The Skyscraper

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November Meeting with Professor Rick Gaitskell

Friday, November 7 at Seagrave Memorial Observatory

Professor Gaitskell, Associate Professor in the Department of Physics, joined the Brown faculty in 2001. He is a member of the executive committee of Cryogenic Dark Matter Search (CDMS) II. He is passionate about pursuing opportunities for making new observations in particle astrophysics, in order to extend our theoretical understanding of astrophysics, particle physics, and cosmology. Prior to his arrival at Brown, Prof. Gaitskell held positions at University College London, UC Berkeley, Stanford University, Oxford University, and Magdalen College.

November 2008

1 Saturday	7:00 pm	**Public Observing Night** Seagrave Memorial Observatory, weather permitting
7 Friday	7:30 pm	**November Meeting** Seagrave Memorial Observatory
8 Saturday	7:00 pm	**Public Observing Night** Seagrave Memorial Observatory, weather permitting
15 Saturday	7:00 pm	**Public Observing Night** Seagrave Memorial Observatory, weather permitting
22 Saturday	7:00 pm	**Public Observing Night** Seagrave Memorial Observatory, weather permitting
29 Saturday	7:00 pm	**Public Observing Night** Seagrave Memorial Observatory, weather permitting

Skyscrapers Meeting Dates

Saturday	12/6/2008	Monthly Meeting	Community Center
Wednesday	12/17/2008	E-board Meeting	Community Center
Friday	1/2/2009	Monthly Meeting	Community Center
Wednesday	1/28/2009	E-board Meeting	Community Center
Friday	2/6/2009	Monthly Meeting	Community Center
Wednesday	2/25/2009	E-board Meeting	Community Center
Friday	3/6/2009	Monthly Meeting	Community Center
Wednesday	3/25/2009	E-board Meeting	Community Center
Friday	4/3/2009	Monthly Meeting	Community Center
Saturday	10/3/2009	Astroassembly	Community Center

In This Issue

President's Message

Glenn Jackson

AstroAssembly has come and gone once again. From all reports that I have received everyone thoroughly enjoy this years AstroAssembly. We had a great line up of speakers and, especially member Al Hall and long time friend of Skyscrapers Dick Parker, who treated us to an outstanding feat of design and craftsmanship in the construction of their respective telescopes. I look forward to viewing through both of these incredible telescopes. My hat is off for both of these astronomers.

As I look back at AstroAssembly I feel a need to thank the countless number of volunteer members who made this all possible. There were members who cleaned the meeting room and observatory, cut the grass, trimmed the trees, made coffee, flipped burgers, set up the sound system, manned the registration desk, gave presentations, set up tents, cleaned up afterward, and the list goes on. With out all of you this yearly event would not be the success that it always is. Oh, did I forget to thank Kathy Siok and that good man behind the good women Steve Siok? Kathy and Steve spent numerous hours organizing this year's AstroAssembly. All members of Skyscrapers are indebted to them!

Details of AstroAssembly will be discussed at the October 30th E-Board meeting. However, one detail that I am pleased to note is that by late afternoon we were approaching 50% Skyscraper participation in this year AstroAssembly. That may be a record for recent times.

I for one am happy to see the weather changing. I look forward to those cold clear nights under the stars. If you haven't had your telescope out recently I encourage you to take advantage of the improving night sky. That's what we are all about, clear dark skies and bright deep sky objects.

Hope to see you at our next Monthly meeting.

Astronomical Potpourri for November

Dave Huestis

Let's hope the skies above southern New England are predominately clear for the month of November. There is a close pairing (called a conjunction) of two major planets, and the Moon will also pass near planets throughout the month, adding much beauty to these sky scenes. And we can't forget two meteor showers that will offer excitement to the celestial show above our heads.

In recent weeks I'm sure you've noticed a bright star-like object in the west after sunset. At first you may have thought it was a plane making an approach to one of the local airports, however it just never seemed to get any closer. That's because it was our nearest planetary neighbor Venus.

