

## **First Light Lite**

May 1, 2021

Jim Lynch – Editor

### **Message from the CCAS President**

As mentioned last month, the officers of CCAS and board of CCAF are working to ramp our in-person programs back up, gradually and safely, and following local and state guidelines. Our (indoors) speaker program will “go live” when the schools and public facilities open up for events (probably next fall), although we will still keep the Zoom format available, as we can get some wonderful speakers “from afar” with Zoom! Our star parties are looking towards “socially distanced” but live events in early summer, transitioning to our usual format by fall. We will notify our friends and members as soon as that happens! And our school interactions should be live by next fall, with interaction directly in the classrooms and at our Observatory. Again, these are not hard-and-fast schedules, but they are looking increasingly possible.

In the meantime, we still have a *great* lineup of speakers on Zoom this spring and summer! I’ll describe them in our “Upcoming Speakers” section shortly. And we also have had some invitations from the Phoenix Astronomical Society to attend their Zoom events, including one this coming Thursday. Read on, if you’re interested!

Before getting to that list, however, let me mention to any Cape HS students (or teachers) reading this newsletter that our spring “book give-away” for HS student attendees is still going on, and will be through June. In January, we gave out laminated Moon maps to those who attended Jim Head’s talk; in February Jim Gates and Cathie Pelletier’s “Proving Einstein Right” was featured; and in March, Emily Levesque’s “The Last Stargazers” was the prize. This next month, we will be giving away extra copies of all three of the above (one per customer... 😊) to those who attend Keith Thorne’s talk on LIGO, and in June, we will award “Turn Left at Orion” (and some small astronomy gear) to those students who Zoom into co-author Dan Davis’ talk. These are admittedly blatant enticements to get the

students to listen to some STEM talks, but the worst that could happen to them is that they would get to listen to some first-rate professional scientists talking about fascinating research, and that they would start a rather nice astronomy library! We'll risk that, in order to give the students something a little extra during a period when their educations have had a lot taken away through a thoroughly nasty pandemic.

## **Upcoming Speakers**

**May 2021**

### **Dr. Keith Thorne**

Thanks to CCAS member Marinna Martini, we have a LIGO project guest speaker in May, Dr. Keith Thorne (who is not related to Kip, but occasionally gets some of his mail...) Let me post parts of an email he sent me:

“Dr. Keith Thorne is a group leader at the LIGO Livingston Observatory. His duties include the real-time control and data acquisition systems for their laser interferometers. These are the most sensitive scientific instruments yet devised, making the first ever detections of gravitational waves from colliding black holes and neutron stars in 2015. He has been with the LIGO project since 2003 after his initial particle physics research at Fermilab.”

Keith mentioned “I even gave a TedEx talk back in the day at Corning Glass”  
<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKewjzuJ2kutHuAhVDeKwKHRPgDAQQwqsBMAB6BAgFEAg&url=https://www.youtube.com/watch?v=oB0KYSluetw&usg=AOvVaw0NwZ9aY6z5J0DIvwFcqwA6>

### **Mr. George Silvis**

During the club portion of our meeting (after the Guest Speaker), we often have presentations of club activities, observations, etc. George Silvis gave an extremely nice exoplanet observation talk last month, and has another batch of data to talk about this month. Specifically, George will give a 10-15 minute talk about the SIDs monitoring data he analyzes each month, and no, it has nothing to do with

baby monitors, which is what you get from the Google search. Rather, George will talk about Sudden Ionospheric Disturbances, which he monitors in the radio band. Who says amateurs just do optical frequencies?! (OK, we pass on x-rays, gamma rays, neutrinos, gravitational waves, and a few others. It's a budget problem...)

