First Light

The Newsletter of the Cape Cod Astronomical Society

February, 2010 **Vol.21 No. 2**

- **Next Monthly Meeting:** is Thursday, February 4th at the DY Library. Program notes below. If we are blessed with a clear night, and interest is sufficient, observing from the Schmidt will follow the meeting.
- **Star Parties** open to all members and the public will resume on Thursdays in June, 2010. Contact info@ccas.ws or Mike Hunter, Observatory Director, if you wish to set up a special Star Party for your group during the winter, or spring months. MEMBERS, particularly newly joined MEMBERS: we would like to provide you an opportunity to observe. if you would like to schedule an evening at the Schmidt, contact us and we will try to schedule something for you soon.
- **Feature Articles this month:**
  - A Good Time at the Dome
  - "Our" First Commercially Made Dobsonian Telescope and an Inspiring Essay by its Creator.
  - A new model for the eclipsing object in long term variable star, ε-Aurigae
  - Other Goodies

Bright New Stars:

We welcome back Joseph Chretien of Marston's Mills. Joseph was a member some ten years ago and is currently ramping up his activities again in amateur astronomy. He has just upgraded from an old 6" Edmund Scientific reflector to a new Celestron C10-NGT Go-To reflector on an equatorial mount. Joe has an interest and some experience in astrophotography. Welcome back, Joe!

We like to welcome new members to our Society in this section of First Light each month. If you are a new member and have not yet been so recognized, or have new information for us (background, astro equipment preferred, interests, etc.) on yourself or someone else, please let us know (email info@ccas.ws).

Thanks to Charlie Burke for his overview here of Michael Renzi's presentation at our January meeting.

PLEASE CONSIDER SUBMITTING AN ITEM OR ARTICLE FOR PUBLICATION IN FIRST LIGHT.

If you are a regular contributor, thank you very much!

CCAS Events

Many thanks to the speaker at our January meeting, Michael Renzi, a former CCAS member, who gave an informative presentation entitled " Reflections of an Aspiring (Amateur) Astronomer". Michael is employed full time in his own software consulting business and spends much of his spare time operating and improving his robotic observatory in Lakeville, Massachusetts. His first observatory was located on the North Shore featuring an 8-inch Meade telescope. This was a robotic or remote controllable unit. His success with this project inspired him to build a much more elaborate observatory on his property in Lakeville. The new observatory has a roll-off roof design and features a 12-inch Meade telescope on a Losmandy Titan mount. Michael has also installed digital imaging cameras. Although located a long distance from his house, the system can be controlled from inside his house. This allows him to create multiple images during one session without actually being inside the observatory. The observatory was completed in just thirty days from plans from a company called Sky Shed www.skyshed.com . Michael also related several of his early experiences with astronomy that later led to his current astronomical projects. Michael feels that to fully appreciate astronomy, a person should be able to have a "cosmological leap of imagination and if understanding fails, there is always appreciation". Be sure to visit his website at www.starhoo.com for more information regarding his observatory.

…Charlie Burke, Secretary

Thanks again to our program chairman, Tom Leach, who continues to put together great programs for our monthly meetings from now well into 2010. If you'd like to look ahead, go to our website and look at the gray box just below the base of the rocket; there you will see what has become

our "Speaker's Bureau": profiles on speakers and topics from now through November 4th.

At our meeting on February 4th, Astronomer Ed Ting will be "Talking about Telescopes". Ed publishes one of the most comprehensive telescope review websites on the internet. Inside, you'll find reviews of over 100 telescopes, eyepiece reviews, a beginner's advice column, feature articles, and lots more! His telescope review website has become a very popular resource for amateur astronomers interested in upgrading equipment and the general novice looking to buy their first scope.

Members, ***PLEASE*** participate in the effort to recruit speakers to present programs in astronomy and related sciences at our meetings. Please send any ideas or contact information to Tom Leach, our President and Program Chairman. For sure he will follow up.

Or, even better, volunteer to give a talk yourself!

