In the evening, we will have a star party, and continue our give-away program for our guests. In between the day and evening activities, we will be going to dinner at a local restaurant, and invite people to join us, but only if they are comfortable with indoor dining. (Right now, our tentative schedule is: afternoon program 2-5 PM, dinner 5-7 PM, and evening star party 7-10 PM.) We will also be doing a membership drive, and hope that some of our visitors will be interested in joining when they see what we do. We hope to see you at WSO!

6) Website

We continue refreshing our poor, neglected (during the pandemic) website, and if you look at it you will see the following updates: 1) an updated introduction by the CCAS President, 2) an updated calendar, with speakers and their abstracts included, 3) a complete list of this year's and previous year's speakers (back to January 2017) and their topics, and 4) this year's and previous year's FLL newsletters. Other sections and features will also be updated in the not-too-distant future.

Speakers

Last Month's Speaker

Dr. Thomas Spirock, Springfield Telescope Makers. July 1st, 2021

Thanks to CCAS member Paul Fucile, we had one his Stellafane colleagues talk to us last month, Dr. Tom Spirock. His talk was on "Lucky Imaging Results Using the 13" Schupmann Telescope at Stellafane and the 6" Warner and Swasey Refractor at Mount Wilson." We hope people, especially those interested in planetary imaging, were able to listen in!

ABSTRACT: In this presentation Thomas Spirock presented the latest results

using the “lucky imaging” technique with the 13” f-10 Schupmann telescope at Stellafane, in Springfield, VT, USA, and the 6” f-15 Warney and Swasey refractor, with a Brashear lens, at Mt. Wilson, in southern California. First, the unique and advantageous characteristics of the Schumann telescope was discussed along with a brief history and description of the 6” W&S refractor at Mt. Wilson. Next, the “lucky imaging” technique was described. Finally, a comprehensive list of resulting images was presented; including Mars, Jupiter, Saturn and both “full disk” and high resolution images of the Moon.

BIO: Thomas Spirock has been a member of the Springfield Telescope Makers, at Stellafane, since 1989. He was instrumental in building both the 13” Schupmann telescope and the McGregor Observatory, at Stellafane, both of which were completed in 1995. He earned a Ph.D. from the New Jersey Institute of Technology working to develop the latest iteration of the solar vector-magnetograph at the Big Bear Solar Observatory in southern California in 2005. During the past several years, he has been applying the “lucky imaging” technique to data collected with both the 13” f-10 Schupmann telescope at Stellafane and the 6” f-15 W&S refractor, the 16” f-10 Mead Catadioptric and the 60” Cassegrain telescopes at Mt. Wilson.

PRECIS: As Thomas has generously allowed us to distribute his PowerPoint presentation to us, I will advise you to look at it. My precis here will just be a short “tour guide.”

Thomas started his talk with a brief history of the century old Springfield Telescope Makers, and their home in Vermont, the renowned Stellafane. (Stellafane is the name of the building which is the home of the STM’s, as well as the name of their yearly convention.) From there, he went on to the creation and details of the 13” Schuppman telescope, a design that was actually not very well known to our members. With an achromatic refractor main aperture, a pair of curved mirrors cancel the remainder of the chromatic dispersion left, giving the equivalent of a Newtonian reflector’s dispersion-free characteristics, but without a central obstruction, with less mirror scattering loss than a Newtonian, and with easier to make (spherical surface) optical components. Of course, the overall system looked complicated enough to us overall, but then you must remember that the STM’s are telescope *makers* and not just users like most of us.

Thomas then went on to the “lucky imaging” part of the talk. Lucky imaging just means ferreting through the images you take over time to get the ones with the best seeing, and Thomas showed a nice example using Saturn. To augment this, you also use stacking and “wavelet analysis,” which is a cousin of the Fourier analysis you may have heard of (or used, for a number of our members). Thomas pointed out freeware that could be used for all of these steps, so that this is something that all amateurs can try their hand at! (Perhaps the most expensive component of the equipment used was the camera, but sic semper photography...)

Processed images of Mars, Jupiter, Saturn and the Moon followed next, with an impressive series of photos made with small telescopes. Thomas ended with a terrestrial example of lucky processing, showing his “work home,” Stellafane.