## **June 2021**

On June 3<sup>rd</sup>, I get a birthday present in the form of a talk by Dr. Daniel Davis of Stonybrook University. He will be talking about amateur astronomy projects that we all can do. Details are still being worked out, but we will be both giving out books to participating students as well as well as some inexpensive observing tools. The book is, as you might know from Brother Guy Consolmagno's talk, "Turn Left at Orion," of which Dan is co-author. I'm working on getting bookplate autographs from both authors, but I goofed a little in that Brother Guy has recently slipped back to the Vatican, and I'm not sure how long mail will take from there these days!

## **July 2021**

Thanks to CCAS member Paul Fucile, we have one his Stellafane colleagues talking to us in July, Dr. Paul Spirock. His talk will be on "Lucky Imaging Results Using the 13" Schupmann Telescope at Stellafane and the 6" Warner and Swasey Refractor at Mount Wilson." Anyone interested in planetary imaging should be sure to attend this talk!

## **August 2021**

Dr. Alyssa Goodman, whose work on the "Radcliffe Wave" discovery has been prominent in the news this last year, has also agreed to talk to CCAS this summer. We are hoping that her talk will be live, as August is when we project meeting restrictions should be lifted.

## **September 2021**

Dr. Jim Head, who has given us two excellent talks on Lunar Exploration and the Chinese Space Program, has offered to talk this September about the latest news from Mars, which should be 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!

## **Last Month's Speaker(s)**

### **Dr. Emily Levesque, University of Washington**

Dr. Emily Levesque, <https://www.emlevesque.com/>, gave our April 1<sup>st</sup> guest talk on her book “The Last Stargazers.” As mentioned, Emily’s talk was part of our “student book program” this Spring, so local HS students (from BHS, DYHS, or Sturgis) attending are getting a signed copy of her book.

**Abstract:** A bird that mimicked a black hole. The astronomer that discovered microwave ovens. A telescope that got shot. The science of astronomy is filled with true stories (and tall tales) of the adventures and misadventures that accompany our exploration of the universe. Join Dr. Emily Levesque, author of the new popular science book *The Last Stargazers*, to take a behind-the-scenes tour of life as a professional astronomer. We'll learn about some of the most powerful telescopes in the world, meet the people who run them, and explore the crucial role of human curiosity in the past, present, and future of scientific discovery.

**Precis:** Emily’s talk, like Jim Gates’ the month before, primarily tracked her book “The Last Stargazers.” While Emily’s book, like Jim’s, tracked some history (the recent history of astronomical observing), it also was a bit of a personal reminiscence about her own career, and also a look forward to what observing has become and will become, which is different (both in good and bad ways) from the past.

Emily’s book starts off with reminisces of how she became “hooked” on astronomical observation even as a toddler, via looks through her family’s 8” telescope, and how she devoured both science/science fiction books and movies as a child. As she got older, dreams of going into science as a career and attending MIT emerged, and to her delight, were fulfilled. (If this bears any resemblance to

Jim Gates talk, or to the lives of some of our members, it is absolutely not a coincidence! Encouragement at an early age is always a good head start to a career (any career, actually) and Emily's case was another good example.) MIT and summer observing experiences at Kitt Peak confirmed Emily's love of astronomical observation, and her career was launched.

From personal reminiscences, the talk (and her book) switches to some early observing history, specifically the use of glass photographic plates by observers physically perched (often precariously) at the prime focus of a huge telescope. Using this (now considered "primitive") photographic technology took hardy observers, willing to brave cold nights and perilous heights, but it was done. And plates like the famous one that Hubble annotated as a Cepheid in the Andromeda galaxy produced amazingly good science. At the end of the chapter, the first notes of "lament for a lost era" are sounded, as Emily describes how powerful, but remote CCD technology replaced the romantic, in-person observing that plates demanded.

