



# the Skyscraper

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August  
2010

Amateur Astronomical Society of Rhode Island ★ 47 Peepoad Road ★ North Scituate, Rhode Island 02857 ★ www.theSkyscrapers.org

## Seagrave Memorial Observatory is open to the public

weather permitting

**Saturdays 9pm - 11pm**

Please note that the observatory may be inaccessible for after extended periods of heavy rain. See web site for updates.

## August Meeting with Richard Sanderson

FRIDAY, AUGUST 13, 7:30PM  
SEAGRAVE MEMORIAL OBSERVATORY

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The presentation will focus on two of the most colorful scientists in the history of Amherst College, Edward Hitchcock and David Todd. Both were instrumental in establishing a long tradition of observational astronomy at the college. Hitchcock's interests ranged from the stars to the strange prehistoric footprints found in the rocks of the Connecticut River Valley. A generation later, David Todd was traveling around the world to witness total solar eclipses while building a large observatory on the campus of Amherst College. Soon after the observatory's completion, he disassembled the massive 18-inch Clark Corporation refractor and brought it to a foreign land in an attempt to prove that life exists on Mars. This talk will offer a fascinating glimpse at the pursuit of astronomy



during an earlier era.

Richard is the curator of physical science at the Springfield (MA) Science Museum and director of the museum's Seymour Planetarium. He is an astronomy journalist who, for 20 years, wrote a column called "Celestial Wanderings" for the "Springfield Journal." He has been published in national magazines that include "Astronomy," "Sky & Telescope," "The Skeptical Inquirer," "The Griffith Observer," and "The Journal for the History of Astronomy." He also is co-author of the 2006 book "Illustrated Timeline of the Universe." Rich is a co-founder of the Connecticut River Valley Astronomers' Conjunction. He also is passionately interested in collecting antique astronomy books. He lives in Feeding Hills, Massachusetts.

Phases of the Moon



3



9



16



24

**OTHER NOTABLE EVENTS:** Mars is 1.9 S of Saturn on the 1st. Mercury is at greatest eastern elongation (27) on the 6th. Venus is 3 S of Saturn on the 9th. Favorable planetary conjunction during the next several days, with the Moon joining on the 12th and 13. Perseid meteor shower peaks on the 12th. Venus is at greatest eastern elongation (46) on the 19th. Neptune is at opposition on the 20th.

Tom Thibault

# President's Message



Dear Skyscrapers Members,

We've had a very busy July and anticipate August to continue that trend. Well, summer has arrived, and we all being New Englanders, have learned this is the season to get out enjoy the nice weather and do as much as we can during these beautiful and lengthy, but limited days. I'm sure everyone is taking advantage of them while they can, so get out and enjoy them.

Skyscrapers Annual Cookout was Saturday, July 10th and we had a great turnout. The heavens above treated us kindly by holding off on the forecasted rain and other than the brief downpour prior to the start our skies stayed dry and even provided a few peaks of sunshine from time to time. The Seagrave grounds looked great and we were all greeted by our newly erected Seagrave Observatory Facility Sign and Kiosk erected by member volunteers and partially funded by a number of donations.

We were all treated to a delicious assortment of foods and desserts prepared by a number of our members. Al Hall provided a Clam Chowder made from his recent quahog excursion. A quahog with every bite, now that's chowder! Steve Hubbard and Steve Siok kept the hot dogs and hamburgers flying off the grilles like army cooks. The turn-out exceeded expectations and it was great to see our members gathered and enjoying themselves on that fine day. Preparations for this event were completed by many volunteers and I would to take this opportunity to thank all those that helped to make it the success it turned out to be.

The cookout was followed by our evening program. Our first order of business was the presentation of a framed plaque from the membership to Bob Horton in appreciation of all his contributions during his leadership as President of Skyscrapers. It featured astronomical pictures Bob has taken over the years and note of appreciation. I would like to thank Manny DeOliveira for his exquisite printing he completed at Print Makers, Inc. in Pawtucket, RI.

This presentation was followed by our guest speaker Bruce Berger, whose presentation on Amateur studies of the Occultation's of Kuiper Belt Objects was very interesting. It showed how we, as amateur's can contribute with our professional counterparts to this facet of astronomy.

Our business meeting followed and I

was pleased to announce Ed Haskel has accepted the appointment as the Skyscrapers Secretary. Please join me in welcoming Ed to this position. Steve Siok informed us during the "Good of the Organization" of Al Hall's intention to begin some maintenance and improvements to the Clark refractor and clock drive. Volunteers were requested for the Clark's disassembly at 9:00 AM, Saturday on July, 17th.

Astronomically, Jupiter is rising earlier each evening and will soon be available at a reasonable hour for all our enjoyment. Hopefully, many of you were able to enjoy the spectacular view Dave Huestis wrote about in July's Skyscraper on July's Planetary Parade in the western sky of Mercury, Venus, Mars, and Saturn. I urge all of you to get out and enjoy the great weather and clear skies we're having. I'm sure you all remember last year's summer, or should I say extended fall.

Clear Skies  
Tom Thibault  
Skyscrapers  
President



The Skyscraper is published monthly by Skyscrapers, Inc. Meetings are usually held on the first Friday of the month. Public observing is usually held every Saturday night at Seagrave Memorial Observatory, weather permitting.

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## Directions

Directions to Seagrave Memorial Observatory are located on the back page of this newsletter.

## Submissions

Submissions to The Skyscraper are always welcome. Please submit items for the newsletter no later than **August 20** to Jim Hendrickson, 1 Sunflower Circle, North Providence, RI 02911 or e-mail to jim@distantgalaxy.com.

## E-mail subscriptions

To receive The Skyscraper by e-mail, send e-mail with your name and address to jim@distantgalaxy.com. Note that you will no longer receive the newsletter by postal mail.

# Teardrops from the Sky Gods Dave Huestis

I bet you I could forecast what my astronomy associates will be doing on the night of August 12-13 (Thursday-Friday) this year. No, I'm not a psychic! That date is the night of the annual Perseid meteor shower, and with practically ideal observing circumstances predicted, there are going to be a few sleepy amateur astronomers on Friday the 13th. Hopefully the weather will cooperate so stargazers and casual enthusiasts can enjoy a bountiful display of celestial teardrops.

If you are a regular reader of this column you are more than likely familiar with the general characteristics of meteor showers. A long-time reader may even know the specifics about the Perseids. If so, and you don't need a refresher, you can skim through a few paragraphs until you come across the observing circumstances for this year.

During a meteor shower an observer sees particles, many no larger than a thumbnail, plunge into our atmosphere at many miles per second and disintegrate. The August Perseids, which occur around the same time each year, are the remnants of Comet 109P/Swift-Tuttle that were stripped off the comet's surface and deposited in "streams" throughout its orbit about the Sun. When the Earth passes through this stream we experience a display of shooting stars.

The Perseids are a fairly consistent display, though some years ago when clear skies provided us a good view, the number of meteors fell far short of predictions. In 2010 we are expecting to observe the normal peak rate of about 60 meteors per hour from a dark sky. That number may even be higher if one can observe from a really dark sky site along the Rhode Island south coast. Then perhaps 80 or more meteors per hour will be seen.

Wherever you decide to observe from, maximize your chances of observing as many meteors as possible by selecting a location well away from light pollution and get comfortable on a lounge chair or in a sleeping bag. A waxing crescent Moon will set around 9:00 pm on the 12th, so it won't diminish the number of meteors that can be

seen. As usual though, you will most likely be plagued by mosquitoes, so be sure to protect yourself to stay off their banquet menu.

I would suggest you begin your observing program around midnight. Between then and dawn is when the peak activity should

If the weather does not cooperate or you are unable to observe on peak night, try your luck on the nights before and after. You won't see 60 meteors per hour, but you may catch a couple of dozen or so. The best time to observe will still be between midnight and dawn's early light.

Meteor observing prospects don't get any better than what is forecast for the 2010 Perseids. Furthermore, I do have another prediction. There are going to be many sad and frustrated stargazers on August 13 should the teardrops of the gods fall from the clouds (rain) and not the celestial heavens (meteors).