Venus will be rising higher and higher above the southwestern horizon as the days pass, so if you haven't glimpsed it yet you soon will. In fact, on November 1st Venus will be joined by a thin crescent Moon. It will be a beautiful sight. Each night the Moon will move further away from Venus. But try to remember to pay attention to Venus as the month progresses. I'll tell you why a little later.

After you've glimpsed Venus turn a little to your left and scan the sky. You'll notice another bright object. That's the giant planet Jupiter. The Moon is near it on November 3rd if you have difficulty trying to locate it at any other time. Each night Jupiter will be closer to the southwestern horizon, setting up for a splendid celestial rendezvous.

Every year the Earth plows through the remnants of Comet 2P/Encke. Under good sky conditions with no moonlight present one can expect to observe five to ten slow but bright yellow meteors per hour at peak on November 5th (smaller numbers of shooting stars can be seen from November 6-12).

However, this year some astron-

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.

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 by November 15 to Jim Hendrickson, 1 Sunflower Circle, North Providence, RI 02911 or email to jim@distantgalaxy.com.

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

omers are predicting the Earth may encounter an enhanced swarm of particles, including more abundant fireballs that frequently fragment into multiple meteors! Time will tell. The almost First Quarter Moon will set just before 11:00 pm, so it would be best to begin your observing session after that time. Begin earlier and you'll need to block the Moon from view. The Taurids radiate out of the sky in the constellation Taurus the Bull, not too far from the Pleiades star cluster.

The second meteor shower of the month is the famous Leonids, which peak this year during the pre-dawn hours of the 17th. While they may be back to their normal peak rate of from 10 to 15 meteors per hour, a bright gibbous Moon will wash out all but the brightest of these bright and fast (44 miles per second) shooting stars. Most of the Leonids appear to be green or blue in color as they disintegrate in our upper atmosphere. They are noted for producing fireballs as well, and about half of them leave trains of dust which persist for minutes.

Remember I asked you to keep an eye on Jupiter and Venus as the month progressed. If you do so you can't help but notice that the two planets are approaching each other in the sky. On November 30th they will be just two degrees apart, a separation of four Full Moon diameters. Look towards the southwest sky about 45 minutes to an hour after sunset and you'll see this beautiful sight. As it gets darker you'll also notice a thin crescent below and to the right of this planetary conjunction. The next evening the Moon will be above and to the left of Venus and Jupiter.

This incredible sky scene will occur fairly low in the sky, so you'll need a good southwestern horizon to see it at best advantage.

Enjoy the beauty of the celestial show performed nightly (and daily) above our heads.

And don't forget to turn your clocks back one hour on Sunday morning, November 2nd at 2:00 am, as we return to Eastern Standard Time (EST). Otherwise you'll be one hour early until you realize you didn't remember to do it!

Keep your eyes to the skies.

Autumn Double Stars: Andromeda

Glenn Chaple

Andromeda is a wonderful constellation to explore on a chilly November evening. We can spend many an hour at the telescope admiring the grandeur of the Andromeda Galaxy (M31) or the delicate beauty of the planetary nebula NGC 7662 (the "Blue Snowball").

