The Valley Skywatcher

Official Publication of the Chagrin Valley Astronomical Society

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Contents

Officers for 2014

NGC 7640 barred spiral galaxy recorded with an 8-inch SCT and Starlight Xpress CCD. The 80 minute exposure was manually guided with an illuminated reticule eyepiece. Photo by CVAS member Sam Bennici.

Astronomy Goes Haywire

By Tony Mallama

The story you are about to read is true. Only the names have been changed to protect the innocent.[1]

It is summertime 2013 and I am reading the weekly news bulletin from Stargazing magazine. An unusual item catches my eye. “Using small telescopes and video cameras similar to those many amateurs use to monitor asteroid occultations, a network of amateurs is observing occultations and eclipses of Jupiter’s moons. The idea is that careful photometry of these events can reveal the moons’ tenuous atmospheres and gas and dust exhalations.”

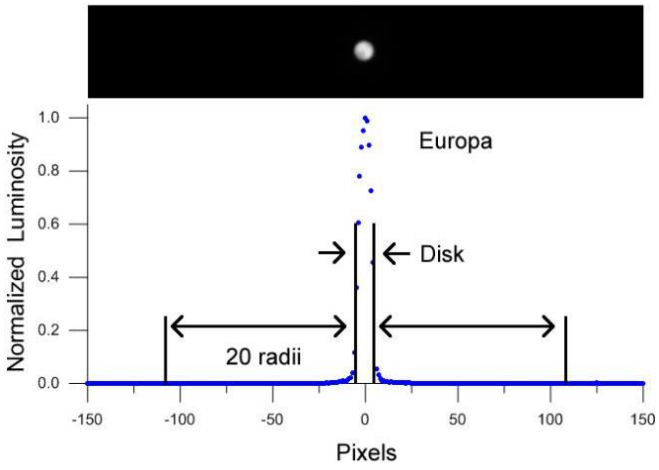
Findings like these would be a major breakthrough in Galilean satellite research. I am excited because I belong to a group which is also studying the moons. An Internet search on the name mentioned in the news article, Sam Duncan, locates his Satellite Eclipse Events web site.

I contact Duncan who confirms the Stargazing piece and adds that his SEE group has already detected the atmospheres of Io and Europa. The papers which Duncan had published in the Proceedings of the Organization for Astronomical Research indicate that he collaborates with about a dozen amateur astronomers. The SEE articles go on to imply that the atmospheres are actually quite dense and extend for thousands of kilometers. Duncan and I discuss whether our two groups might work together but there appears to be little overlap so the conversations lapse.

Reading the SEE papers published by OAR more closely, I am puzzled by some of the details. One of the light curves shows a satellite actually growing brighter during an occultation! Duncan attributes this to a phenomenon that he calls the Photon Doubling Effect. However, an Internet search for this phrase turns up nothing about PDE in the realm of science or anywhere else.

[1] Paraphrased from *Dragnet*. All the material appearing in quotes is verbatim from actual media reports or from email correspondence.

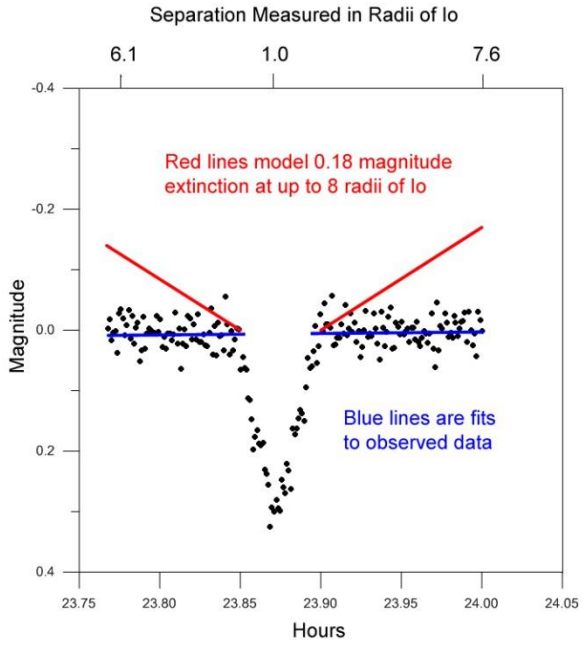
Then a more serious problem with SEE comes to mind. If the atmospheres of Io and Europa were as dense and extended as their theory claims they would be evident as halos shining by reflected sunlight. However, anyone who has observed the Jovian satellites knows that no such atmospheres are seen. Just to be sure, I analyze numerous Hubble Space Telescope images and find no halos. I am growing more certain that there is something fundamentally wrong with the SEE project.