Don't forget that Seagrave Memorial Observatory (<http://www.theskyscrapers.org>) in North Scituate is open for public viewing every clear Saturday night. Our summer hours are from 9:00 – 11:00 pm, weather permitting. If in doubt, check our web site for weather closures.

The renovations at Ladd Observatory (<http://www.brown.edu/Departments/Physics/Ladd/>) in Providence are continuing, and the observatory remains closed at this time. Please check the web site for updates before visiting.

Good luck and keep your eyes to the skies.

OBSERVER: <u>AL HALL</u>		LIMITING MAG: <u>4.0</u>		Page <u>1</u> of <u>2</u> Pages							
DATE: <u>AUGUST 11-12, 73</u>		TIME: <u>10:45</u> TO <u>5:00</u>		RADIANTS: <u>PERSEIDS</u>							
LOCATION: <u>SEAGRAVE MEMORIAL OBSERVATORY</u>											
TIME	MAG.	DURA.	LENGTH	COLOR	DUR.T.	RADI.	PKC.	PHOTO	FACING	DEPTH	COMMENTS
1	10:36	2.5	0.8	8°	W		9	9			
2	11:08	0.5	0.9	10°	Y		5	8			
3	11:21	0.0	0.5	14°	B			PER. 9			
4	11:36	2.5	0.5	5°	W		S	7			
5	11:42	-0.5	1.2	20°	B	0.5	PER. 9				
6	11:53	-1.5	0.5	15°	B		PER. 9				
7	12:06	2.0	0.6	10°	W		PER. 9				
8	12:25	-1.0	1.5	12°	W		CAP. 9				
9	1:15	-5.0	5.0	50°	YBG		S	7			2, -6 SIX TERMINAL BEATS
10	1:36	1.6	0.5	8°	B	1.0	PER. 9				
11	1:40	1.0	0.5	10°	Y		PER. 9				
12	1:40	0.0	0.7	12°	B	0.6	S	7			
13	1:50	2.0	0.5	2°	W		S	9			
14	1:58	2.0	0.5	8°	B		PER. 9				
15	2:05	2.0	1.0	5°	A	0.2	PER. 9				
16	2:07	0.0	1.0	5°	Y		S	9			
17	2:30	0.0	0.5	0°	0		PER. 9				
18	2:42	2.5	0.7	10°	W		S	9			
19	2:25	2.5	0.7	3°	0		S	9			
20	2:31	-1.5	1.0	10°	B	1.5	PER. 9				
21	2:53	1.8	1.0	15°	0		S	9			
22	2:54	1.5	1.1	20°	W	0.5	S	9			
23	2:58	0.0	1.0	17°	B	2.0	PER. 9				
24	2:58	-0.5	1.0	25°	0	1.0	PER. 9				
25	3:00	-1.0	0.5	10°	Y		PER. 9				
26	3:07	-0.5	0.5	25°	Y	1.5	PER. 9				
27	3:08	2.0	0.7	15°	W		PER. 9				
28	3:09	-2.0	1.0	8°	Y	1.5	PER. 9				
29	3:15	0.5	1.0	30°	W	1.0	PER. 9				
30	3:18	-1.0	0.5	10°	Y	1.0	PER. 9				
31	3:20	1.0	0.5	10°	Y	0.5	PER. 9				
32	3:23	-1.0	1.0	20°	B	1.5	PER. 9				
33	3:30	1.0	0.5	15°	Y		PER. 9				
34	3:35	2.0	0.5	10°	B		PER. 9				
35	3:38	0.0	0.5	20°	B		PER. 9				
36	3:41	1.0	0.5	10°	Y	0.8	PER. 9				
37	3:49	1.0	0.5	18°	0		S	9			
38	3:50	0.0	1.0	20°	W		PER. 9				
39	3:54	1.5	0.4	8°	Y		PER. 8				
40	4:00	0.0	1.5	30°	B		PER. 9				

Perseids observing report from Al Hall on August 11-12, 1973.

occur. For fun, keep a written or mental count of meteors per hour. You should note an increase as the morning progresses.

The Perseids are so named because they appear to radiate from an area of sky, called the radiant point, in the constellation Perseus. Perseus is well up in the northeast sky after midnight. If you can see a pattern of stars that looks like a sideways "M" or "W" (that's Cassiopeia), Perseus is below it so you're looking in the correct direction. You know you've seen a Perseid if you can trace the path of a meteor back to the radiant point.

Also, the Perseids are usually green, red or orange in color and blaze across the heavens at 134,222 miles per hour. And some members of this shower are bright and often produce exploding fireballs.



# Corona Australis & the Southern Limits of Sagittarius

Craig Cortis

Many astronomers regard Sagittarius not only as the iconic, symbolic king of summer constellations, but also as one of the most important star groups in the entire sky. The rich star clouds of the central Milky Way lie just above the “spout” of the easily identified “Teapot” asterism, near the point denoting the actual nucleus of the Milky Way Galaxy. Some of the best known nebulae—both bright *and* dark—and numerous star clusters—globular *and* open (galactic) types—decorate the night sky throughout this region. Open star clusters associated with certain nebulae, as in the Lagoon Nebula (M8) in northern Sagittarius and the Eagle Nebula (M16) in Serpens Cauda, are great examples of what I like to call “clusterosity”—you can see two for the price of one, so to speak. (I hope I’ve coined that word, unless others have used it elsewhere.) I’ve written about this subject in past issues, but it occurs to me now that it might be of interest to mention just the few bright stars that lie way down near the southern border of Sagittarius, only a few degrees above our local horizon limit of  $-48^\circ$  in declination. The small constellation of Corona Australis, known as the Southern Crown, lies just west of these stars and is a worthwhile section of sky for those who might wish to become better acquainted with the more southerly parts of the summer Milky Way as presented to our view in August.

I must admit that due to the low southern declination of stars and deep-sky objects described here, your ability to see any of them *at all* will be predicated on some very important limiting factors. Foremost of these is a condition that’s hard to attain for most amateurs, most of the time. You must be able to view absolutely as low to the true southern horizon as possible, *minus* any obstructions that might conceal sky objects *just* above the horizon itself. Trees, buildings, hills, etc. cannot block your southern view. Many Skyscrapers are familiar with [East Beach](#) in Charlestown on the coast, near Frosty Drew Observatory in Ninigret Park. This site would be close to perfect for such viewing. Secondly, weather and sky conditions must be optimal. There must be *no* clouds, haze, or fog to the south; a sightline to the horizon should pass through clear air, all the way down. Obviously, intense skyglow from area light pollution must be absent, as well as a bright Moon. August 9th will be a New Moon, which will be a big help.

Finally, it’s crucial to know the *transit*

times for extreme southern objects. They’re hard enough to see when not at the meridian, so you need to take full advantage of viewing them when they are at their highest altitude above the horizon. This is the time at which an object *culminates*, meaning it transits (crosses) the celestial meridian. An object furthest to the *west* would be the first in a group to attempt viewing at or close to its time of transit, followed sequentially in time by other objects in increasing order of right ascension as each, in turn, approaches its transit point. The eastern-most object in a given group would logically be the *last* you’d try to see. Jim Hendrickson has been kind enough to furnish a handy table listing local transit times for a few objects in August, with times given in Daylight Saving Time (DST). Should you be observing on a date not listed in the table, just add or subtract 4 minutes’ correction per day. A transit time for August 10th, for example, could be easily converted for 2 days prior by adding 8 minutes, meaning a 9:30 transit on 8/10 would occur at 9:38 on 8/8. How about August 12th? In that case you’d subtract the 8 minutes, arriving at a time of 9:22. If you want to figure a transit time for an object not listed in the table, note its right ascension as compared to that of a listed object and interpolate as follows: A listed object has a right ascension of 18h 59m 33s. Another object having *no* transit time listed lies east by 33 minutes at 19h 32m 28s. (Rounding-off a few seconds won’t matter.) Your object of interest, therefore, will transit 33 minutes *later* than the more westerly object. The reverse is true for anything *west* of a listed object; such an object transits sooner than a listed time for something having a greater right ascension value. Just keep in mind that right ascension as a celestial coordinate measurement increases from west-to-east, and this equates to actual *time*, unlike declination measurement, which is based on angular position expressed in degrees, minutes, and seconds of *angle*.