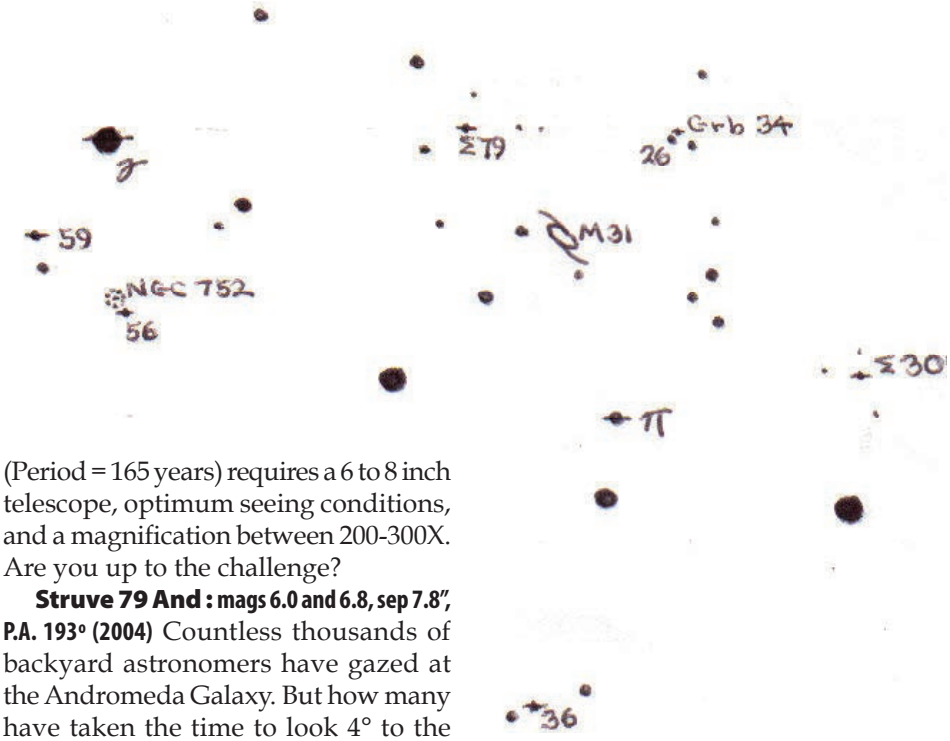
Andromeda is also home to a fine collection of double stars. Here are eight of the best. Data on magnitudes and separation were taken from the Washington Double Star Catalog.

Struve 3050 And : mags 6.5 and 6.7, sep 2.0", P.A. 334° (2004) We start out with a pair that will challenge a 3-inch scope, but should be easy in a 4-inch or larger if the seeing is good. Use 150-200X. Both components have been described as yellowish.

Groombridge 34 And : mags 8.1 and 11.0, sep 34.8", P.A. 65° (2004) Grb 34 may not be a visually spectacular pair, but the interest factor makes it worth a look. A red dwarf binary with an orbital period estimated at 2600 years, it's one of the nearest binary stars to our solar system (D = 11.7 LY). Grb 34 is 1/4° north and slightly east of 26 Andromedae.

π (Pi) And (H V 17) : mags 4.3 and 7.1, sep 36.0", P.A. 173° (2003) This wide, unequal pair is easily split with small scopes. Its colors have been described as white and blue. What do you see?

36 And (Struve 73) : mags 6.1 and 6.5, sep1.0", P.A. 314° (2004) For moderate-sized scopes only, this tight binary pair



(Period = 165 years) requires a 6 to 8 inch telescope, optimum seeing conditions, and a magnification between 200-300X. Are you up to the challenge?

Struve 79 And : mags 6.0 and 6.8, sep 7.8", P.A. 193° (2004) Countless thousands of backyard astronomers have gazed at the Andromeda Galaxy. But how many have taken the time to look 4° to the northeast for this lovely gem? Both are white and stand out well at 100X.

56 And (Struve I 4) : mags 5.8 and 6.1, sep 200.5", P.A. 299° (2001) Still reluctant to engage in double star observing? Next time you're checking out the open cluster NGC 752, look for a wide pair of stars immediately southwest. This is the optical pair 56 Andromedae. It's better suited for binoculars, but if you use a telescope, look about a degree west and slightly north for the delicate little pair Struve 179 (mags 7.6 and 8.1, sep 3.8", P.A. 314°).

γ (Gamma) And (Struve 205) Almach : mags 2.3 and 5.0, sep 9.7", P.A. 63°(2004) Now for the showpiece. This magnificent pair sports rich golden yellow and sapphire blue hues – a definite rival for the celebrated Albireo. Almach is a wonderful target for star parties, especially on moonlit nights when clusters and galaxies are hard to see.

