



First Light

The Newsletter of the Cape Cod Astronomical Society



September, 2008

Vol.19 No. 8



Did you see the Perseid Meteors? Please send an email telling us about it!

(Thanks to Ed Swiniarski for providing this cartoon from Boston Globe, 8/20/08)

Bright New Stars

Welcome to Paul Cezanne of Truro, our latest Bright New Star. Some of you may have seen Paul's postings on the CCAS Yahoo Group site in which he describes both his recent talk at the Truro library and his hobby of inviting passers-by to look through his telescope at the moon from McMillan Pier in Provincetown.

Paul and his wife recently moved to North Truro and are year-rounders. Paul has been interested in the stars since he was small and still remembers standing in his backyard in Pennsylvania and gazing up at the sky, wondering where the Andromeda galaxy was (and not finding it.) After some years of distraction by education and his career in software engineering, Paul realized a few years ago, while living in New Hampshire, that he was surrounded by dark skies: the amateur astronomy bug bit. Paul is a member of the New Hampshire Astronomy Society as well as now CCAS. Starting with a Celestron NexStar R, he experimented with other equipment options and recently graduated to an excellent 5" Burgess refractor, mounted (Go To) on a Celestron ASGT German Equatorial Mount. Paul also enjoys binocular observing, using a Canon 15x50 IS pair. He enjoys projects like trying to observe all of the Leo Triplet of galaxies. First Light can attest to the quality of image in his Burgess: Jupiter and its moons and then both

Neptune and Uranus were clear and spectacular in that scope at our Star Party at The Schmidt on August 20th. Welcome, Paul!

Once again, we wish to invite recently joined members not yet introduced as "Bright New Stars" to send an email to the info@ccas.ws email address letting us know a little more about themselves: background, astro equipment preferred if any, and interests.

Thoughts on First Light

Thanks to many members for contributions this month: a cartoon from Ed Swiniarski, input from Paul Cezanne for our introductory profile, the results of an interview with Gary Derman on the Erastosthenes Project, a new feature on our website from Tom Leach, a new "Resources for Observers" from Greg McCauliff, minutes of our EC meeting from Betsy Young, and, of course, "From the Dome" from Mike Hunter.

Thank you, members!
"First Light wants YOU!"

CCAS Events

The September issue of Sky & Telescope magazine, page 30, has a wonderful story called "The Coming Giant Star Patrols" which provides a broad look at currently and about-to-be implemented sky surveying capabilities such as the Large Synoptic Survey Telescope (LSST) discussed by Larry Marschall in his presentation at the July CCAS meeting in. Anyone who enjoyed Dr. Marschall's talk will enjoy following up by reading the S&T article on modern survey instruments. Also of interest is another article with a fantastic photo, page 77 in that same issue, describing how the LSST's main mirror, 8.4 meters in diameter, is being made.

Many thanks to CDR Robert A. Walsh, Director of Center for Maritime Training at the Massachusetts Maritime Academy for his excellent overview of Celestial Navigation and the teaching thereof at MMA.

We are pleased to look forward to a presentation by Richard Port on the Development and Use of the Thermometer from Galileo to the Space Shuttle at our meeting on September 4th. Dr. Porter is owner operator of the Thermometer Museum in Onset, Massachusetts and recently donated one-half of his collection to Penn State University.

Please see "From the Dome" below for an Update on Star Party happenings and plans.

Eratosthenes Project

(Err-ah-tohs-then-ees)

By now most of the membership should be aware by email that Gary Derman, our President, has proposed that members of the Society might be interested in participating in member projects oriented to learning about and "recreating" key scientific experiments from the History of Astronomy. Some members will remember a project of this type carried out by the Society some years ago when the late Caxton Foster inspired several of the members to try to duplicate the measurements of the speed of light made by Ole Roemer around 1675. Gary has now proposed another project related to amazing accomplishments of the ancients: the Eratosthenes Project. He proposes we recreate (or improve on?) how Eratosthenes, in antiquity, deduced the size of the earth. First Light interviewed Gary about this proposed project. The results of that interview are found under the heading "Why the Eratosthenes Project" following the September Observing section of this issue.