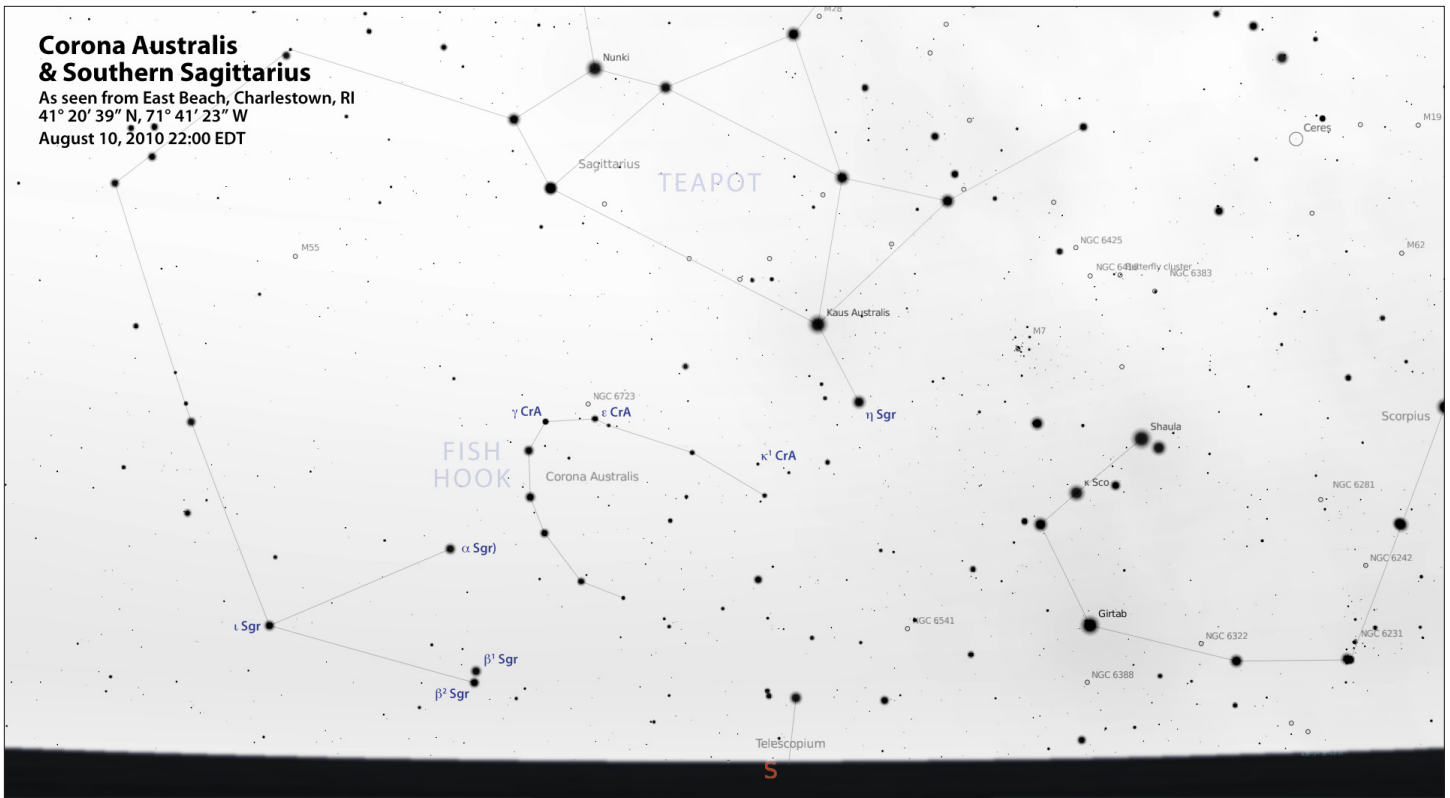
Near the southwest corner of Corona Australis, at a hopelessly low declination of  $-43^\circ 42' 20''$ , is a fine globular cluster I’m mentioning here for record only. NGC 6541 is something to try observing if you’re on a trip somewhere at least a few degrees of latitude south of here. Still, if everything’s perfect and you’ve got a quality instrument with which to observe, the plucky among you *might* just manage to “tease” this cluster out

of the background sky. It is magnitude 6.5 approximately and is 13’ in total diameter, but has a bright and compact core with a high surface brightness that seasoned observers find to be rather striking. NGC 6541 lies just 20’ to the SSE of a magnitude 4.9 white star at RA 18h 06m 48s, Dec  $-43^\circ 25'$ . This star, h 5014, is a fine double of equal magnitudes but is much too close in separation to be resolved at such a low altitude in our location locally; the components are roughly 1” apart and are suitable for more southerly latitudes.

Two key problems that always accompany observing any sky object at such a low altitude—even when you’re lucky enough to have otherwise perfect sky and weather conditions—are the total amount of air you have to look through (“airmass”) and the small arc of visibility above the horizon that low altitude objects are confined to, which makes knowing a transit time so important. Assume a given object attains an altitude at transit of  $4.5^\circ$  above the true (actual) southern horizon. This value is the radius of the total arc in the sky through which the object is above the horizon. From southwest to southeast, the total diameter of the  $\frac{1}{2}$ -circle would only be  $9.0^\circ$  from rising to setting points. If you know your site’s latitude you can easily figure an object’s maximum altitude at its transit. Charlestown is approximately  $41.4^\circ$  north, meaning the maximum southern declination of a sky object seen exactly on the true horizon cannot be greater than Dec  $-48.6^\circ$ . (Atmospheric refraction can “lift” objects a small amount so as to reveal a false image of something that technically is just below the horizon, but you shouldn’t take this effect into consideration for this purpose.) If an object has a declination of say,  $-44.8^\circ$ , just subtract this value from  $-48.6^\circ$  to arrive at a transit altitude of  $3.8^\circ$ , much less than the  $5.5^\circ$  of arc separating the 2 “pointer” stars in the bowl of the Big Dipper!

Eminent astronomer James Kaler has written that if we assume a sightline straight overhead to the zenith as passing through a unit value of “airmass” of *one*, the airmass increases exponentially as we look lower in altitude to a maximum value of 38 if looking precisely horizontal to  $90^\circ$  away from the zenith. This means the total amount of atmosphere—based on a clear sky—we must see through when viewing stars right at a perfect horizon from a sea level site is 38 *times* that of a sightline





**Corona Australis & Southern Sagittarius**

As seen from East Beach, Charlestown, RI  
 41° 20' 39" N, 71° 41' 23" W  
 August 10, 2010 22:00 EDT

Object	Type	Mag	Size/ Sep.	RA			Dec		Time of Transit (local DST for East Beach)		
				h	m	s	°	'	Aug 5	Aug 10	Aug 15
NGC 6541 (C78)	Globular Cluster	6.5	13'	18	08	02	-43	42	21:58	21:38	21:18
Eta Sgr	Double Star	3.2, 7.8	3.6"	18	17	38	-36	46	22:07	21:47	21:28
Kappa CrA	Double Star	5.9, 6.6	21"	18	33	23	-38	43	22:23	22:03	21:43
NGC 6723	Globular Cluster	7.1	12'	18	59	33	-36	38	22:48	22:29	22:10
Gamma CrA	Double Star	4.2	1.0"	19	06	25	-37	04	22:56	22:36	22:16
Beta <sup>1</sup> Sgr	Double Star	4.0, 7.1	28"	19	22	38	-44	28	23:12	22:52	22:33
Iota Sgr	Star	4.1	-	19	55	16	-41	52	23:44	23:25	23:05

overhead to the zenith! The potential inconsistencies in all that air—varying degrees of wind, turbulence, and humidity, plus dust or other particulates—adds to the problem when considering the total length of a sightline through the atmosphere. Even in a fine, clear sky, the dimming of apparent magnitude by atmospheric extinction is dramatic the further from the zenith you look. At an altitude of 32° above the horizon, a star of a given unit magnitude is dimmed by 0.2 magnitude, or 1.2x; at 19° it's 0.5 magnitude, or 1.6x; at 10° it's dimmed by 1.0 magnitude, or 2.5x, and lower than that it gets much worse. Stars of precisely the same magnitude value as assumed for my above examples are dimmed by 2.0 whole magnitudes if seen at an altitude of only 4°, or 6.3x dimmer. How about an altitude of just 1° over the true horizon? The answer is 3.0 magnitudes, which equates

Altitude above horizon	Extinction factor	Extinction magnitudes
90°	N/A	0.0
32°	1.2x	0.2
19°	1.6x	0.5
10°	2.5x	1.0
4°	6.3x	2.0
1°	15.9x	3.0

to a factor of 15.85 times dimmer than if seen overhead at the zenith!