This Month’s Speaker (Zoom)

Dr. Delilah Gates, Harvard University, August 5, 2021

Our Guest Speaker in March, Dr. Jim Gates, mentioned in passing and with more than a slight hint of pride, that his daughter Delihlah was finishing her PhD work in General Relativity (Black Holes) at Harvard this spring. Being a shameless opportunist, I cadged the link to her thesis defense and also asked her if she would be interested in giving a talk to our club. Happily, she agreed and her abstract is below. We were hoping that we would be able to have this as a “live” event, but as mentioned, the facilities we use weren’t planning to open until September (and even that is uncertain now.)

Her topic should ring a bell with our members, in that Dr. Tony Stark gave a talk about the Event Horizon Telescope and its images when they first were disclosed to the public. The effort to extract information from these images about black holes and their environs has been ongoing since their appearance (and actually before), and Dr. Gates will provide us with some insight into how that effort is going!

Title: Observational Signatures of Black Holes: Learning from Light?

Abstract: Black holes are a prediction of Einstein's theory of general relativity and are the most extreme gravity regions of our universe. With experiments like the Event Horizon Telescope, imaging black holes has transformed from science

fiction to science fact. What can we learn about black holes from imaging the light that bends around them? What signatures in black hole images tell us how big they are and how fast they rotate?

Future Speakers

September 2nd, 2021

Dr. Alyssa Goodman of Harvard University, whose work on the "Radcliffe Wave" discovery has been prominent in the news this last year, has also agreed to talk to CCAS this fall. Her exact topic/title is TBD.

October 7th, 2021

Dr. Jim Head of Brown University, who has given us two excellent talks on Lunar Exploration and the Chinese Space Program, has offered to talk this October about the latest news from Mars, which should be very exciting. Perseverance and a number of other rovers and orbiting craft are making Mars a busy place these days, and there should be plenty to relate and synthesize!

November 4th, 2021

Dr. Daniel Davis of Stony Brook University, the co-author with Brother Guy Consolmagno of "Turn Left at Orion," will give the November talk on "hands on" astronomy projects for amateurs. We will have signed copies of his book to distribute to students, and we hope they will be interested in some of the things that amateurs can see and do!

Star Parties

We are again posting our "usual information" as well as an event schedule, but please note that given the resurgence of the pandemic via the delta variant, these dates and plans may change. Please see the website for up-to date information.

Star Party Dates: Sept 4, 11; Oct 4,30; Nov 6, 27; Dec 4, 11.

Information:

A Star Party is a scheduled event "at the WSO Dome" usually starting at 7:30pm in the fall, winter, and spring (8:30 in the summer because the sun sets later.) Our EAA setup will be available for ~2-4 hours from when the sun sets.

Not just telescopes will be available: a CCAS member who knows the groupings of stars in the night sky (constellations) and how those move with season and time, will point to various stars, planets, and constellations with a laser pointer, describe what is being pointed out, and invite binocular observation.

When at our website, please click on: " Meetings & Events" on the Home Page and then,

...for Schedule of Meetings and Star Parties and anything else scheduled, click on " Calendar". If you need to see a month later than the current month, click on the arrow pointing to the right... to see more info on each item in the calendar, click on each item.

If you can, please visit the calendar at our website once a month to track us "opening back up to normal," especially as we start scheduling Star Parties again.

If in doubt about the weather, call 508-398-4765 15 minutes or less before the event starts – no answer means the event has been cancelled. Cancellations may also be reflected on the calendar.

All our scheduled Star Parties are free of charge and open to the public. One of the main missions of CCAS is to invite folks to enjoy the night sky and learn something about it.

For more info about The Schmidt Observatory click on " Observatory" from the home page and look thru the items listed, particularly "Mission" and "Facility." At "Facility," please click on the underlined "Werner Schmidt Observatory" at the top of the page to go to a map showing the location of the observatory behind Dennis-Yarmouth High School.

Directions:

To get to a WSO Star Party, exit from the Mid-Cape Highway, Rt 6, at Exit 8 and turn left (toward the south) at the end of the ramp. Drive down Station Avenue a mile or so, and, when you reach it, on the left, drive into the northernmost road leading onto the Dennis-Yarmouth High School campus. Then go all the way thru the gate until you see the Dome and parking spots. Don't worry about a sign on the fence near the open gate which suggests "authorized" folks only. If the Dome is open, you are authorized.

To get to the Library at Dennis-Yarmouth Regional High School where our monthly meetings are usually held (again, check for updates), drive into the southernmost road leading onto the campus, drive along the football field until you can turn left behind the main HS building, and park near and go into the first "back door" you can see. Directions to the Library are posted in the hallways when we have meetings there.