SEE theory claims that Europa has a dusty atmosphere which is measurable out to 20 satellite radii. A Hubble Space Telescope image and luminosity scan show otherwise.

The clincher occurred to me a little while later. For the past several decades a world-wide network of more than 100 professional and amateur astronomers has been recording exactly the same sort of Galilean satellite light curves as the SEE group. Their data does not indicate anomalous dimming due to satellite atmospheres. One of their papers alone contains hundreds of light curves that preclude the possibility of large dusty atmospheres.

In the world of science publishing, a researcher is expected set the record straight if false information was distributed. A simple statement of correction



The thick atmosphere model is contradicted by observations from other pro-am groups.

suffices for most errors. However, when an entire paper is wrong it should be retracted. So, I presented the overwhelming volume of Hubble and ground-based evidence that refutes SEE theory to Duncan and suggested that he amend his OAR papers. He refused and added "this concludes our conversations".

I might have dropped the issue at that point. However, I've been involved in pro-am collaboration for nearly my entire life and I care about the reputation of amateur observers. The OAR is a pro-am group, so SEE had obviously come to the attention of professional astronomers. That was unfortunate enough. Additionally, though, a much larger number of professionals follow Stargazing and they must have wondered how the amateur SEE program could be so incredibly misguided. So, my next step was to contact the editor of the OAR Proceedings, Benson Williams, and I suggested that he ought to retract the SEE papers himself. Williams said that he did not want to be involved with the SEE controversy and declined to retract the articles.

Lacking any practical alternative, I wrote a rebuttal to the SEE papers. The Society for Lunar and Planetary Studies, another pro-am group, published my article.

The email messages that I received in response to the article were eye-opening. One observer said "I recorded a mutual event that showed none of the claimed [SEE] effect, and nevertheless [Duncan] interpreted it as a positive observation of the effect he describes." An amateur spectroscopist wrote "I could see none of the [SEE] predicted effects. I communicated this to [Duncan], but could never get a response even as to whether he thought I had made the right measurement." An editor of *Stargazing* sent a strongly worded message calling SEE 'junk science'.

Outraged amateurs continued to send messages. One said that Duncan had issued an alert for additional SEE observations. His request had then been distributed by one of the world's best known pro-am astronomy organizations, the Affiliation of Astronomical Observers. The sender proceeded to inform the AAO that they ought to cancel the alert.

Then the *smoking gun* email arrived from a close associate of Duncan. He stated that the SEE effect in satellite light curves could be manipulated by adjusting the user parameters of their data reduction program. Even more stunning, though, was the email that he forwarded which had informed Duncan of this fatal problem back in 2009! The associate had wisely distanced himself from SEE all those years ago. However, Duncan continued generating and publishing specious data.

In the end, JEE was found to be simply the result of bad methodology and irresponsible promotion of a half-baked idea. Quite a few people (including the author) were fooled at first. I am pleased to report, though, that hardly anyone except Duncan himself still adheres to his discredited theory.

President's Corner

By Gus Saikaly

Friends:
If one thinks that he or she has learned everything there is to learn about a subject, any subject especially science, or deterred from seeking the answer to an inquiry, read this article from the New York Herald Tribune, European Edition, and reprinted July 21, 2014 by the New York Times:

1939: Sign of Life on Mars Reported
By International Herald Tribune

BLOEMFONTEIN, South Africa - Dr. V.M. Slipher, director of the Lowell Observatory at Flagstaff, Ariz., who is here to take color photographs of Mars from the Lamont-Hussey Observatory, today reported that camera studies definitely indicate the presence of life on the planet which in six days' time will be nearer the earth than it has been for fifteen years. Dr. Slipher's photographs show a gradual change in the appearance of the planet, he said, which prove the growth or decay of vegetable matter. Scientists have long believed that Mars is a planet where all conditions needed for life are to be found. - New York Herald Tribune, European Edition, July 22, 1939

I suspect if Dr. Slipher is still with us his conclusions and views will change as our knowledge about Mars has changed. His experience and countless other scientists' over the millennia spurred the curiosity and the basic research to prove or disprove a theory. Often these changes rely on individuals working alone or with other fellow amateur astronomers in some back yard whose accumulated data eventually lead us in another direction. This also serves as an acknowledgement of the efforts, long hours, and curiosity of the CVASers, present and past, who spend countless hours searching the skies.