Now we move on to stars seen at higher altitudes in one part of Sagittarius and elsewhere in Corona Australis. To save a little space here, I've omitted giving coordinates of RA and Dec for any of the 7 objects listed in Jim's transit table—it'd be redundant. Lying just over the northern border of Corona Australis is the worthwhile double star Eta Sgr, an orange-reddish star of class M3 with a combined magnitude of 3.1 having contrasting components of magnitudes 3.2 and 7.8 separated by 3.6", requiring a scope at fairly high power to split. A binocular shows a good color-contrast between Eta and the brightest star in Sagittarius, magnitude 1.8 Epsilon, also known as Kaus Australis. Epsilon is a bluish-white star of class B9 and lies only about 2.5° to the northeast at the southwest corner of the "Teapot"; the contrast is attractive.

Progressing eastward in right ascension, we can note the easy double star Kappa CrA having white components of class B8 and magnitudes of 5.9 and 6.6 separated by 21", suitable for moderate power in a scope. East of this point you'll see the semi-bright stars at the northern curve of what I choose to call the "Fish Hook" asterism of the Southern Crown; this "hook" (to me) is the most easily recognizable pattern of stars within Corona Australis and lies mainly at the northeast corner of the constellation. A total of perhaps 8 stars comprise the hook, centered roughly 30' or so east of Kappa. Corona Australis ranks only 80th in size among the 88 constellations but actually is *second* in overall brightness due to the number of stars of a certain magnitude level (and brighter) that are within its small area of sky. Still, only 21 stars in total are brighter than magnitude 5.5; just 3 being brighter than 4.4—Alpha CrA is the brightest at magnitude 4.1 and class A0, RA 19h 09m 28s, Dec -37° 54'. The top of the hook-shape I'm describing—featuring Epsilon CrA (RA 18h 58m 43s, Dec -37° 6'; magnitude 4.9 variable, class F3) at the western point of this hook and brighter Gamma to its east by about 1.5°—is key to locating 2 important double stars (Gamma being one) and some deep-sky objects right in this vicinity.

Just a little NNE of Epsilon CrA and almost at the northern border of CrA (but technically in Sgr) is a fairly easy globular cluster, NGC 6723, magnitude 7.1 and size of 12' total diameter. This is easy to

find and not hard at all to make out with a good instrument at low to moderate power; a good binocular might show this globular, if of about 12 power or more and around 60mm in aperture. Due east of Epsilon CrA by about  $0.5^\circ$  at RA 19h 01m 05s, Dec  $-37^\circ 04'$ , is a great double star: BrsO) 14 (Brisbane Observatory list) having B8 class components of magnitudes 6.6 and 6.8 at 13" separation. A faint and probably nearly impossible to see reflection nebula, IC 4812, is associated with this star. Go northeast of Brs) 14 by less than  $1/4^\circ$  to a magnitude 7.2 star and you've found NGC 6726, a hazy reflection/emission nebula illuminated by this star. Another nebula immediately northeast, NGC 6727, is of the same type and is a separate "lobe" from the associated 6726. NGC 6727 is illuminated chiefly by TY CrA, an irregular variable star with an amplitude from magnitude 8.7 to 12.4. These 2 associated nebulae supposedly have a high surface brightness and might be doable on a good night through quality optics—I haven't seen them myself. Nebula NGC 6729—a Caldwell object, C68 in Patrick Moore's catalog—is just southeast of NGC 6726-7, but is far more difficult to see at our latitude and probably is impossible, particularly because it fluctuates in size and brightness. Globular cluster NGC 6541, by the way, is also a Caldwell object—it's number C78. Gamma CrA is a tight double star of

combined magnitude 4.2 involving class F8 components of magnitudes 4.8 and 5.1 at an estimated separation of only 1.0 to 1.4". If anyone can split *this* star you deserve a prize!

Sagittarius is a perfect example of a classical constellation that in no way really resembles the mythical centaur-archer for which it is named. We see the Teapot, basically, especially at our latitude. Should you observe at East Beach, though, you can see the southern limit of Sagittarius and the centaur's hoof (or foot) denoted by 4 stars: Beta #1 and Beta #2 Sgr, a wide optical pair separated by roughly  $0.4^\circ$ , plus Alpha Sgr which is  $4^\circ$  due north, and Iota Sgr at  $6.5^\circ$  ENE, marking the eastern tip of an elongated triangle. (Alpha and the 2 Beta stars form the narrower side of this triangle at its western edge; Alpha Sgr (Rukbat) is noted by looking east a short distance from the middle of the "Fish Hook" shank in Corona Australis.) Beta #1 Sgr (Arkab) is the slightly brighter and more northerly of the wide Beta pair. Through clear air on a good night it isn't hard to resolve Beta #1 as a generously-separated true double of magnitudes 4.0 and 7.1, both white and at 28" of separation. Beta #2, magnitude 4.3, is SSE of Beta #1 and of class F2. Alpha Sgr, class B8, is magnitude 3.96 and is either the 15th or 16th brightest star in Sagittarius—the most extreme example I know of the Alpha star in a constellation being superseded in

brightness by such a host of other stars. The Greek alphabetical naming sequence in Sgr is remarkably "out of whack" for at least a few reasons not entirely clear to me, although one reason regarding J. Bayer's observations at different latitudes does make sense. Plus, he didn't always assign Greek letters based strictly on a brightness scale. Sometimes he took relative positions of stars with respect to one another within a constellation into account for his lettering scheme.

By the way, Iota Sgr (remember the east tip of the triangle I described?) is magnitude 4.1 class K0. I almost forgot to mention a nice dark nebula, Be 157, which lies roughly between and below Gamma CrA and BrsO 14.

I hope you enjoy the lesser-known sky region described here, and good luck in your observing attempts.

### See also:

#### Summer Deep-Sky Objects

July 2008

#### Exploring the Southern Constellations

September 2008

#### The Heart of Our Milky Way Galaxy

August 2009

## Light Pollution Notes:

### Ninigret Park Plans and Charlestown Wind Turbines Could Threaten Dark Skies at Frosty Drew Observatory

As most of you are aware, Frosty Drew has, as we've publicized, the "darkest skies on the Eastern Seaboard from Maine to Georgia." It is part of the mission of the organization to keep those skies as dark as possible. However, there seem to be a couple of projects in the works in Charlestown that have the potential to counter that. Ninigret Park, owned by the town and where the observatory is located, has, as part of its future plans, a dog park potentially situated next to the observatory parking lot. Also, the Senior Center up the road from Frosty Drew, has a new tenant that is planning on working inside the building 24 hours a day. Both these projects will require lighting.

In addition, there are two wind turbine projects in discussion for the town, one southwest

of the observatory, and one within the park grounds. Both at this point will require lights at the top for low-flying aircraft.