The minutes of our January meeting prepared by Charlie Burke, our Secretary, are on our website; click on on the "Minutes" button at www.ccas.ws or go to http://www.ccas.ws/minutes/ccasminutes010710.pdf

Executive Corner

The Executive Board exchanges ideas by email and phone on a continuous basis and now and then formally convenes by conference call. Anyone wishing to offer an item to the agenda, please contact Tom, Paul, Peter or Charlie.

All Members please update your dues!

If you are the Officer of CCAS or the member of the Foundation who has not yet paid 2009 dues, do you know who you are?

If you (or any other member) forgot again, please send your payment in this month either by bringing to a meeting or mailing directly to CCAS at PO Box 297 Harwich Port MA 02646. Thank you. .

Foundation News…

From the Dome

An impromptu gathering of four Observatory Staff Members took place on January 14, a clear but cold night, for a most enjoyable browsing of the night sky at the Schmidt. An overview of some of our experiences that night is published later in this issue as a Feature article.

A week later, six staff members met to work on exercises in operating both the 16" and 18" scopes. Bernie Young and Ed Swiniarski have been working for many months to debug/decipher the mechanics of the 18" scope and develop operating procedures for both "Push To" and "Go To" operation. This effort has reached its objective: on January 21, two "newbies", Peter Kurtz and Matt Jones, successfully traversed the setting up of the 18" and accomplishing finding sky targets in both "Push To" and "Go To" modes and tracking targets in the latter mode. Thanks to Bernie and Ed for "bringing the 18" home."

As always, "Private" group or individual observing sessions at the Werner Schmidt Observatory may be scheduled by contacting observatory Director Mike Hunter at mamhunter@yahoo.com **or sending an email to** info@ccas.ws

Our Society exists to promote observing! Promote this objective by asking for time at the Dome!

CCAS has both 8" and 14" Dobsonian telescopes for loan to members. Currently, Tom Leach is using the 14" for outreach in Harwich. If you wish to borrow one of these 'scopes, contact info@ccas.ws

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February Observing:

PLANETS:

- February is the "last" chance for evening viewing for **Neptune** and **Jupiter** until mid-2010. Look in the West early in the evening.
- Magnitude 6 **Uranus** is still a good target in February but it will soon get very low in the west except in very early evening. Try in good binoculars early in the month. It is easy to find about 9º below and left of mag 4.5 λ-Psc and just 5º left of 14- and 15-Psc, both mag 6 stars.
- Everyone's favorite, **Saturn**, becomes a convenient evening target in early February.
- **Mars** is a big star for this and the next several months. Present at sunset every night now, and having been at opposition on January 29th, it will slowly shrink from this season's near best apparent diameter of 14" on February 1st to 12" at month's end. Look for it with binoculars just 3º northeast of the Beehive Cluster on and around Feb 6th.

ASTEROIDS:

- Magnitude 10 **Melpomene** hangs around in the west

still in early evening in Cetus. A good telescope challenge. By end February it will leave the early evening sky and not be seen as bright as during the recent season until 2016.

Mooncusser's Almanac and Monthly Alert[1]

By Peter Kurtz

FEBRUARY, 2010

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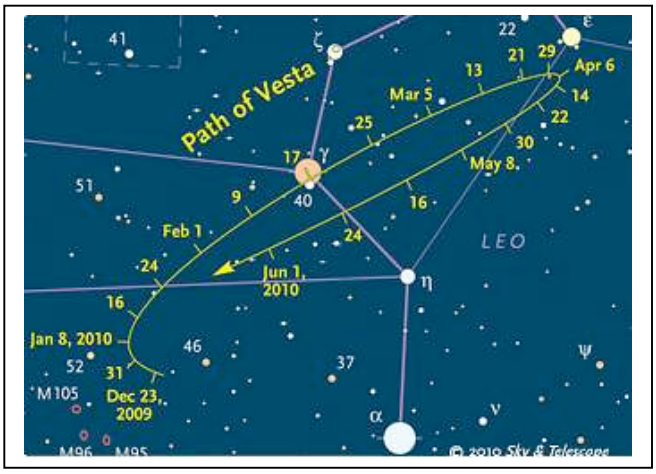
Object	Feb 1 (EST)	Feb 15 (EST)	Feb 28 (EST)
Sun	R 06:52 S: 16:55	06:36 17:13	06:16 17:29
Moon	R: 19:46 S: 07:59	07:00 18:43	17:25 05:59
Mercury (dawn)	R: 05:33 S: 14:54	05:51 15:29	06:00 16:25
Venus (evening)	R: 07:14 S: 17:17	07:04 17:52	06:51 18:24
Mars (evening)	R: 16:13 S: 07:13	14:51 06:02	13:47 05:00
Jupiter (early eve)	R: 07:52 S: 18:39	07:05 18:01	06:22 17:26
Saturn (evening)	R: 21:08 S: 09:18	20:09 08:22	19:14 07:29
Uranus (evening)	R: 08:41 S: 20:26	07:47 19:35	06:57 18:47
Neptune (early eve)	R: 07:31 S: 18:01	06:37 17:08	05:47 16:19
Pluto (predawn)	R: 04:16 S: 14:07	03:22 13:14	02:32 12:24