The landscape of the history of science is littered with discarded ideas and wrong theories by very prominent people, and in a curious way they are hopeful signs that the future and especially the future of science is bright. I am sure Dr. Slipher would agree.

Constellation Quiz

By Dan Rothstein

This month's questions:

1. Peter Apian is known for the first depiction of Arabic constellations in Europe. List his 16 "fundamental stars" that lie along the ecliptic (at least most of them are close to it).
2. What prominent star is known as "The Ghost of Summer Suns"?
3. This grouping of stars was first a constellation known to Sumerians, then by the Egyptians with the same name, re-tasked by the Greeks as part of another of their nearby constellations, and then returned to its original interpretation by the Romans and medieval Christianity with the designation under which we still recognize it.
4. Canis Major is paired with its Minor Dog, Ursa with its Minor Bear, and Leo with its Minor Lion. Name and locate two of the three other constellations which at one time also had Minor companions which are now obsolete. For one of these pairs, both Major and Minor are both obsolete.

CONSTELLATION QUIZ (CONT.)

Answers to last issue's questions:

1. In Greek mythology Draco the Dragon guarded the golden apples in the Garden of the Hesperides, being "the emblem of eternal vigilance, in that it never set" (Vergil?). One of the labors of Hercules was to retrieve the golden fruit from the garden. Most drawings of the sky show Hercules with one foot standing on the dragon. On a higher level, Draco surrounds the north ecliptic pole and guards it from harm. Until the 17th century, beginning around the time of Halley, ecliptic coordinates (angles parallel and perpendicular to the ecliptic) were used to locate objects in the sky instead of our modern equatorial system (Right Ascension and Declination, angles measured parallel and perpendicular to the celestial equator). For some time atlases used to show both sets of coordinates.

2. Invert the horns of Taurus and you have our letter A. In early Semitic languages the first letter "aleph" meant "ox" and the symbol for it was an inverted A. The face of Taurus indicated not only the first constellation of the ecliptic but the first letter of the alphabet of the Sumerian civilization and other languages that followed.

3. The area of the sky today recognized as the circlet of stars making up the head of Cetus the Whale, to the Arabs was seen as a hand. The 3rd magnitude star γ Ceti has the mouthful of an Arabic name of affaljidhmad, meaning "part of a hand." This star is regarded as the finest double in Cetus, but today we actually know that it is a triple system. The 3.6 magnitude primary is accompanied by a cooler 6.2 magnitude secondary located 2.6" distant, discovered in 1836. A 10th magnitude companion, lying 0.25 degrees to the northwest, wasn't recognized as a third member of the system until 1924. Lying so far away from the other two, it must be very weakly bound. From Deep Sky Nights by Greg Bryant, S&T, December 2005.

4. The time that the sun is in the "celestial sea" is in the fall. Quite a few of the constellations in the southern sky at this time of year are associated with water: Capricornus, Aquarius, and Pisces on the ecliptic; Pisces Austrinus, Cetus, and Eridanus off the ecliptic. One could even extend the celestial sea to include Delphinis and Pegasus (which certain ancients pictured with a fish-like tail). Five thousand years ago, in Mesopotamian times, the winter solstice was located in the center of the celestial sea, in Aquarius. This was a cold and rainy time in the Near Eastern year. The Sumerians associated the heavenly source of both the Tigris and Euphrates Rivers with Aquarius, the Egyptians similarly with the source of the Nile. In Greek mythology the river was transferred to the sky to console Apollo for the loss of his son Phaethon, who tried to drive the chariot of the sun and was thrown into the river by Jove. To Homer it was the Ocean Stream flowing around the earth. It was Italy's largest river, the Padus to the ancient Etruscans or the modern river Po. In northern Europe it has been associated with many rivers, including both the Rhine and the Rhone, and the Ebro of Spain.

   The Sea has only one inanimate member, the river itself. In ancient Arabic the star we identify as θ Eridanis was called Achernar, the end of the river, because no other visible stars occurred between it (about 10 degrees above the horizon at Alexandria in Ptolemy's time, at declination -40° 47') and the horizon. Ptolemy's descriptions indicate that it was much brighter then, possibly as bright as first magnitude, since he designated it as α, but it is now magnitude 3.2. Due to precession, new stars are now visible above the horizon below θ from Greece and the Middle East, revealing the ninth brightest star in the sky, so a segment was added to the river which dives down to only 32° from the south pole. By Renaissance times θ was renamed Acamar, allowing the end of the river to still be known as Achernar, but the present Achernar is a different, much brighter star: magnitude 0.4, declination -57 degrees. So the river's end is still not visible from Greece or anywhere north of +33°.