The Frosty Drew board of directors is concerned that any lighting could compromise the dark skies that our visitors are now enjoying. The Town of Charlestown has been supportive in lighting issues, and we are hoping their support will continue.

I am writing to alert you to the possibility of our losing or reducing the dark skies that this part of Rhode Island enjoys, and hope that, if necessary, Skyscrapers, Inc., will be supportive to the necessity of keeping Frosty Drew dark.

-Francine Jackson





## BOOK REVIEW:

# The Sun and The Moon

by Matthew Goodman

Francine Jackson

We all every so often find a book we either love or hate. It might be nice to let each other know about them. For example, I was recently loaned a book by my friend John, from the Providence Athenaeum, who assured me that I'd love it, because it included, among others, man-bats. OK. It also has a very, almost nothing title, *The Sun and the Moon*. Now, what John didn't let on was the following: *The Sun* in the title isn't our nice warm neighbor, but one of a number of penny newspapers put out in the early 1800s in New York City. *The Moon*, although this is obvious, refers to the alleged observations of it by one of the premier astronomers of that century, Sir John Herschel.

In the 1830s New York was overrun by newspapers, all doing their best to be the best, and to topple as many of their rivals as they possibly could. Enter Richard Adams Locke, hired by *Sun* editor Benjamin Day to report on the daily court news. However, Locke had dreams of something better. Learning of Herschel's work in South Africa, Locke proceeded to create a scientific journal from which he had learned, from a "Dr. Andrew Grant," that Herschel had built a telescope of such marvelous proportions and abilities that it was able to view the surface with such detail that Herschel observed

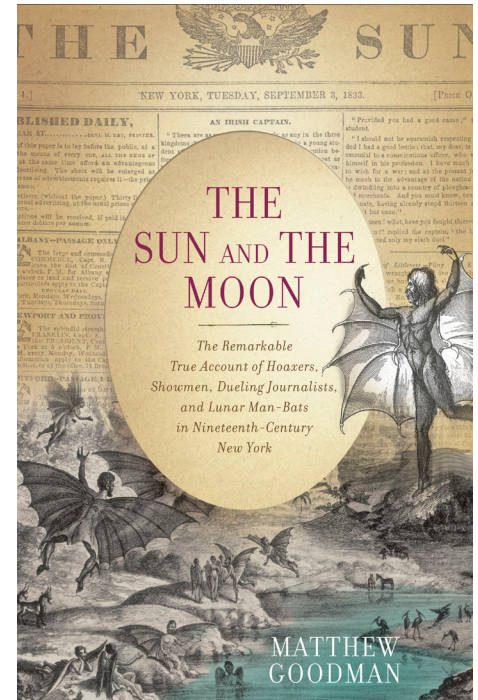
wooded areas, with trees of every detail, riverbanks, and centered around them, life of all kinds, resembling bison, unicorns, biped beavers, and, most shocking of all, menlike creatures with batlike wings – man-bats. Needless to say, the *Sun's* circulation increased exponentially.

And John Herschel? He only learned about his "great moment in astronomical observation" months later, when an acquaintance looked him up in the Cape Town area and congratulated him on his wondrous works.

*The Sun and the Moon* is a great journey not only into one of the biggest hoaxes in astronomical history, but in the workings of 19th century newspapers. We also are introduced to some of the great players of that time, historic names such as Edgar Allan Poe – who was originally believed to have been the author of the hoax – and P. T. Barnum, whose life as a trickster was begun by his dad.

Matthew Goodman, the author, has written one of the most researched books of all time. Everything in this has been meticulously checked for accuracy. This book was one of the most fascinating, most detailed that I've ever read, one that brings to life a time in history that isn't normally thought

about, a time, as the subtitle states, of "hoaxers, showmen, dueling journalists, and lunar man-bats." Enjoy.



**The Sun and the Moon**, by Matthew Goodman, New York: Basic Books, 2008, ISBN #978-0-465-00257-3, hardbound, \$26.00 US

## The Sun Can Still Remind Us Who's Boss

By Dr. Tony Phillips

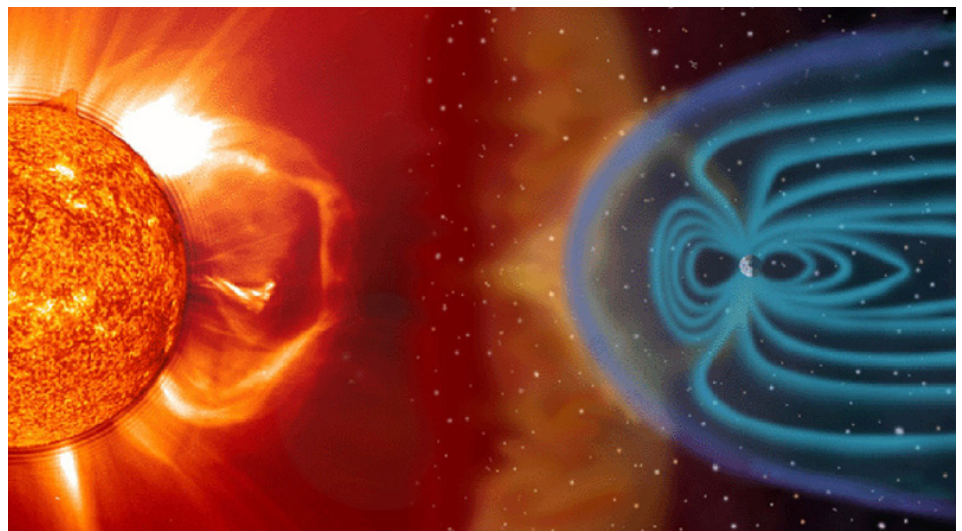


Grab your cell phone and take a good long look. It's indispensable, right? It tells time, surfs the web, keeps track of your appointments and, by the way, also makes phone calls. Modern people can hardly live without one.

One good solar flare could knock it all out.

"In the 21st century, we're increasingly dependent on technology," points out Tom Bogdan, director of NOAA's Space Weather Prediction Center in Boulder, Colorado. "This makes solar activity an important part of our daily lives."

Indeed, bad space weather can knock out power systems, telecommunications, financial and emergency services—basically, anything that needs electronics to work. That's why NOAA is building a new fleet of "space weather stations," the GOES-R satellites.



**In spite of Earth's protective magnetosphere, solar storms can wreak havoc with Earth satellites and other expensive electronics on the ground.**



“GOES-R will bring our existing fleet of weather satellites into the 21st century,” says Bogdan. “They’re designed to monitor not only Earth weather, but space weather as well.”

NOAA’s existing fleet of Geostationary Operational Environmental Satellites (GOES) already includes some space weather capabilities: solar ultraviolet and X-ray telescopes, a magnetometer and energetic particle sensors. GOES-R will improve upon these instruments and add important new sensors to the mix.

One of Bogdan’s favorites is a particle detector named “MPS-Low,” which specializes in sensing low-energy (30 eV – 30 keV) particles from the sun.

Who cares about low-energy particles? It turns out they can be as troublesome as their high-energy counterparts. Protons and other atomic nuclei accelerated to the highest energies by solar flares can penetrate a satellite’s exterior surface, causing all kinds of problems when they reach internal electronics. Low-energy particles, particularly electrons,

can’t penetrate so deeply. Instead, they do their damage on the outside.

As Bogdan explains, “Low-energy particles can build up on the surfaces of spacecraft, creating a mist of charge. As voltages increase, sparks and arcs can zap electronics—or emit radio pulses that can be misinterpreted by onboard computers as a command.”

The Galaxy 15 communications satellite stopped working during a solar wind storm in April 2010, and many researchers believe low-energy particles are to blame. GOES-R will be able to monitor this population of particles and alert operators when it’s time to shut down sensitive systems.

“This is something new GOES-R will do for us,” says Bogdan.

The GOES-R magnetometer is also a step ahead. It will sample our planet’s magnetic field four times faster than its predecessors, sensing vibrations that previous GOES satellites might have missed. Among other things, this will help forecasters anticipate the buildup of geomagnetic storms.