- A much easier asteroid acquisition beginning this month is magnitude 6 **Vesta**. Vesta moves around in Leo's neck just below Mars from now until well into the summer as shown on the finder chart on this page. At opposition on February 18th, it threads the gap between bright stars Gamma Leonis (magnitude 2.5) and 40 Leonis (magnitude 4.8), which is located only 22 arcminutes to Gamma's south. Thus, this familiar binocular pair will have a faint new interloper! Watch the asteroid's progress from night to night — or even, with a telescope, from hour to hour. Around those dates Vesta moves northwestward by 1 arcminute in a little less than 2 hours — or, at high magnification, 1 arcsecond in a little less than 2 minutes of time.

SPECIAL EVENTS

- **The Zodiacal Light** may be visible in the west after evening twilight for the two weeks beginning 2/2.
- **Minima of Algol**[1,3] occur twice in February at convenient evening viewing times, 9:45pm on Feb 7th and 6:35pm on Feb 10th. See the references for supporting information on how to view this phenomenon.
- Want a new "Deep Fuzzy" challenge? Try the tightly concentrated but dim (magnitude 9.6) green planetary nebula with central star **NGC 1535**. David Eicher in the February issue of *Astronomy Magazine*, p 75, reports it as "an intense blue-green disk with a faint outer halo with a dim central star glowing faintly inside" (8" scope at 255x). The nebula glows in Eridanus in the west in early evening so don't delay.



Once again, all of us have access to excellent monthly summaries of of interesting sky objects to be seen in the upcoming month in the print editions of both Astronomy Magazine and Sky & Telescope. The websites for both magazines also offer a wealth of information on "what's in the sky this month".[4,5] Both outfits also offer weekly or monthly email newsletters to help you keep abreast of what's happening. Look also on the CCAS website for other good observing guides.

Moon Phases, February, 2010

[Moon Full and at perigee 1/30; large tides 2/1-2]

Last QTR	Friday, Feb 5th	at 6:48pm EST
New Moon	Friday, Feb 13th	at 9:51pm EST
First QTR	Sunday, Feb 21st	at 7:42pmEST
Full Moon	Sunday, Feb 28th	at 11:38am EST

[The moon also at perigee: large tides]

Anyone having an interest in monthly **Libration and Declination Tables for the Moon**[2] during this month please contact your editor and the information or sources will be provided. **Dates and Times for the Minima of Algol**[1,3] are given earlier in this First Light.

Feature Articles:

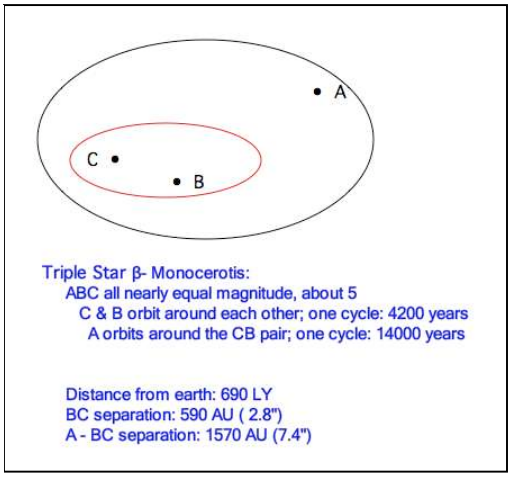
A Good Time at the Dome:

. . . By Peter Kurtz

OK. We had planned it as a learning and training session. But we just had a plain old good time observing on January 14th. An impromptu gathering of four Observatory Staff members met at 7pm. Here are highlights of our evening:

- At 8pm, the magnitude 10 asteroid **Melpomene** swims between the fishes (Pisces) and the whale (Cetus). We centered the 16" on "reliable" RA and Dec for Melpomene for the time and date of our observation (from Peter's SkyVoyager program on an iPod Touch), and jockeyed around verifying putative neighboring stars and finally found… well not much. Was that fun? Well it will be next time when we run the exercise with a little more precision. The fun is in the chase. Wait till next time!
- **The Great Orion Nebula** was spectacular in the 16". Not as much "depth" as one can see in the 18" (which we kept inside because of the cold and the snow) but we had a spectacular and clear view of the trapezium and a seemingly darker than usual dark nebulosity to their right as we looked in the eyepiece.
- **Mars** was blazing; almost too bright to look at. Next time someone should bring a polarizing filter. Mars is at opposition on January 29th so as we move into February it will be at its peak for a while and then begin to diminish. The next opposition will take place in March of 2012 when the planet will appear very similar to what we see this cycle. We collectively noticed something some of us had not recognized before: Mars looks redder with the naked eye and at lower powers; it was much redder in the Finderscope than in the main scope. We see that again in a minute with Hershel's "Garnet" star.
- Bernie Young had brought along a printout of the always very helpful "Evening Sky Map" for January which lists targets for naked eye, then binoculars, then reasonably sized telescopes each month (available at www.skymaps.com/downloads.html each month.) We entertained ourselves for a long part of the evening with targets suggested by Bernie's Sky Map:
    - **Herschel's Garnet Star**, μ-Cephii. A variable. Very red in the Finderscope. More like orange in the main. The Garnet star is a double with the components separated by 19.5". I don't think any of us could see the separation.
    - This was a good night for really pretty open clusters: The first of three in Monoceros was **NGC 2232**, a really pretty scattering about 1º in diameter of more than 20 stars . We were not wowed but that is likely because we were using too much power and could only see part of the cluster.
    - **NCG 2244** This is a definite wow in the 16" using the 20mm eyepiece. Likely it was more of a wow than NGC 2232 for us because in this case, our telescope field was big enough for the 30' wide cluster. We did not see much of the associated Rosette nebula.
    - **M50**, a nice tight (14' wide) 200 star bright open cluster. Very much a wow in our powerful scope.
    - **NGC 2264**, the "Christmas Tree Cluster" also in Mon. Not such a wow. Maybe we were zoomed in too far. Didn't see much of the associated Cone Nebula either.
- Which brings us to one of our most interesting views, **β-Monocerotis, a triple star in Mon**. Two aspects made this so interesting: the information one can learn on studying about this "triple of equals" and the fact that we could only see two of the three components until we put in the 9mm eyepiece which nicely separated the tighter pair. Here's some really interesting info on this triple:

Beta Monocerotis was discovered by Sir William Herschel in 1781. The triple system consists of three equally bright stars, an unusual configuration among multiples. This triple star forms an acute triangle of bluish-white stars. The three stars are lettered from west to east β Mon A, β Mon B, and β Mon C; they have magnitudes of 4.6, 5.4, and 5.6, respectively. β Mon B and C make a double 2.8" apart, while A stands off from them by 7.4". β Mon B and C mostly likely orbit each other, while A orbits the pair. Most likely the perspective here is foreshortened, so A is really farther away in the background or foreground. At a distance of 690 light years, the minimum separation of B and C is 590 AU, and the separation of A from B-C is 1570 AU. The B-C pair takes at least 4200 years to orbit each other, while A takes at least 14,000 to circuit the closer pair. (from Jim Kaler's *STARS*, University of Illinois.)