The next chapter in the book, while not as heavily covered in the talk, is Emily's description of what a real night of observing with a modern telescope is like, based on her experiences. For those of us in CCAS who have ocean-related careers, her description looks very familiar, with the substitution of "sea" for "sky." Telescope time, like ship time, is a scarce, expensive commodity, and weather and equipment can quickly scuttle your small, precious time window. The equipment also is, in many ways, delicate, and a seemingly small software or hardware hiccup can make millions of dollars of gear into an uncooperative pile of junk (to put it politely) at just the wrong moment. But, when the data does roll in, and when you're looking at a beautiful sky or sunset over the water, it all becomes worth it. Experimental science is an iffy, but rewarding, experience, but if you're looking to develop a "case of nerves," have we ever got some good areas for you!

The next two chapters of Emily's book (and the talk) relate some rather humorous episodes. In the first, the effects of earthquakes, nasty local fauna, wind, lightning and even volcanoes on telescopes and observational astronomy are explored, with more than a touch of humor. In the second chapter, the effects of man-made hazards (bullets and sledgehammers) on telescope mirrors are described – really! Those who attended the talk enjoyed these episodes a lot!

The next chapter (not treated in the talk) has to do with the placement of telescopes on lands that are often sacred to indigenous peoples. This is a delicate topic, and one that people might already be familiar with, as the story of the Thirty Meter telescope (TMT) on Mauna Kea is a well-known one.

Next follows a chapter on radio astronomy, followed by one relating Emily's experiences in flying with the SOFIA airborne telescope and on balloon astronomy. Eclipses are discussed next, and then LIGO (the topic of our next speaker!). Target-of-opportunity observing comes next, as this is a new part of astronomy's "observing culture." Remote, robotic observing is the next topic up, and here again, a somewhat wistful note gets sounded. To quote the book, "Today's astronomers have the option of carrying out entire research projects – entire careers, even - that make use of telescope data without ever visiting or running the telescope themselves." As amateurs who enjoy the visceral beauty of the night sky, that last sentence (which also applies to the important area of satellite astronomy) is just a bit sad. Something has been gained scientifically, but something personal has been lost.

As you can see, there is far more in the book than could be covered by a one-hour talk! Emily was "chartered" to survey a good cross section of astronomical observations for her book, and did so nicely.

Emily's talk concluded on another personal note – an exciting observation that she and her collaborators made concerning "Thorne-Zytkow objects," an odd type of variable star with a neutron star core. A last minute add-on observation gave Emily data on what is still a somewhat controversial, but exciting, object. And that is just what science thrives on – some observations of things that we don't know everything about!

I'll leave off here, and just say that this book is a great introduction to laymen and professional in other areas alike as to what "the astronomy biz" looks like, both personally and professionally. You'll enjoy reading it!

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We also had a second "Club Guest Speaker" from CCAS after Emily, Mr. George Silvis, who talked about some *very* nice observations of exoplanet transits

that he made from his home observatory just after March's CCAS meeting His title, abstract and brief bio are below.

**Title: "Exoplanet Transit Observing for the Amateur."**

**Speaker: Mr. George Silvis, CCAS, AAVSO**

**Abstract:** A review of what is happening on the Exoplanet scene. Amateurs can play and are needed! A look at information sources and techniques. And the experience of one guy with a telescope.

**Bio:** George Silvis is a resident of Bourne and a member of the CCAS for the past several years. A retired software engineer with a passion for astronomical observing, data and equipment. Not an astronomer, but the next best thing! Hails from Detroit. Came to Boston to attend MIT and never got back home save for visits. Never studied astronomy but I worked my undergraduate years at the MIT Planetary Astronomy Laboratory building instruments and supporting observing teams bound for Hawaii and Chile. Now an active volunteer with the AAVSO and the AAVSONet. The latter is a network of some nine telescopes around the world which are maintained for use by the AAVSO membership and scientists everywhere.