Observer's Log

Starry Nights on South Branch Mountain

Although the much anticipated Camelopardalid Meteor Shower (CAM) on the morning of May 24th was basically a bust, a few were seen by Goddard Astronomy Club members Steve Bilanow and myself observing from the dark skies of Mountain Meadows, Mathias, West Virginia. Observing from 2 am to 4 am EDT Steve saw 3 CAMs and a few sporadic meteors, while I observed meteors from 2 am to 4:40 am (with a break from 4 to 4:11 am EDT) and saw only 3 CAMs. I also noticed meteors from an unknown source that were coming from the Cassiopeia region.

I also noticed meteors from this area the two following nights, and saw 2 meteors from the CAMs on the morning of May 25th. In total I saw 14 meteors from the Cassiopeia region in 6.45 hours. After searching the internet for possible matches for known minor radiants active at that time I found a radar map produced by the Canadian Meteor Orbit Radar (CMOR) that showed a radiant very near my estimated location. This Radar Radiant is known as the June Mu Cassiopeids. These meteors were recently discovered by Canadian Meteor Orbit Radar (CMOR), about 10 degrees from the location I estimated it to be. You can see it as JMC on the radar map near 0 hrs *55 in this article:

http://astrobob.areavoices.com/2014/05/28/close-flyby-of-asteroid-2014-kh39-june-3-camelopardalid-meteor-shower-radar-rich/ All-sky radar map by the Canadian Meteor Orbit Radar (CMOR)

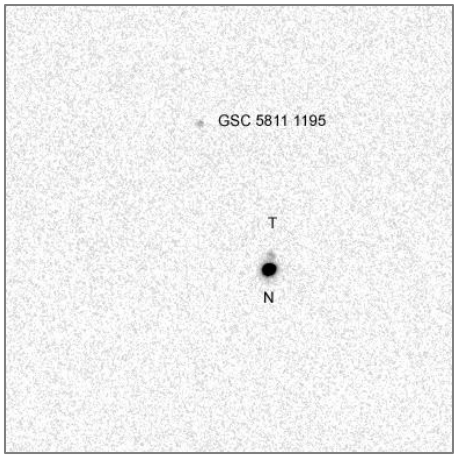
Later Lynne and I went up to our cabin at Mountain Meadows, in Mathias, West Virginia for a few days near the end of June and had only one good night where it stayed clear long enough to do some serious observing. June 23/24 was a fine night and the Milky Way was rather spectacular. Many dark nebulae were visible and the Cepheus Coalsack stood out visually. When the transparency became 6.8 magnitude or so, I could actually see numerous very faint star clouds away from the Milky Way, and the Milky Way looked like curdled milk. The Coat Hanger was resolved into stars with only the naked eye, and spiral arms were seen in M51 with only 12x63 binoculars.

Numerous satellites were spotted including a flashing booster from a spent rocket. Several other deep sky objects were also seen while sweeping the sky with the 12x63 binoculars including M101, M3, M44, M13, M92, M103, M52, NGC 7789, M31, M32, M33, Herschel's Garnet Star, M39, Cygnus Loop, M71, M27, M11, M22, M17, M8, M20, M6, M7, and M4 near Antares.

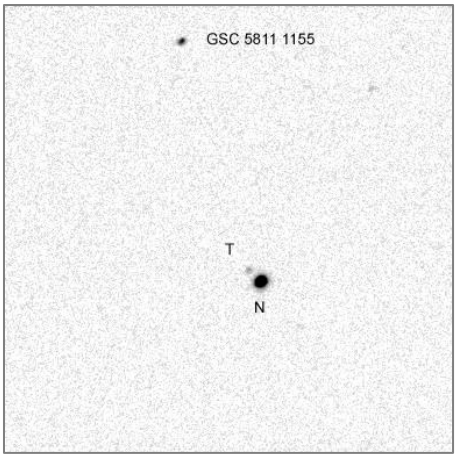
Several nice meteors were also seen, including a nice -1 Sigma Capricornid seen at 6:15 UT with a 2 second train, and a beautiful 0 magnitude Pi Piscid that had a 3 second train. The Northern Apex source also produced a couple of nice meteors that were 0 and 1st magnitude that had nice persistent trains. The screech owls, fireflies, and field crickets were also very active and entertaining. It was a fine early summer night for star gazing. G. Gliba