Thanks, Bernie, for finding such a great collection of goodies in Monoceros, a not-that-often-looked-at constellation!

A Note on the First Commercially Made Dobsonian Telescopes and an Inspiring Invitation by the Company Founder

by Peter Kurtz

Jon Greenberg, longtime member and former president of CCAS, taught astronomy to newbies at his home for eight years through 2008. (See story in February 2009 First Light, page 7.) Jon's course was my introduction to him and to CCAS in the spring of 2006. Following that first experience, I, along with Bill Boyd and Betsy Young used to assist Jon in observing sessions connected with his classes. Jon had, as I remember, a 12" Meade Go To, a small Dob, a Coulter Odyssey 13.1" Dobsonian along with other equipment at his housetop observatory. When Jon decided to retire toward the end of 2008 from presenting his course once or twice a year, he offered to give me his old Coulter Dob. I gladly accepted and have been little by little refurbishing that scope hoping it will again see light sometime this coming spring. Thank you, Jon.

Now, "The Rest of the Story." The current (February issue, page 70) of *Sky and Telescope* has a most informative article by Gay Seronik celebrating the history of Dobsonian telescopes from John Dobson's earliest unveilings of his simple design at the 1978 Riverside Telescope Maker's Conference in California through the present. As some of you know personally, John Dobson and his colleagues championed home building of these simple reflector scopes into the early 80's at which point we arrive at 1988 where the connection of Dob History with Jon Greenberg and us takes place. As the S&T article points out, the Dobsonian revolution in big reflectors did not really occur until a commercial vendor entered the fray. So in 1980, the California-based Coulter Optical Company showed up at the California RTMC meeting with the first commercially made Dob – a 13.1-inch f/4.5 scope made of plywood and a cardboard tube. The first ad for this scope, named the Odyssey, appeared in S&T in June 1980 priced at $395! It was the Coulter company, not Dobson, who established the f/4,5 Newtonian as the "standard" Dob configuration. If I have it right, Jon bought the 13.1" Odyssey scope I am refurbishing from Coulter in 1988 for $500.

Now I did some research on the web in support of my refurbishing effort and was able to retrieve a pdf file at http://sites.google.com/site/coulterodyssey/ which was scanned from Coulter's original typewritten manual for the Odyssey. This manual was sent out with many different Odyssey scopes including Jon's 13.1" scope. This manual has a treasure on one its last pages, typewritten by John Braginton, the founder of Coulter. For me, Mr. Braginton's little piece, "A Final Word" is a most beautiful and lyrical essay on the joys of amateur astronomy. All of us who love the sky should know this piece and its origins.

A FINAL WORD

I wish you the special moments you can experience when you are out there with your telescope under a dark sky. I can remember the many nights on a mountain top or in the middle of the desert that I touched the Universe and felt a sense of belonging to it. It is ironic that we all are trying to make sense out of this colossal Universe and yet we can see it staring back at us with it's light tempting us to understand it. It is these messengers of light, photons, that prompted John Dobson to say, "You first have to see the Universe inorder to understand it." It is now your unique opportunity with your own telescope to make a beginning.

I want to end this with a very sad and heartbreaking true story for one who was about to face death. The time is World War Two and a soldier is writting his last letter. This letter never reached his loved one. Here are some excerpts of that letter: "I was happy when I could sit at the telescope and look at the sky and the world of the stars, happy as a child that is allowed to play with the stars....Dearest, what is our life compared to the many million years of the starry sky! On this beautiful night, Andromeda and Pegasus are right above my head. I have looked at them for a long time; I shall be very close to them soon. My peace and contentment I owe to the stars, of which you are the most beautiful to me. The stars are eternal, but the life of man is like a speck of dust in the Universe."

Good luck, and good observing!