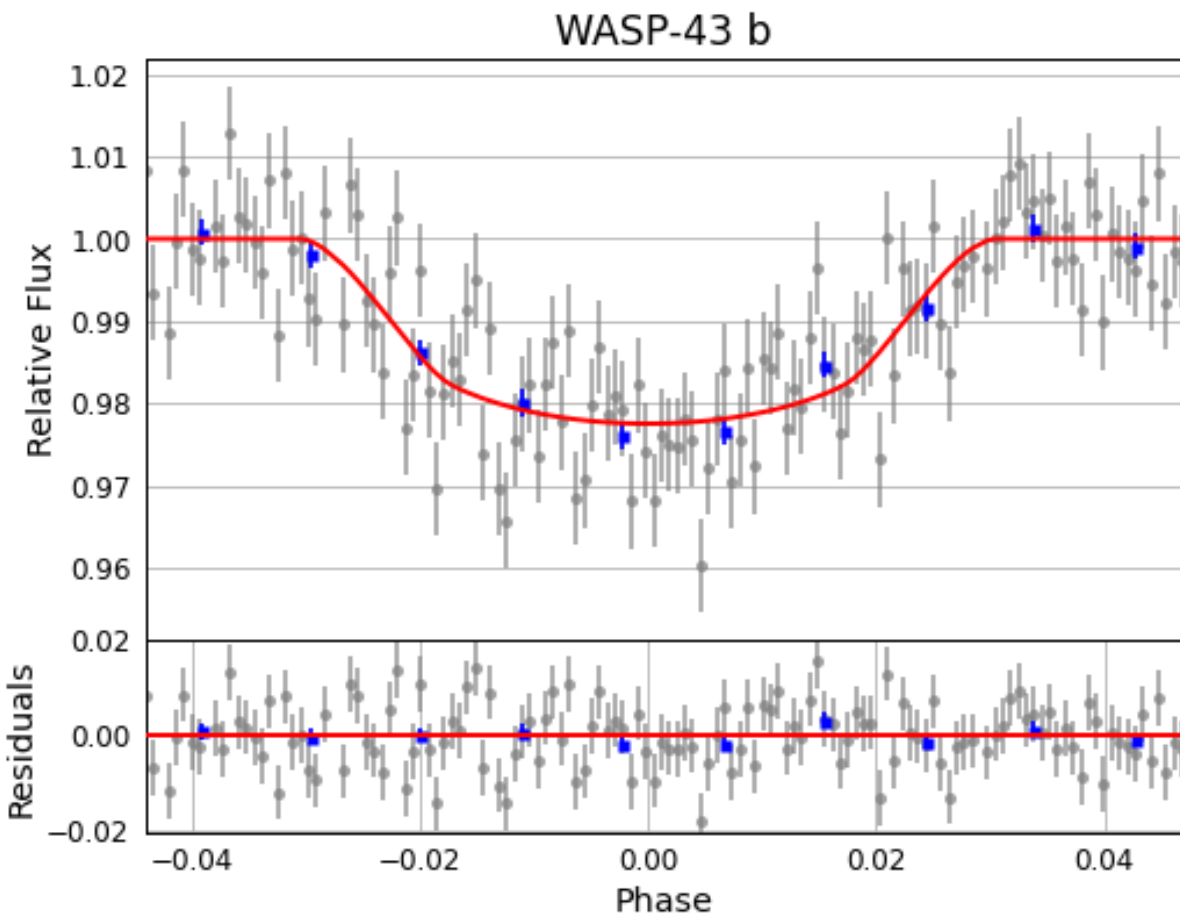
**Precis:** George Silvis may claim not to be a professional astronomer, but he is certainly more than just an average amateur. With an MIT degree, a professional software engineering background, and years of experience with the AAVSO (American Association of Variable Star Observers), George makes observations from his home observatory that are real scientific data, as listeners to his talk saw firsthand. His home observatory, which boasts a twelve-inch scope, an automated dome, and copious software to make things "slick and easy" (though software sometimes can do the opposite), is most amateur's dream rig. George can, and does, program up his night's observation program, checks that it is working, and then can go to sleep and check his results in the morning.

