First Light Lite

April 1, 2023

Jim Lynch – Editor

Message from the CCAS President

As the weather has improved with the advance of the seasons (from dismal to marginal?!), our in-person activities have picked up apace. Where we were weathered out for a solid week in February and lost our star party window, the one-week window we now use worked fine in March, and we had a very successful event on March 20th. The outdoors "laser pointer/binocular sky tour" went well, as did the viewing with the 8" Dobsonian scopes. But the overall "star attraction" ( ) was the large main dome scope which, after throwing a brief software tantrum, performed admirably. An audience of about 20-25 people grabbed seats in our main downstairs room and watched as WSO Director Charlie Burke and astrophotography expert Hank Ricci flashed near-real time camera images of late winter and early spring deep sky objects. The Crab Nebula (M1), The Orion Nebula (M42), the Pinwheel Galaxy (M101), Bodes Galaxy (M81) and the Whirlpool Galaxy (M51) all flashed up on the main flat screen viewer with only a minute or two of stacking and processing needed. A description of what each one was followed. This "near-real-time planetarium show" format was very well received and led to some lively dialogue. An observatory dome tour concluded the show. We will be pursuing this format in future star parties, along with our very successful outside components.

Our other in-person activities are also going well and picking up again after our Covid hiatus. We've had two successful "workdays" at WSO since New Year's, where members repair and maintain equipment, and also a very successful "Telescope Day," on March 11th, where we invited both CCAS members and the public to learn how to use amateur telescopes, including bringing them physically to WSO for hands-on use. We plan to have more of these Telescope Days, and perhaps will alternate them with our WSO workdays, with both being held mostly during Full Moon periods (which are the poorest in terms of deep sky viewing.)

Fig. 1. Whirlpool Galaxy (M51) image from our March 20th star party. This is always a favorite object to see.

Fig 2. Minor planet Ceres (bright star with spikes) transiting past spiral galaxy M100. Taken during March workday at WSO.

This next month will continue to feature more of the same, starting with our monthly talk on April 6th at DYHS by CCAS member and noted planetary geologist Dr. Jim Head. (See our "This Month's Speaker" section below for details.) Next, we will have a WSO workday on April 14th, from 3-5 PM. Finally, our star party weather window will be from April 20-25, the same as last month. The spring constellations and galaxies will be featured attractions.

Last Month's Speaker

Dr. Jim Lynch, CCAS, WHOI and ASA

Topic: Dark Matter

Abstract: I'll admit to a real fascination with some of astronomy's great mysteries - dark matter, dark energy, and uniting General Relativity and Quantum Mechanics. While these are far beyond my personal pay grade as research topics, I still try to read up on them and understand the basic outline of what is going on, as well as learn the often-fascinating history behind the research. For this talk, I'll go with dark matter, which has both some great history and intriguing current research directions. Dark matter was first inferred close to a century ago by the irascible Swiss astronomer Fritz Zwicky and confirmed by modern astronomer Vera Rubin. But, for a century, an entity which we know to exist due to its effects has craftily defied efforts to specify exactly what it is. I think this (still not completed) story is well worth devoting an hour to! And if anyone listening to this talk figures out the solution to what dark matter is (and proves it…a minor gotcha), there's an all-expenses paid trip to Stockholm in your future!

Precis: My apologies for lack of time to write a precis. If anyone would like a copy of my Powerpoint presentation, please just email me! And for those who may have noticed my teaser question about three things that the famous (and quite irascible) astronomer Fritz Zwicky was noted for, here are four: dark matter, supernovae, neutron stars, and gravitational lensing. He was a man significantly ahead of his time.

This Month's Speaker (April 6th, 7:30 PM, DYHS Library and Zoom)

Dr. Jim Head, Brown University

Abstract: The Chinese Lunar Exploration Program (CLEP) has been phenomenally successful, with a series of robotic orbiters, landers, rovers, and sample return missions (Chang'e 5) on the lunar nearside, and a relay satellite and a robotic lander and rover (Chang'e 4) on the lunar farside. What is next in CLEP? Lunar farside sample return (Chang'e 6) followed by an International Research Station (Chang'e 7-8) near the lunar south pole. The nature, candidate landing sites and payloads of these robotic missions will be described as well as China's plans for sending humans to the Moon around the end of the decade. These plans will also be placed in the context of China's Mars and deep space exploration program.

Biography: Jim Head graduated in geology from Washington and Lee University in 1964 and Brown University in 1969. From 1968 to 1972, while serving at NASA Headquarters, he participated in the selection of landing sites for the Apollo program, in training Astronaut crews in geology and surface exploration, in planning and evaluating the package of experiments to be deployed on the Moon, in mission operations in Houston during lunar surface exploration, and in preliminary analysis of the lunar samples returned by the Astronauts. His subsequent research has centered on the study of geological processes that form and modify the surfaces of planets, how these processes vary with time, and how such processes interact to produce the historical geological record preserved on planetary bodies. He has undertaken field studies of volcanism, tectonism and glaciation on active volcanoes in Hawaii and at Mt. St. Helens, on volcanic deposits on the seafloor with three deep-sea submersible dives/cruises, and during five field seasons in the Antarctic Dry Valleys, and one in the Arctic. He has been involved in dozens of NASA and international planetary exploration missions and principal advisor to over 55 MSc recipients and over 45 PhD recipients, and he involves his students in all international projects, missions and meetings.

May Speaker

Dr. Maura McLaughlin, West Virginia University

Topic: TBD (see bio below for hints!)

https://gwac.wvu.edu/about/people/maura-mclaughlin

Directions to Dennis Yarmouth HS and 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. **NOTE:** We are redoing the website, so that this information may become dated soon. We intend to move any currently useful information to our new website.

For meetings, drive in 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.

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.