59 And (Struve 222) : mags 6.1 and 6.7, sep 16.5", P.A. 36° (2003) To capture this lovely pure-white duo, look 4o south and slightly east of Almach. A magnification of 50X will do the trick.

The Chemical Weather Report

JPL

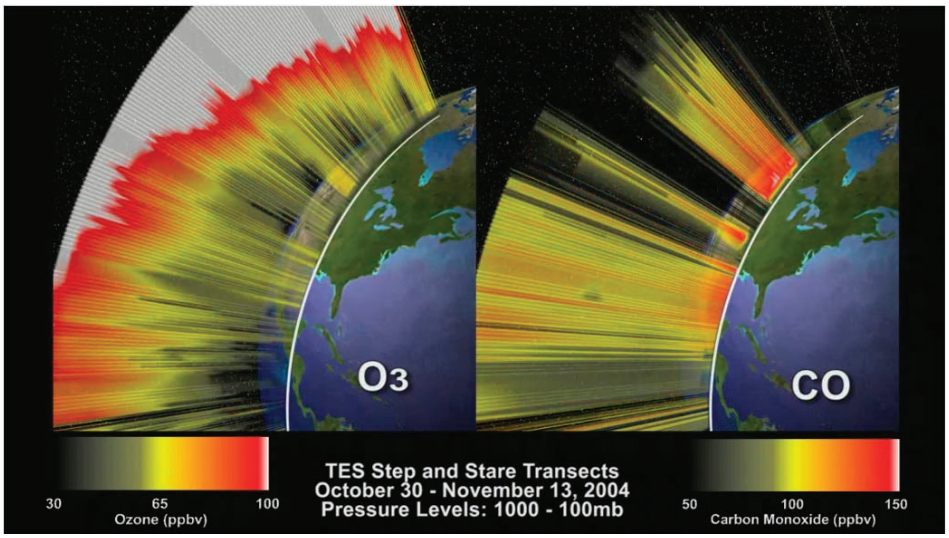
"Sunny tomorrow with highs in the mid-70s. There's going to be some carbon monoxide blowing in from forest fires, and all that sunshine is predicted to bring a surge in ground-level ozone by afternoon. Old and young people and anyone with lung conditions are advised to stay indoors between 3 and 5 p.m."

Whoever heard of a weather report like that?

Get used to it. Weather reports of the future are going to tell you a lot more about the atmosphere than just how warm and rainy it is. In the same way that satellite observations of Earth revolutionized basic weather forecasting in the 1970s and 80s, satellite tracking of air pollution is about to revolutionize the forecasting of air quality. Such forecasts could help people plan around high levels of ground-level ozone—a dangerous lung irritant—just as they now plan around bad storms.

"The phrase that people have used is chemical weather forecasting," says Kevin Bowman of NASA's Jet Propulsion Laboratory. Bowman is a senior member of the technical staff for the Tropospheric Emission Spectrometer, one of four scientific sensors on NASA's Aura satellite.

Aura and other NASA satellites track pollution in the same way that astronomers know the chemical composition of stars and distant planetary atmospheres: using spectrometry. By breaking the light from a planet or star into its spectrum of colors, scientists can read off the atmosphere's gases by looking at the "fingerprint" of wavelengths absorbed or emitted by those chemicals. From Earth orbit, pollution-watching satellites use this trick to measure trace gases such as carbon monoxide, nitrogen oxide, and ozone.



Example of visualization of data from the Tropospheric Emission Spectrometer. These frames are from an animation that steps through transects of the atmosphere profiling vertical ozone and carbon monoxide concentrations, combining all tracks of the Aura satellite during a given two week period.

However, as Bowman explains, "Polar sun-synchronous satellites such as Aura are limited at best to two overpasses per day." A recent report by the National Research Council recommends putting a pollution-watching satellite into geosynchronous orbit—a special very high-altitude orbit above the equator in which satellites make only one orbit per day, thus seeming to hover over the same spot on the equator below. There, this new satellite, called GEOCAPE (Geostationary Coastal and Air Pollution Events), would give scientists a continuous eye in the sky, allowing them to predict daily pollution levels just as meteorologists predict storms.