James A. Braginton

James A. Braginton, Idyllwild, Calif., 7/19/86

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Understanding More About the "Eclipsing Body" that Takes Four Months to Dim ε-Aurigae and Keeps it Dim for More than a Year…

. . . By Peter Kurtz

In August we reported in First Light on the coming opportunity to observe and report on changes in the brightness of ε-Aurigae as it undergoes its once-every-27-years dimming and then later brightening phenomenon. ε-Aurigae completes one cycle from magnitude 3.0 to magnitude 3.8 or so and back over two *years* and then waits 25 years until the next dimming cycle! The most interesting times in this cycle are changes in apparent brightness as the dimming begins and ends, and a "bump" of slight brightening during the mostly static dim phase, the complete dimming and undimming process taking about two years.

This time around, the cycle of dimming began toward the end of August 2009. In the December First Light, we reported on how we amateurs can take readings "by naked eye" or binoculars on day-to-day brightness of the star making online reports using instructions provided by to "Citizen Sky", an initiative to involve amateurs in estimating and reporting brightness changes in variable stars under the tutelage of AAVSO. Jim Carlson will talk more on this at our meeting on June 3rd. In that article, we saw that by November 18th, ε-Aurigae had dimmed to more than mag 3.5, and enjoyed learning that our own observations fit well with those of other observers around the world. Well, as of this writing, January 20, the light curve is leveling rapidly at just below mag 3.75, approaching the expected bottom near 3.8 where it will stay with interesting fluctuations for likely more than a year.

During the fall, the professionals have been taking observations and studying the dimming phenomenon. One of their objectives is to improve our theories about the nature of the eclipsing object. According to a story written on January 5th in Sky and Telescope online,[6] the pros are having some success toward accomplishing that objective. In early January at the American Astronomical Society meeting in Washington, DC, Donald Hoard of Caltech described recent infrared observations from NASA's Spitzer Space Telescope supporting a new model for the nature of the eclipsing phenomenon. The new model apparently for the first time fully ties together the mountains of available data on the subject. Here are the key elements of their model supported not only by Spitzer IR data but also new visible and UV observations from land and space telescopes:

- The Main star is an type-F supergiant, much more massive than the sun (extreme luminosity, 130,000x the sun's brightness.)
- The eclipser is a dust disk of sand-sized grains; the disk is 8AU in diameter as expected. Far UV indicates a smaller very hot star at the center of the eclipsing disk, likely spectral type B, only 3x hotter than the sun.
- But the little B star seems to have <u>same</u> mass as the F supergiant. So it "should" be as bright as the F star. But we hardly see it.
- The Model proposed by the Caltech scientists:

> "The bright F supergiant is much less massive than previously thought. It could still shine so powerfully if it is very far evolved and nearing the end of its life. In this scenario it started off with around 10 solar masses (as opposed to the 15 or 20 usually assumed for it) and has since blown off much of even that. The companion B star is then allowed to have only about 6 solar masses, and therefore shines much dimmer. In this scenario, the dark disk is not the sign of a newborn star still gathering material. The disk instead is made of material that the B star <u>gravitationally captured</u> from the dying primary star's wind… Over the next thousands of years, the dying F star will puff off most of its remaining mass to form a planetary nebula."

What could be more interesting than to watch this eclipse from night to night knowing that serious astronomers were little by little improving their model for the phenomenon we are looking at!

We will continue to monitor reports on ε-Aurigae. However, it is likely that the dimming phase we watched over the last four months is almost over and the system is about to sit "in eclipse" for about a year before beginning a multi-month brightening cycle in 2011. So, unless there is compelling news on ε-Aurigae we likely will turn First Light's interest in Citizen Sky at least for the next several months to some other variable star system; i.e., a system undergoing active change we can see from day to day or month to month.

Would you like to have fun at the Dome?

Please let any member of the Observatory Staff know of your interest and we will make an arrangement that works for you.

Other Goodies:

Ever Wondered What Virtual Observing Online Can Be Like?

Well, you can find out. In a story posted in S&T online on January 8th,[7] Kelly Beatty reports that an outfit calling itself Astronomers Without Borders (AWB) has teamed up with the Virtual Telescope project and Global Rent-a-Scope to provide a remote-observing experience for those of us lacking good skies or too busy to drag our own scopes outside. On January 8th AWB blogged an observing session on skies on the northern side of the celestial sphere and on January 10th, blogged one on skies on the southern side of the celestial sphere. More than likely there will be future adventures of this kind set up by AWB. If you are interested, read Kelly's story and also take a look at the AWB website: http://www.astronomerswithoutborders.org/ You can sign up for AWB's newsletter at this website.