Neptune and Triton

Neptune's moon Triton orbits the planet in a retrograde direction. It is thought to be a trans-Neptunian object captured by Neptune long ago. The orbit is highly inclined to the ecliptic, and so Triton appears to us to move in a counter-clockwise circular path in the plane of the sky. The orbital period is roughly six Earth days, and during the time between these images Triton completed 1.17 revolutions. Images recorded at IHO. R. Baker



Jul 25, 2014 7:45 UT, N-up, E-left



Aug 1, 2014 7:15 UT, N-up, E-left

Find the Stars & Constellations

Find more than 45 names of stars and constellations in this new puzzle. Names may run up, down, across, backward, or diagonally. Any single letter may belong to as many as four names. Circle the names as you find them.

Mostly the constellations run up and down or diagonally; the stars run horizontally or diagonally—but not always. Spellings come from Alcott and Mayall, A Field Book of the Skies.

If you find most of the names, you can then find a mysterious message from the editors. The exact system you will have to discover. Happy hunting!

C	D	E	N	E	B	K	A	I	T	O	S	U	A	A	S	S
A	L	M	A	C	H	S	H	E	I	A	R	R	E	R	I	A
N	B	H	I	O	G	E	M	M	A	T	A	S	T	Y	A	T
I	O	E	A	S	P	C	A	P	H	S	H	A	U	L	A	T
S	D	R	R	U	U	I	S	K	A	T	E	M	V	S	S	I
M	A	C	D	P	L	N	E	H	T	H	L	I	S	U	S	G
A	L	U	Y	E	A	E	A	I	S	H	R	N	I	N	U	A
J	I	L	H	L	R	R	R	Z	O	G	L	O	R	G	N	S
O	U	E	T	P	I	E	E	L	O	G	A	R	A	Y	I	I
R	Q	S	O	M	A	B	M	A	R	K	A	B	L	C	H	L
J	A	B	B	A	H	A	R	A	I	G	O	M	O	H	P	A
Y	T	A	S	A	W	M	F	A	O	I	K	C	P	U	L	E
R	Y	D	O	F	S	O	I	G	N	U	I	I	H	H	E	R
E	F	U	R	U	D	C	B	E	N	R	A	A	T	A	D	O
F	I	N	E	O	S	I	R	I	U	S	H	F	E	S	B	B
V	F	E	C	S	T	S	N	H	D	A	G	E	V	U	T	A
E	R	A	O	E	I	Y	U	A	T	M	D	L	U	I	S	N
I	R	E	N	O	P	T	D	V	E	A	S	A	Y	P	C	O
D	O	H	O	S	R	H	U	M	R	J	N	R	R	R	H	R
H	M	T	M	R	O	M	E	L	L	O	O	I	E	O	A	O
C	A	S	T	O	R	O	A	U	A	R	C	E	N	C	E	C
X	U	L	L	O	P	N	A	M	S	O	Z	S	T	S	E	R

Dan Rothstein found this puzzle in the Sky and Telescope archives.

NOTES & NEWS

Talks and Presentations

Aaron Watkins from Case Western Reserve University gave a presentation at our June meeting entitled 'Current Galaxy Formation'. Aaron is investigating the optical properties of the faint outer regions of nearby galaxies using the Burrell Schmidt telescope at Kitt Peak to probe the most difficult to detect indicators of their formation histories.

Special Meeting

The CVAS convention of the Ohio Turnpike Astronomers Association was held at Indian Hill on June 28th. The event was attended by 35 people made up of CVAS members and representatives from the Black River and Cuyahoga astronomy clubs whose presence was most welcome. The food was plentiful as prepared by chef Marty. The grounds were impeccable as prepared by Ken and Tom. Even the clouds held off until the last man out (after midnight). – Gus Saikaly

General Information

The CVAS website has information about upcoming astronomy events and activities in our area. There is a host of astronomy-related information, and links to interesting and useful sites. Send comments and suggestions to the webmaster. Russ Swaney

The Valley Skywatcher has a long tradition as the official publication of the Chagrin Valley Astronomical Society. All material in this issue has been written and provided by individuals within our membership community. The CVAS welcomes original articles and material from all members and friends, and this journal provides a unique opportunity to share interests. Published quarterly, the next issue will be available near the end of September. If you would like to contribute material to the publication please contact the editor. Ron Baker

Recent issues of *The Valley Skywatcher* are available on our website here.

REFLECTIONS

Q: How do NASA engineers go about scheduling a meeting?

A: They have to plan-et!