"NASA is beginning to investigate what it would take to build an instrument like this," Bowman says. Such a chemical weather satellite could be in orbit as soon as 2013, according to the NRC report. Weather forecasts might never be the same.

Learn more about the Tropospheric Emission Spectrometer at tes.jpl.nasa.gov.

Kids can learn some elementary smog chemistry while making "Gummy Greenhouse Gases" out of gumdrops at spaceplace.nasa.gov/en/kids/tes/gumdrops.

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

Sometimes Binoculars are Best: Part 1 of 2

Craig Cortis

I've always thought it'd be just a matter of time until I'd write an article in praise of using binoculars for amateur astronomy, something not immediately thought of by many who enjoy stargazing. The notion of trying binoculars on the night sky seems to be by no means an automatic consideration to a fair percentage of amateurs, unfortunately. Among this group are some of the very people, ironically, who stand to benefit the most from using "binos"—newcomers to our astronomy fraternity who may not be familiar with the night sky and who could really use all the help they can get in gradually easing into simple, straightforward star watching and constellation recognition. To some, binoculars just don't seem, somehow, appropriate for looking up at night to the stars, something mistakenly considered to be properly reserved for astronomical telescopes. A bino is such a common item in many households that daytime use on traditional terrestrial scenes such as sporting events, bird and animal watching, ships at sea, distant mountains or hills, etc. registers on the mind of the user as the normal and "correct" way to use such an instrument. Perhaps the thinking is that a binocular is simply too small, basic and underpowered to

meet astronomical viewing criteria, so why bother? I can't overemphasize to those who hold this opinion just how much you're missing!

There are four basic points I should make before getting into specifics on reasons for using binoculars. I'll do a follow-up piece explaining many of these reasons in next month's issue, due to space limitations here. First, we recognize that telescopes have their obvious applications in astronomy and can show the observer a number of things not revealed at all in binoculars. (Separation of tight double stars, resolution of planetary details, highly magnified enhancement of tiny angular-size deep-sky objects so as to enable resolution, far greater light-gathering ability in medium-to-larger aperture scopes, and so on.)

Second, no writer can write for everyone—there'll be many among you who are already well aware of this subject and need no introduction. I chose this topic for those of you who might simply enjoy a piece on binocular viewing and perhaps could be encouraged to give it a try, if you've not done so already. Third, this article is concerned with hand-holdable binoculars of 50 to 60mm aperture or under and magnifications of approximately 10 power maximum. Fourth, so-called "giant" binos—owing to their size, weight, and the necessity of attaching them to some kind of mount—are not mentioned here because they're deserved of a separate article all their own and are not as quick and easy to use as smaller, hand-held types. (The giant types, if of good quality and in proper collimation, can yield superb views that might be classed roughly midway as an observing experience between, say, a 7x35mm bino and a good 6 to 8-inch telescope. Should you have an opportunity to try one sometime, there'll be a good chance you'll be so impressed that you might end up reviewing your budget for new toys.)

Plenty of good information on the most important features that binoculars for astronomy should have is readily available in a number of books and magazine articles, and some publications have fine, comprehensive listings of recommended objects for observing. Phil Harrington's Touring the Universe Through Binoculars is an absolute treasure trove in this respect. Phil has put together object listings for each of the 88 constellations that are so extensive that his book can easily serve as a good observing guide for telescope users, although his choices are things that can actually be seen in binoculars. If I were to compile a "short list" of a dozen or so of the best books for an amateur astronomer's library, this splendid book would have to be included.