Interested in Downloading Six Really Good Maps of the Moon?

To accompany his article "10 Tips for Moonwatchers" in the February issue of (*Astronomy Magazine*, p52.) Michael Bakich has posted six really good moon maps at http://www.astronomy.com/asy/default.aspx?c=a&id=8920 Take a look.

Short notes on two stories fitting for the end of The Year of Astronomy that We Have Been Promising for Months:

Starry Messenger:

January 2010 marks the beginning of the year in which Galileo published *Nuncius Sidereus* announcing his observations on the solar system, the moon, the moons of Jupiter, and other phenomena new to the world at that time. There is a story by Glenn Chaple in the November issue of *Astronomy* (p 66) that anyone interested in the history of astronomy will enjoy.
The article, "The Medicean Stars" discusses how the moons of Jupiter, found by Galileo to revolve around that planet, opened (from the point of view of the establishment at the time) the Pandora's box that not all celestial bodies orbit Earth. Galileo announced his discovery of these "Medicean Stars" in his book *Sidereus Nuncius,* that is, "Starry Messenger." Chaple suggests that we can all have great fun repeating the work that Galileo did observing how the positions of the moons of Jupiter change from day to day and even hour to hour. Go to http://www.rarebookroom.org/Control/galsid/index.html to see and study images of the actual original pages of *Nuncius Sidereus*. Make your own observations during the next Jupiter season in your sky, and see if you can find "*die*-to-*die"* and *hora*-to-*hora* rhythms similar to the ancient images you can now see online that Galileo published in January… 400 years ago. Galileo would be fascinated and pleased to know now that his little stars, named to honor Duke Cosimo II de' Medici, a patron, are inert bodies only reflecting rather than generating light.

Did You Know that Galileo "just missed" discovering Neptune?:

Neptune is just now passing out of our evening sky to become a "morning star" in a month or so; it will be back in our evening sky in late July. In another story in *Astronomy* (October 2009, page 64) Glenn Chaple regales us with the tale of how Galileo "could" have discovered Neptune if he had studied differences in sketches he indeed had for Jupiter and its moons made 12/27/1612 vs. 1/28/1613! If we study these sketches now, with the benefit of knowing what Galileo had no clue about, we can see that Galileo "could" have seen that from sketch to sketch, the distance *between* background "stars" *widened*! We know now that this is because one of the stars in his sketch was a wanderer, that is, a planet, the planet Neptune. If finding moons revolving around Jupiter created a stir, imagine the stir if Galileo had discovered a new planet! Aristotle would have rolled over in his grave! Chaple goes on to review how Neptune was finally discovered on September 23, 1846. It takes Neptune 165 earth years to orbit the sun. So, besides being just fun to see, if you observe Neptune any time before the summer of 2011, you will have seen it in the same (Neptune!) year it was discovered!

Coming Next Month (if priorities don't change!!):

- Most of us know that Mizar, one of the double star system Mizar-Alcor in Ursa Major, is itself a double system. There is also a nearby unrelated field star named Sidus Ludoviciana that lurks nearby. New study has found that *Alcor* is not a single but in fact also has a partner. Next month we will review current study which uses an ancient technique Galileo used to determine that the newcomer is indeed part of the Alcor/Mizar system rather than merely an unrelated far distant star that only "looks" nearby.

- The newly installed Wide Field Camera 3 (WFC3 on Hubble is returning new wider and deeper views almost all the way to the edge of the universe. Next month we will highlight some beautiful images and things newly.

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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 mimima 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.

4) http://www.astronomy.com/asy/default.aspx?c=ss&id=84

5) http://www.skyandtelescope.com/observing/ataglance

6) Story by Alan MacRobert, Sky and Telescope Online:
http://www.skyandtelescope.com/community/skyblog/newsblog/80730537.html

7) Story by Kelly Beatty, Sky and Telescope Online:
http://www.skyandtelescope.com/community/skyblog/observingblog/80991092.html

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