Executive Corner

The Executive Committee met on August 19th. Highlights:

- Reviewed and endorsed revisions of the By-Laws proposed during the month. A copy of the revised By-Laws was sent by email to all members on August 20th. The membership will vote to approve/disapprove this document at one of the next two meetings.
- Peter Kurtz and Kel Parkinson will work jointly on maintaining an up-to-date spreadsheet on members, post and email addresses, status of dues, etc.; Peter's main role is to keep the email addresses current. Kel, as our Treasurer, will continue to monitor and maintain records on post addresses, phone numbers, and dues status for all members. Please send updates at any time to Peter or Kel.
- For the present, access to the Society's Yahoo Group List Server will be limited to members only. Tom Leach, maintainer and creator of this online facility for dialog on topics of interest in the astro area will reintroduce how this works at one of the next meetings of the membership.
- Tom Leach will create a special page on the CCAS website to contain summaries of activities and progress on the Eratosthenes Project. Active participants will decide how to provide current information on the EP project to Tom for inclusion. Tom will discuss further at the next CCAS meeting. Members of the EP project also will decide mechanics for providing updates on the EP to First Light.
- Tom Leach will create a page on the CCAS website for posting information on telescopes or other equipment for gift or sale. Sales may be by CCAS or others. Alerts about such new postings will also be made in First Light. Members will be asked to submit postings to Tom by email with copy to Peter.

From the Dome

... this from Mike Hunter, Director of the Schmidt...

After six weeks of clouds (good for the lawn) we finally have more clear nights than not. The star party on the 20th was well attended with 25 guests and 8 members. The early part of the evening was hit and miss with banks of high clouds drifting through. However, as forecast by the satellite view of our area on the net about 6pm, the sky cleared around 9:30.

The satellite and radar available on wunderground.com will give you the best chance of accurately predicting the sky for each night. I never use the various "clear sky" sites.

Jupiter was the "star" of the evening. Especially while the bands of clouds were passing by. Very good seeing. The Red Spot did not cooperate like it did on Sunday the 17th: what a sight; my first time.

On the 20th, we had one special remark by a junior guest: one young man noted that of six "dots" visible on either side of Jupiter, in the 16", "only four could be moons since they have to be in a line."

For those who stayed past 10pm on Wednesday, Uranus and Neptune took center stage.

If you missed out on these sights, you need to turn off the TV and turn down Station Ave to The Schmidt. Wednesday the 27th is the last of the summer events. For September through May, monthly star parties will take place on the Saturday closest to the new moon. Dark Saturdays will rule for nine months. Check our website to confirm dates and "Go" status each time.

"Private" group or individual observing sessions at the Werner Schmidt Observatory may be scheduled by contacting observatory Director Mike Hunter at mamhunter@yahoo.com.

Foundation News...

...when we have input from Foundation Officers...

Reminder: CCAS has both 8" and 14" Dobsonian telescopes for loan to members.

September Observing:

Tom Leach has discovered a wonderful new resource on YouTube from the Astronomical League which suggests observing targets for the coming week's sky. Tom has put



a "mini" version of this resource midway down on the home page of the CCAS website. When you click on the little triangle at the bottom (see image) a movie outlining highlights of this week's sky with narrative plays right on your computer. First Light has tried this capability and found it an excellent supplement (in some *rare* cases even better!) than the excellent observing advice you always find here in First Light.

If you double click on the window for this on the CCAS website, your browser will take you to a larger version at http://www.youtube.com/watch?v=KftIGH_sqJU&eurl=http://www.ccas.ws/

Thanks, Tom, for discovering a great new tool for finding out what is going on in the sky!