And then there are the pictures. GOES-R will beam back striking images of the sun at X-ray and extreme UV wavelengths. These are parts of the electromagnetic spectrum where solar flares and other eruptions make themselves known with bright flashes of high-energy radiation. GOES-R will pinpoint the flashes and identify their sources, allowing forecasters to quickly assess whether or not Earth is in the “line of fire.”

They might also be able to answer the question, Is my cell phone about to stop working?

The first GOES-R satellite is scheduled for launch in 2015. Check [www.goes-r.gov](http://www.goes-r.gov) for updates. Space weather comes down to Earth in the clear and fun explanation for young people on SciJinks, <http://scijinks.gov/space-weather-and-us>.

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*

## Glenn Chaple’s Sky Object of the Month IC 4665

During the summer of 1977, I was thumbing through the pages of the July issue of *Astronomy*. I came across a photograph of the constellation Ophiuchus and noticed what appeared to be a nice open star cluster a degree or two north of beta (β) Ophiuchi. A check of Norton’s *Star Atlas* showed just a single star in that location. Intrigued, I decided to go outside and look for myself. Lo and behold, my 8X50 binoculars revealed a beautiful open cluster about a degree across

and containing some two dozen stars. To me, it resembled the Praesepe Cluster in Cancer.

I sent a description of the mystery cluster to “Deep Sky Wonders” columnist Walter Scott Houston. He wrote back, informing me that my “discovery” was, in fact the open star cluster IC 4665. It wasn’t plotted on my copy of Norton’s, an omission rectified in more recent editions.

One reason for IC 4665’s relative ano-

nymity is its large size, allowing it to elude the narrow fields of large-aperture telescopes. Charles Messier and William Herschel missed it, and it wasn’t included in the *New General Catalogue*. This often-overlooked cluster is definitely a must-see object for binoculars and rich-field telescopes.

*Your comments on this column are welcome. E-mail me at [gchaple@botmail.com](mailto:gchaple@botmail.com).*



Jim Hendrickson took this photo of NGC IC 4665 using an 80mm refractor at f/4.8. 30 second exposure at ISO 800 using a Canon 40D.

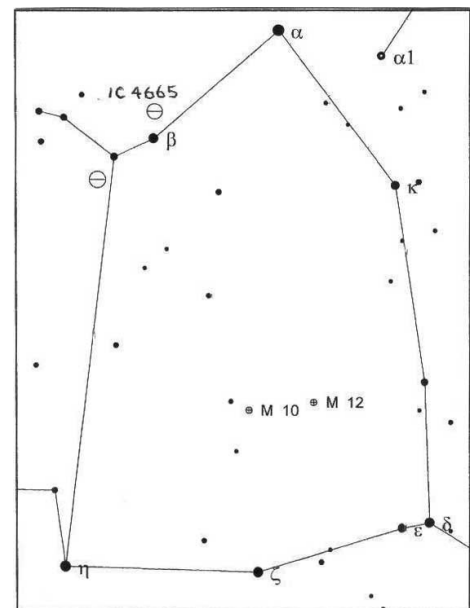


Chart for IC 4665  
From *Cartes du Ciel*

# July Reports

Ed Haskel, *Secretary*Jim Crawford, *Treasurer*

## Cash Flow

6/5/2010- 7/21/2010

### INFLOWS

Uncategorized	\$14.01
Cookoutinc	
Cookout Change Cash	\$100.00
Other Cookoutinc	\$397.50
TOTAL Cookoutinc	\$497.50
Donation	\$150.75
Dues	
Regular	\$240.00
Senior	\$20.00
TOTAL Dues	\$260.00
Magincome	
Astronomymaginc	\$94.00
Starparty	\$58.00
<b>TOTAL INFLOWS</b>	<b>\$1,074.26</b>

### OUTFLOWS

Cookoutexp	\$314.59
Members Guide	\$18.59
Trusteexp	\$85.00
Utilities	
Electric	\$23.51
Propane	\$51.36
TOTAL Utilities	\$74.87
<b>TOTAL OUTFLOWS</b>	<b>\$493.05</b>

**OVERALL TOTAL** **\$581.21**

Banking Accounts	
Citizens Checking	\$4,138.59
Capital One	\$16,398.21
<b>Total</b>	<b>\$20,536.80</b>

## EXECUTIVE COMMITTEE MEETING

WEDNESDAY, JULY 7, 2010

### SEAGRAVE OBSERVATORY

**ATTENDEES:** Jim Hendrickson, Ed Haskel, Dave Huestis, Steve Hubbard, Bob Forgiel, Jim Brenek, Tom Thibault, Tom Barbish, Bob Napier, Jim Crawford, Kathy Siok, Steve Siok, Penny Lesperance.

Items discussed:

**MONTHLY MEETINGS:** July meeting will be the annual cookout on the 10th. The cookout will go on rain or shower (contingencies were provided for inclement weather). Assignments were agreed to for the cookout. • August meeting on the 13th, September on the 10th, E-board to be the preceding Wednesdays. • John Briggs inquired whether Skyscrapers pays travel expenses for speakers. We do not in general.

**POLICIES:** Cancellation of public observing sessions for poor seeing will be

determined by noon when conditions are obviously bad and by 5pm when conditions are changing. The question of 'official start and end time' of sessions was raised and Jim Hendrickson and Jim Brenek will submit proposal at the next E-board meeting.

**ASTROASSEMBLY:** Saturday talks set. Same caterer and menu as last year. Plans progressing nicely.

## JULY MEETING MINUTES

SATURDAY, JULY 10, 2010

### SEAGRAVE OBSERVATORY

Tom Thibault welcomed all members and guests then announced that Ed Haskel was appointed to position of Secretary.

The Minutes of the June meeting were



meetings.

There were no items of **OLD BUSINESS** and no **NEW BUSINESS** was raised.

**GOOD OF THE ORGANIZATION:** thanks to all who worked on the cookout.

Meeting adjourned at 8:25pm.

Respectfully submitted by Ed Haskel



approved with minor typographical corrections. No changes were noted in the Treasurer's report.

The Trustees reported that the Clark scope work and some general refurbishing will begin starting on Saturday at 9am. The scope will be offline for some time. Al Hall will fabricate some parts and a general cleaning and lubrication will be performed. The objective will be cleaned if needed. The Trustees were applauded for the excellent conditions of the grounds for the cookout.

Several future meetings are being rescheduled due to conflicts: August 13th, September 10th, with the E-board meetings rescheduled to the Wednesdays before the



Former President Bob Horton was presented with this plaque in appreciation for his service to Skyscrapers by current President Tom Thibault at the July meeting. Photos by Steve Hubbard and Jim Hendrickson.