Although the information is available elsewhere, it won't hurt to go over some recommendations here. Due to the nature of the images presented by stars and other celestial objects, the optical criteria for viewing them well is much higher than for, say, watching players on a football field or spotting a hawk in a distant tall tree. (Remember: stars themselves, other than our own Sun, are technically "point sources" of light because of their fantastic distances.) Should you happen to own a binocular now, I hope it'll be in collimation, meaning that the two barrels are parallel and therefore give one clear image when using both eyes simultaneously, which is what a binocular is intended to do. (You'd be surprised at how often the "double image" problem comes up!) I also hope that your binocular has sufficiently long eye relief that you can see the entire width of field, even when wearing eyeglasses. Eye relief is simply the distance-expressed in millimeters- between your eye and the point at which the full field of view is rendered in an optical instrument. The more generous this important value is, the better. An eye relief of 20mm, for example, is vastly superior to one of only 12mm—it's critical that you be able to comfortably and effectively see your binocular's entire field without having to just about "glue" your eyeballs up against the ocular (eyepiece) lenses, particularly when wearing glasses.

Maybe you don't have a bino but might consider buying one? The following points can help greatly in guiding you; for brevity's sake I'll skip a few lengthy technical explanations and hope you can accept what I say as a given.

1. Coatings: Avoid any bino having red (so-called "ruby") lens coatings; same goes for gold-colored coatings—these can be cheap gimmicks intended to impress the uninitiated and optical performance will be poor on stars. Buy a bino with the highest grade of coatings you can afford, multicoated (MC) or, better still, fully multicoated (FMC). The best coatings will show a deep greenish-violet color when examining the lenses at an angle under light.

2. Collimation: We covered this but I'm repeating it here for emphasis. A bino has to be in proper collimation to be of any use to you, so be fussy when checking one out.

3. Eye relief: Same story—eyeglass wearers should be able to leave glasses on and still make easy use of a binocular. Get the longest eye relief rating possible.

4. Variable ("zoom") power binoculars: Don't buy one of these for astronomy purposes! Stick with a fixed-power instrument. I'll forego explaining why; just trust me.

5. Tapped hole: Any binocular purchased for astronomy should have a tapped hole in its central pivot brace at the front end—standard size is 1/4x20 thread. The hole enables you to easily attach the bino to a bracket which, in turn, goes on a mount head. Even small, lightweight binos can benefit by the ability to be used on a mount of some kind, although one of their primary advantages over telescopes is hand-holdability.

6 "BAK-4" or "BK-7" prisms? These code designations refer to special kinds of optical glass used in the internal prisms. Always choose a bino having BAK-4 prisms; various optical qualities inherent in BAK-4 make them superior for astronomy viewing to BK-7. You can usually check this feature by just holding a bino up to light at about one foot away from your eyes and studying the appearance of the light dots emitted through the ocular (eyepiece) lenses. If they're nice and round, the prisms probably are BAK-4. If, however, they're slightly squared-off and appear a bit diamond-shaped instead of truly round, then the prisms are the inferior BK-7 type.

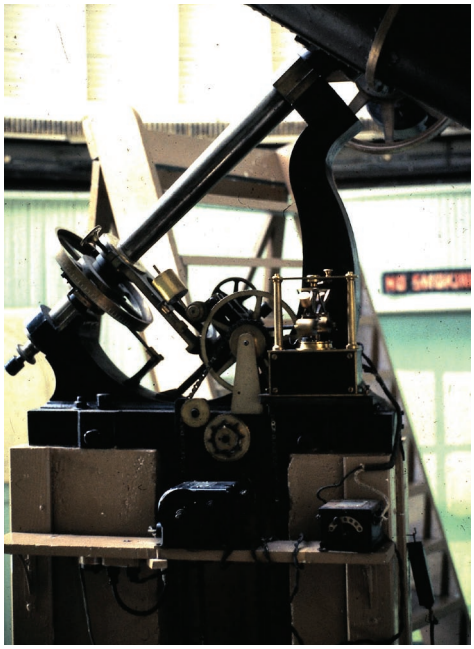
7. "Roof" or "Porro" prism type? Some might argue this point, but in general, you'll be better off with a Porro prism binocular, the basic type having 90-degree offsets in the barrels. Because of this design feature the distance between the centerlines of the