George's talk highlighted observations of two of AAVSO's favorite targets, exoplanets. These planets around distant stars can transit the face of a star from our viewpoint, causing its light intensity to dip ever so slightly. By examining the time it takes to transit, and the shape of the transit curve, parameters like the planet's

size and mass can be estimated. And by having advanced amateurs like George make repeated observations of such transits, orbital parameters can be estimated with increasing precision, something which is of great interest to the exoplanet research community.

George started with a nice view of his observatory's physical and software components. An important part was his "sky and weather monitoring system," given that he lives by the water, and clouds and fog are a Cape Cod fact of life. He then went on to give some background on exoplanets, which have gone from a startling curiosity to a common astronomical object in just two decades or so.

George's data, which went into the AAVSO database, is impeccable, and even though we've shown it once before in FLL, we'll risk redundancy and show it one more time. This is just beautiful data! Thanks again, George!





**Books available:** As you might remember from our last newsletter, Mr. Jim Carlson, one of CCAS' founders, recently passed away. His family has generously offered to give his astronomy books to any members who might be interested. If you *are* interested, please just contact me at [jlynch@whoi.edu](mailto:jlynch@whoi.edu), and I will put you in contact with the family. (We don't post information about private individuals directly.)

### **Phoenix Astronomical Society talk invitation**

We have again received a generous invitation (below) from Mr. Paul Facuna, VP of PAS. Please note that this is *Pacific Daylight Time*, not Eastern Daylight Savings time!

### **Phoenix Astronomical Society Meeting**

**Thursday May 6, 2021**

**Speaker: Dolores H. Hill**

**Topic: OSIRIS-REx Asteroid Mission to Bennu:**

#### ***A Familiar and a Foreign World***

NASA's OSIRIS-REx mission has made important scientific discoveries along its journey and overcome unforeseen challenges including house-sized boulders in its path and pandemic. The mission combines the best of engineering, astronomy, remote sensing, and sample analysis, making ground-truth comparisons of distant astronomical observations and asteroid materials up close. Bennu is a "rubble-pile" asteroid that reveals information about primordial asteroid formation and history of the Solar System. On October 20, 2020, the never-before-tried Touch-and-Go Sample Acquisition Mechanism (TAGSAM) collected an abundance of precious, pristine samples that will return to Earth on Sept. 24, 2023. We expect the returned samples to reveal important details about Bennu's parent asteroid and

organic materials important to life. This talk will explore some amazing ways the science team was able to combine data from its perfect suite of instruments to select the best sample site and help the sample analysis team compare meteorite types in laboratories that may be similar to Bennu... or not.

Dolores H. Hill

Sr. Research Specialist, Lunar and Planetary Laboratory, University of Arizona

Since 1981 Dolores has analyzed a wide range of meteorites at the University of Arizona's Lunar and Planetary Laboratory in Tucson, AZ, provided technical support, and participated in public outreach for space missions and LPL laboratories. Dolores currently works with sample teams for NASA's OSIRIS-REx asteroid sample return mission, LPL laboratories, and coordinates LPL outreach activities. She is a volunteer co-coordinator of the Astronomical League's Target NEOs! (near earth objects) observing program, formerly the mission's *Target Asteroids!* citizen science program that was honored as a White House Champion of Change for Citizen Science in 2013. Dolores has a lifelong interest in amateur astronomy. She is a longtime member of the Tucson Amateur Astronomy Association, co-founded the Sunset Astronomical Society in Midland, Michigan, and was a member of the Warren Astronomical Society in the Detroit-area. Near-Earth asteroid (164215) Doloreshill is named after her.

The meeting is through Zoom. The Zoom login time starts about 7:00 PM PDT. The meeting starts at 7:30 PM. The Zoom link is:

<https://us02web.zoom.us/j/82267698319?pwd=TEswUzh5dzVDY1ZmVmduSEVpQXpmUT09>