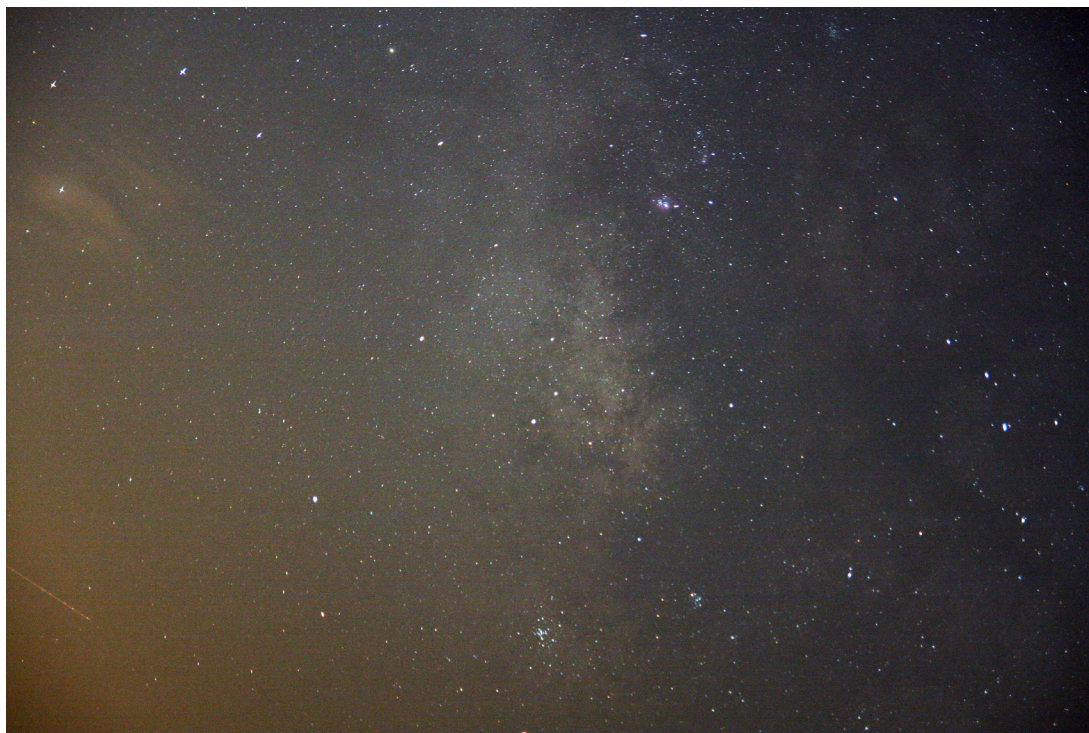




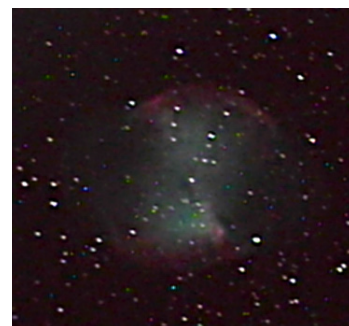
Top: Jim Brenek and Tom Thibault work on the new kiosk at Seagrave Observatory. Photo by Tom Barbish. Bottom: Except for a few finishing touches, the kiosk was completed in time for the July cookout. Photo by Jim Hendrickson.

Top: Steve Hubbard and Steve Siok manning the grills. Center: An early rain storm (which quickly ended) forced us to turn the meeting hall into a cafeteria. Bottom: Photos by Jim Hendrickson.

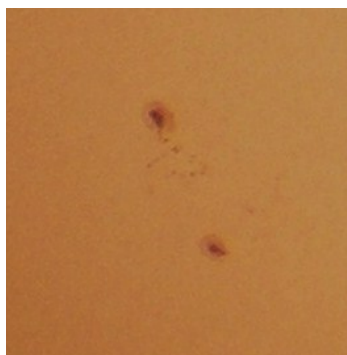




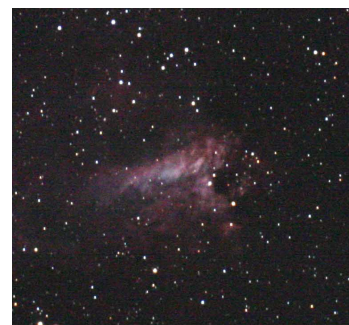
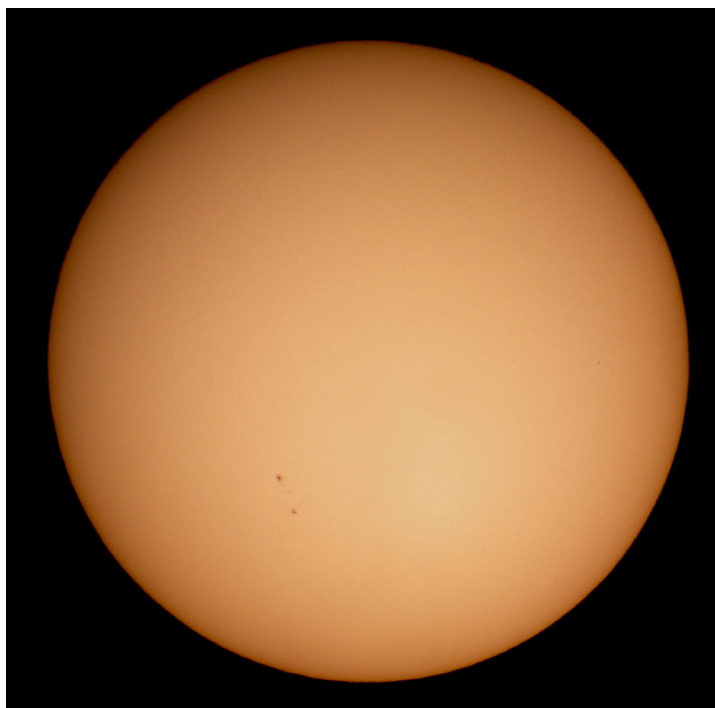
Sagittarius Teapot and the Center of the Milky Way Galaxy. 30 second exposure, Canon 40D, 55mm @ f/2.8 from Pascoag, Rhode Island on July 3. Photo by Jim Hendrickson.



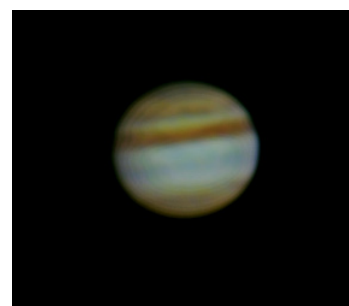
I took these July 3 with my 10-inch Meade SCT and Mallincam. Both are 28 second exposures, single shot with very light processing. Mostly a bit of sharpening and a little bit to bring out color and detail slightly. Photos by Steve Hubbard.



Photos taken Saturday 7-25-10 11:45 AM with 4" Celestron Refractor, 19mm Panoptic eyepiece and Nikon Coolpix camera. Photos by Dan Lorraine.

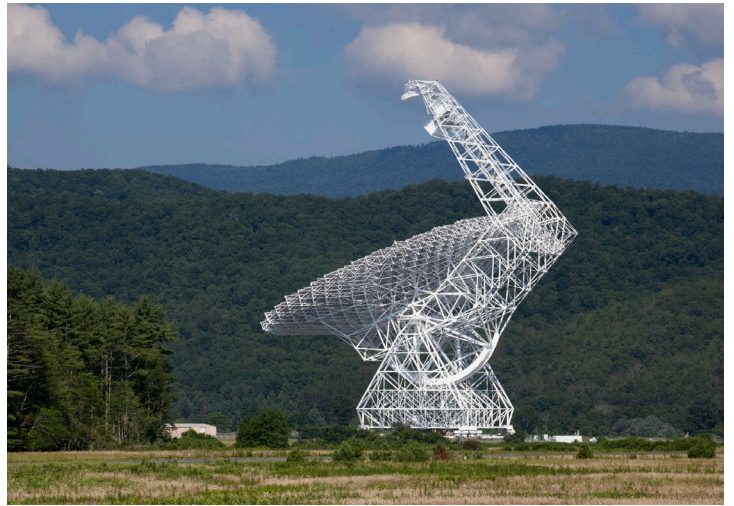
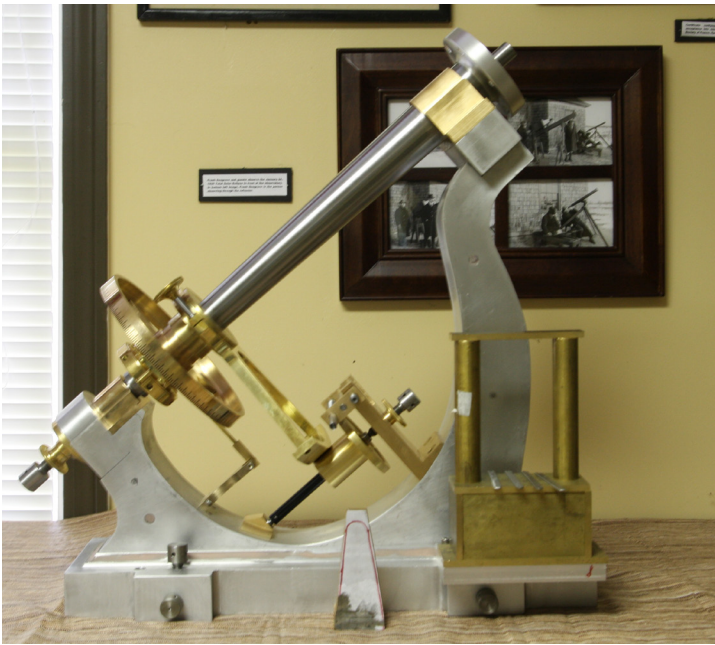


M17, The Swan Nebula. 80mm refractor at f/5.8 using Canon 40D, 30 seconds ISO 800. Photo by Jim Hendrickson.