Moocusser's Almanac and Monthly Alert¹

By Peter Kurtz

SEPTEMBER 2008

Object	Sep 01 (DST)	Sep 15 (DST)	Sep 30 (DST)
Sun	R 06:07 S: 19:13	06:21 18:49	06:37 18:23
Moon	R: 08:24 S: 19:47	18:44 07:08	08:21 18:36
Mercury (dusk)	R: 08:19 S: 20:04	08:41 19:32	07:46 18:33
Venus (dusk)	R: 08:04 S: 20:09	08:37 19:51	09:13 19:35
Mars (dusk)	R: 08:34 S: 20:20	08:26 19:45	08:18 19:09
Jupiter (evening)	R: 16:14 S: 01:24	15:19 00:29	14:23 23:34
Saturn (-----)	R: 06:15 S: 19:24	05:28 18:33	04:39 17:39
Uranus (evening)	R: 19:35 S: 07:12	18:39 06:14	17:38 05:11
Neptune (evening)	R: 18:23 S: 04:45	17:27 03:48	16:27 02:48
Pluto (evening)	R: 14:49 S: 00:48	13:54 23:53	12:55 22:54

Moon Phases, September 2008¹

First QTR Sunday, September 7 at 10:04am DST
Full Moon Monday, September 15 at 5:13am DST
Last QTR Monday, September 22 at 1:04am DST
New Moon Monday, September 29 at 4:12am DST

The Autumnal Equinox takes place this year at 11:45am on September 22. Beginning this day of “equal hours of daylight and darkness,” the hours of darkness each day begin to exceed the hours of daylight and will do so until the Winter Solstice.

Dance of the Planets at Sundown:

On September 1st, at sunset, the **Venus/Mercury/Mars** trio are together with a **thin crescent moon** all within a circle of about 8° diameter about 10° above the horizon after the edge of the sun sinks away for Cape Codders. You have almost an hour after the sun is gone to watch or photograph our quartet before all its components set. Binoculars or a zoom lens should help seeing **Mercury** and **Mars** in this group since they are only visual magnitudes 0.0 and 1.7 against the glow of the just set sun. Visit a Bay beach and see what you can see on 9/1!

On 9/11 (!) **Mars** and **Venus** align just 0.3° apart, again, best seen with binoculars or a small telescope or camera with zoom lens. **Mars** and **Mercury** stay close together almost the whole month with **Venus** gradually moving away and the distance between the MM pair and the sun gradually decreasing toward the end of the month. Best to look early in the month.

Check out the “JPL Small Body Database Browser” at <http://ssd.jpl.nasa.gov/sbdb.cgi?sstr=17P%2FHolmes:orb=1:cov=0:log=0#orb> for a wonderful animation of the orbits of planets to see why, as viewed from earth, these planets stay together for so long a time this month and into October. Zoom down just to where you can see the orbits of the four innermost planets and then click one day at a time to see how they move (and how close they must appear from earth) for the entire month and beyond.

September is another good month to view **Jupiter** for most of the evening each night. The dance of the **Galilean moons** around **Jupiter** is always a treat. If you are interested in the best times to see the “Great Red Spot” cross or be near the planet’s meridian, check out the S&T website at <http://www.skyandtelescope.com/observing/objects/javascrip/3304091.html>

Both **Neptune** (magnitude 7.8) and **Uranus** (magnitude 5.7) are well placed for viewing in the evening hours three hours on either side of midnight all month long in September at Cape Cod. *We had excellent views of Neptune (clearly not a point source; i.e., it was a tiny disc) and Uranus (clearly a disc) at 400x through our 16” scope at the Star Party on August 20th.*

Mike Hunter has expressed an interest in CCAS attempting the tough challenge of observing Pluto. Pluto

is located in the constellation Sagittarius until the year 2023. Pluto is at opposition around late June or early July, so the best time to observe Pluto is between May and September.

So Pluto is in an excellent position (just after opposition) right now for viewing. It currently sits just a bit above Jupiter. We should be able to see Pluto in our 16” scope if we can find a night with good darkness and good seeing in the next two months or so. Pluto is a challenge at magnitude 13.6.

Persons interested in this quest should check out the amusing website called “Pluto challenge” (http://www.pietro.org/Astro_C5/Articles/PlutoCurrent.htm): Can Pluto be seen with a telescope smaller than 8” aperture? With an 8”? Can we see it with our 16” at the Schmidt?

Good time of year to try.

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Libration and Declination Tables for the Moon

SEPTEMBER	
Max Longitudinal	Min Longitudinal
9/1 and 9/28 (5°)	9/14 (-5°)
Max Latitudinal	Min Latitudinal
9/5 (7°)	9/19 (-7°)
Max Declination	Min Declination
9/21 (28°)	9/8 (-28°)

Have you seen the Zodiacal Light.... yet? Or is it the Aurora Borealis?

The zodiacal light, discussed in some detail last month, is most likely to be seen in the east well before morning twilight beginning on September 27th and for the 14 days thereafter.

But...

Our email address at info@ccas.ws received the following inquiry on August 13th:

I live in North Eastham. Early Tuesday morning (Aug 12th about 2:00 am), the sky to the north (toward Provincetown) lit up repeatedly for several seconds at a time. All the trees in the front yard and seemingly far beyond were brightly backlit with a cool

white-yellow light. This was a broad light--no streaks, no thunder. The sky directly above the house was clear with many stars. It was still going on at c 2:20 when I fell asleep and again (or still) c 4:00 when I woke briefly. I have never seen anything like this before. Do you know what it was? Thank you.

Your editor responded to this inquiry that it was most likely the Aurora Borealis that this woman saw; *fluctuating* light in the *north* of *long duration*. But there has been very little storm activity on the sun the last three weeks. Could it have been the zodiacal light? More likely she saw the Aurora. The z-light will usually be seen as fairly constant for a short time predawn running up the ecliptic from the *eastern* horizon. It is the opinion of your editor that since she saw a *fluctuating* light for several hours in the *north* more likely it was the Aurora.

What do you think?

Please let First Light know what you saw and the details if you are successful seeing the Z-light pre-dawn between now and end October. Or for sure if you see the Aurora Borealis!

Minima of Algol visible after dark at Cape Cod: ^{1,3}

[Only minima actually timed near or after sunset thru predawn at Cape Cod are noted.]

SEPTEMBER	
4:37 (am)	Monday, Sept. 1
1:25 (am)	Thursday, Sept 4
3:06 (am)	Wednesday, Sept 24
11:54 (pm)	Friday, Sept 26
9:43 (pm)	Monday, Sept 29

An update on the Mars Landers will have to wait until next issue.

Why the Eratosthenes Project?

...an interview with Gary Derman on his proposal for CCAS members to engage in a project to recreate the very successful efforts of Eratosthenes in 240BC to estimate the circumference of the earth...

Why the Eratosthenes Project?

It didn't really matter what subject we picked. I really wanted to give the members the opportunity to experience the excitement of doing science. Measuring the Earth just seemed outlandish enough that I doubt anyone in the group has tried it before.

But doesn't that put many of us at a disadvantage? Only a few members are engineers or scientists.

Who knows? It might even be an advantage. Common knowledge is not always right. Most tasks can be accomplished in a number of different ways. In other words, knowing too much can limit our thinking.

Don't you have to have a knack for science? Doesn't it require a special kind of thinking?

It requires the same kind of thinking that we all (or most of us) use when deciding how to safely cross a street. We look around, we draw on our knowledge of what vehicles can do, and we make decisions.

People have said, "I don't know how to get started." What would you suggest?

I can tell you what works for me. The first and most important task is to define exactly what we are trying to do and any constraints the task may have.

Would you please give us an example of what you mean?

In this case, the task is to determine the diameter of the earth. The constraints are that we can only use task specific information that was available to people 2200 years ago. For example, they knew that the sky behaved as though the stars were on a sphere rotating relative to the Earth around an axis. They knew this because of the way the map of stars repeated itself through the heavens as the sky and Earth rotated relative to each other. They also knew that the axis of the Earth was on a tilt of 23 degrees relative to the axis of the path of the Sun on that Celestial Sphere.

But there is no constraint on devices that we use to measure things as long as those devices do not depend on the

diameter of the Earth for their operation. So we cannot use a GPS to do our measurements. But plumb bobs, optical instruments, automobile odometers, magnetic or gyroscopic compasses, etc. are all legal.

You really don't want to tell us how to do this, do you?

That would take away much of the fun. Besides, there are a number of very good ways to approach the problem.

What is the best advice would you give to the EP group.