Here's a shot of Jupiter July 28 @ 4:30; it looks like the southern cloud band is beginning to return. Photo by Tom Thibault.





## Clear Skies And Radio Telescopes: Star Quest VII Star Party, Green Bank West Virginia

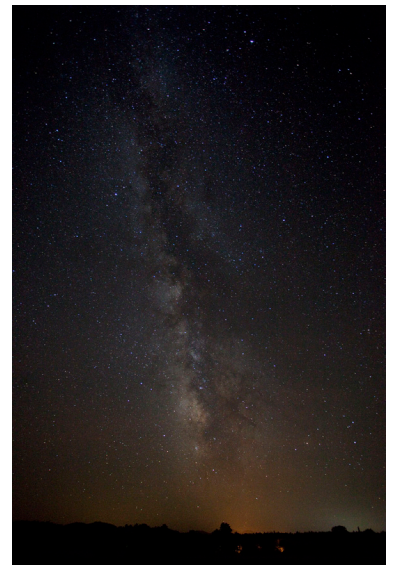
Star Quest VII, a star party like no other star party I have ever been to. The star party was held at the Nation Radio Astronomy Observatory in Green Bank West Virginia. Green Bank is located in a 13,000 square mile radio quiet zone. No cell phones, no wi-fi, no microwave ovens, no two way radios, and only diesel power vehicles in zone 1 near the telescopes. 175 people were in attendance including Carolyn Shoemaker for all 5 days. A bunk house for those that are tent challenged, meal plan for the grill-less group, real bathrooms for those with Porta-John-phobia, hot showers and all professional sessions conducted in an air conditioned auditorium.

I had the opportunity to conduct my own search for ET following in the footsteps of Dr. Frank Drake. Many know of the Drake equation but in Green Bank it is known as the Green Bank Equation or the Green Bank Formula. I got to conduct a search for ET where the first SETI search was conducted.

More highlights and details to follow at AstroAssembly 2010. Hope to see you there.

Photos are by: Jeremy Northum a photographer for the Texas A&M newspaper who was visiting Washington D.C.

Submitted by: Glenn Jackson



Top: Al Hall showed us the progress on his Alvan Clark 3/4 scale replica mount at the July meeting. Bottom: Cataloging and photographing all the parts of the Alvan Clark telescope in Al's workshop, August 1. Photo by Jim Hendrickson.





Skyscrapers Incorporated Presents

# AstroAssembly 2010

Friday, October 1 & Saturday, October 2  
at Seagrave Memorial Observatory



## Todd Kozikowski

**Measuring the Expansion of the Universe from the Backyard! (The Hunt for Supernovae)**

Topics of Todd's talk will cover: Anatomy of a supernova and why we search for them; Selecting target galaxies based on distance, morphology, luminosity, size, and inclination; Robotic telescope setup; Demonstration of software used; Data post-processing; and reporting a discovery.



## Rev. Robert Bachelder

**Protecting the Outer Space Environment**

Orbital space must be protected because it is a valuable natural resource, serving as home to satellites that are essential to communications, weather forecasting, Earth observation, and other activities. However, orbital space is becoming congested with debris, the results of the expanded utilization of space for scientific, commercial, and military purposes. The

2009 collision of a functioning U.S. satellite with a defunct Russian spacecraft underscores the importance of timely action to mitigate and remove debris from key orbits. It is time for humanity to enlarge its environmental perspective to encompass outer space as well as Earth.



## Ruben Kier

**Best Targets For Autumn Astrophotography**

Ruben Kier's lecture will focus on the choice of celestial objects for astrophotography, especially objects situated for imaging during the months of October and November. In choosing targets for imaging, amateur astrophotographers should seek out compositions that inspire the viewer. For most amateurs, the object should be bright enough to

image with an average CCD camera through a backyard telescope during a single evening. The target needs to be large enough to show detail, and high enough in the sky to be captured from northern latitudes. Choosing the right target for the season, sky conditions, and equipment keeps the process of imaging a pleasure. After all, a hobby should be fun!



## Bob Berman

**Light and Color in the Universe**

George Berkeley, for whom the town and campus were named, said, "The only thing we perceive are our perceptions." This means that the colors of the cosmos come partially from our own retinal biases. This colorful lecture, which includes demonstrations, examines the universe's "favorite" color, provides vivid demonstrations of color illusions, and makes

clear the four major quirks of human scotopic (low-light) vision upon which all astronomers rely. We'll also explore light's amazing oddities (e.g. the day sky is actually not blue but violet, most of the yellow we see is not yellow at all, but solely a mixture of green and red light, etc). While we're at it, we'll learn the only way that light is created, what it truly is, and how it delivers the electromagnetic force from distant empires.

### Friday Evening Informal Talks

Contact Steve Hubbard if you would like to give a talk

**A Fabulous Saturday Evening Reception** followed by a  
**Sumptuous Catered Banquet**

You must pre-register for this banquet

**Raffle & Door Prizes**

Name \_\_\_\_\_

Address \_\_\_\_\_

Email \_\_\_\_\_

Send completed form and check (made payable to **Skyscrapers Inc.**) to:

Steve Hubbard  
AstroAssembly Registrar  
45 Church Street  
Auburn, MA 01501

(508) 832-8746  
cstahs@yahoo.com

Registrations at \$17.00 each

Registration cost is \$17 per person through September 15. After September 15, registration cost is \$20.

Total \$ \_\_\_\_\_

Banquet tickets at \$17.00 each

Banquet tickets must be pre-ordered. No tickets will be sold the day of the event.

Total \$ \_\_\_\_\_

**Total** \$ \_\_\_\_\_

I would like to give a short 20-minute talk on Friday evening:

Indicate the title of your talk below. AstroAssembly registrar Steve Hubbard will contact you via email to confirm your talk.

\_\_\_\_\_



# Directions to Seagrave Memorial Observatory

## **From the Providence area:**

Take Rt. 6 West to Interstate 295 in Johnston and proceed west on Rt. 6 to Scituate. In Scituate bear right off Rt. 6 onto Rt. 101. Turn right onto Rt. 116 North. Peeptoad Road is the first left off Rt. 116.

## **From Coventry/West Warwick area:**

Take Rt. 116 North. Peeptoad Road is the first left after crossing Rt. 101.

## **From Southern Rhode Island:**

Take Interstate 95 North. Exit onto Interstate 295 North in Warwick (left exit.) Exit to Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.

## **From Northern Rhode Island:**

Take Rt. 116 South. Follow Rt. 116 thru Greenville. Turn left at Knight's Farm intersection (Rt. 116 turns left) and follow Rt. 116. Watch for Peeptoad Road on the right.

## **From Connecticut:**

- Take Rt. 44 East to Greenville and turn right on Rt. 116 South. Turn left at Knight's Farm intersection (Rt. 116 turn left) and follow Rt. 116. Watch for Peeptoad Road on the right.
- Take Rt. 6 East toward Rhode Island; bear left on Rt. 101 East and continue to intersection with Rt. 116. Turn left; Peeptoad Road is the first left off Rt. 116.

## **From Massachusetts:**

Take Interstate 295 South (off Interstate 95 in Attleboro). Exit onto Rt. 6 West in Johnston. Bear right off Rt. 6 onto Rt. 101. Turn right on Rt. 116. Peeptoad Road is the first left off Rt. 116.



47 Peeptoad Road  
North Scituate, Rhode Island 02857