Question everything. The way science is taught in schools today, most people think we understand how most things work. We scoff at the things that were misunderstood in the past without realizing that in many ways we still operate out of ignorance.

So what do you expect of the EP group

What I am hoping for is that the people in the group will brainstorm (i.e. - share thoughts) and work together to get an answer. Getting an accurate answer is nowhere as important as understanding the reasons for any error there might be in the final result of the project and knowing what would be required to eliminate that error. But mostly it will be fun for people to be doing things rather than just reading about them.

Resources for Observers

By Greg McCauliff

[Thanks, Greg, for another helpful installment on your series on published materials helpful to Observers.]

Star-Hopping for Backyard Astronomers, by Alan M. MacRobert (1994) is a collection of 14 "Star Hop" articles, first published in *Sky and Telescope* magazine. Alan MacRobert guides us through selected areas of the sky to reveal a variety of interesting objects. The book contains 160 (9 by 11 inch) pages, with many high quality star maps and photos. It is written for both beginners and more advanced observers.

Alan M. MacRobert holds a degree in Physics, is an ardent amateur astronomer, and has written extensively about astronomy for *Sky and Telescope* magazine and for the *Boston Globe*. The author is a masterful presenter. He reminds us that Amateur Astronomy is the largest branch of amateur nature study, attracting more people than ever before. In the first few sections of the book, he discusses topics that we should be familiar with before we begin the star hops. He then guides us through the individual star hops to discover for ourselves the beauty of the universe, and hopefully to leave us with a better appreciation of the cosmos.

Introductory topics discussed *before* the Star Hop observation sessions, include:

- Using star maps to find your way around the sky, angular distances between stars, finding directions in the sky, star types and nomenclature
- Choosing and testing binoculars and telescopes, types of telescope mounts, and how to use your telescope
- Tips and techniques for observing celestial objects, especially deep sky objects
- How to star-hop using a map at the telescope

If you like using star maps and want to improve your observational skills using the star hopping technique, this book should be very helpful.

This book is also useful as a source of interesting objects for planning observation sessions.

Besides using the star hopping method, you can use a scope equipped with setting circles or a computer operated telescope to locate objects, if either of these methods is more suitable to you.

A PORTION OF THIS PAGE IS INTENTIONALLY LEFT BLANK TO REMIND ALL MEMBERS THAT THERE IS ALWAYS PLENTY OF ROOM IN FIRST LIGHT FOR YOUR CONTRIBUTIONS.

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The **Cape Cod Astronomical Society** meets at 7:30 pm on the first Thursday of every month in the library of the Dennis-Yarmouth Regional High School in Yarmouth, Massachusetts. Meetings are open to the public. Membership dues are \$30 for adults, \$15 for students in two year colleges and part year residents, and no charge for spouses or for students in K-12 schools.



Reference Information:

- 1) Information for The Mooncussers Almanac and Monthly Observing Alerts was extracted from Sky Events, Astronomy Magazine Online (Astronomy.com), Stargazing.net's Planet Rise/Transit/Set calculator (<http://www.stargazing.net/mas/planet2.htm>), *Astronomy Magazine*, *Sky & Telescope Magazine*, *Sky and Telescope Skywatch 2007*, and other sources. The *Observer's Handbook, 2007 and 2008*, published by The Royal Astronomical Society of Canada is also an important reference, particularly for information on lunar libration and declination and the minima of Algol.
- 2) Information on how Libration and Declination Maxima and Minima can make visible parts of the moon normally hidden was reviewed in the December-January First Light. Quick recap: Max Long brings to view extra right side; Min Long, extra left side; Max Lat, extra north side; Min Lat, extra south side. Max Dec puts it high in our sky during its transit; Min Dec puts it low.
- 3) Algol is an eclipsing variable star in Perseus which has its brighter component eclipsed or covered by its companion once every 2.87 earth days. When the dimmer component is not eclipsing the brighter, Algol appears typically about magnitude 2.1; when eclipsed, magnitude 3.3 The minima usually lasts about two hours with two hours on either side to bring it back to mag 2.1. Good comparison stars are γ -Andromedae to Algol's west, mag 2.1, and ϵ -Persei to its east, mag 2.9.