barrels will always be greater than your eyes are apart. This enhances stereoscopic depth perception, even if only by a slight margin. Porro prism binos are simpler and easier to assemble and test by a manufacturer, meaning they're less expensive than a roof prism type of comparable quality. They're often a bit shorter in overall length, too. Roof prism binos employ a more complicated arrangement of their internal prisms, a design making it possible for the barrels to be straight all the way though with no side displacement. This makes them more compact, on average, than the Porro type, a good reason for their recent increase in popularity. Quality roof prism binos tend to be appreciably higher in price than a Porro instrument of the same quality level. Also, there tends to be greater loss of light in the image due to the complexity of the prism arrangement, a condition minimized in very high quality models of extreme price.

8. Power (magnification) and aperture (diameter of main lens) selection: A binocular will always be defined by two very important numbers, power being first and aperture being second in the description of any given model. Examples are 7x35, 8x42, 10x50, and so on. You might find the variety available to be confusing, especially if you're surfing the websites or looking through, say, Orion's catalog. We'll narrow things down rather quickly, though. Many experienced bino users would say that the ideal "one size fits all" astronomy model is 10x50mm, followed closely by 8x42mm or 8x40mm. Ten power is the best compromise in magnification between higher powers with images that are hard to hold steady by hand and lower powers that often don't magnify quite enough for pleasing resolution. Fifty millimeter aperture seems about ideal between the size and weight concerns you'd have with a model larger than 60mm, and the reduced light-gathering ability that a 35mm gives. A good bino of 10x50mm type should yield an apparent width of field of about 5 degrees; some models will do even better. An 8x42mm should, because of the lower power, yield 5.5 degree to 6.5 degree fields. By the way, you can easily figure a binocular's "exit pupil" rating by simply dividing the aperture (in millimeters) by the power number, as in this example: 10x50 works out to a 5mm diameter exit pupil, which is ideal for most people. The exit pupil is simply the diameter of the light beam emitted though the eyepiece into your eye, always expressed in millimeters. This value should approximate the diameter of your dark-adapted pupils at their full dilation, and not be substantially larger or smaller. (I'll skip a detailed reason.)

Next month in this space look for part 2 of this article, which will take you through reasons why binoculars are sometimes a better choice for certain kinds of observing than telescopes.

In line with that thought, here's a brief preview of my main reason—it'll dramatize beautifully why no telescope is the equal of a suitable binocular for viewing large celestial objects (or rich starfields) that can truly only be seen in their entirety and appreciated fully in a binocular. If you've got a bino, train it on the Pleaides, M45. Never seen this cluster in a bino? You'll be a believer! Also, sweep the central Cygnus Milky Way just below Gamma Cygni (Sadr)—only a binocular can show this spectacle the way it should be seen.



From the Archives, AstroAssembly 1968. Left: Shows Clark telescope and mount at 1968 AstroAssembly with original drive assembly, including governor, that was destroyed by vandals in 1974. Right: AstroAssembly 1968. Does anyone recognize any of the individuals in the image? Images were provided by Paul Grueter, President/Webmaster of the South Shore Astronomical Society. Images were found while South Shore group was researching records for their 50th anniversary. Thanks to Paul for passing them along to us.

September Meeting Notes

Friday, September 5, 2008; Seagrave Memorial Observatory
Nichole Mechnig

Meeting was being officiated by Kathy Siok. The meeting was called to order at 9:05pm.

Secretary's report for the month of August Accepted by the membership

Treasurer's report saving account closed and is now with a Capital One Acct.

1st V.P. not available at this meeting

2nd V.P. AstroAssembly Oct 3 & 4: Speakers for AstroAssembly have been signed up • Prizes for the Raffle are good • Attendance with members is usually low please bring your support

Trustee's report: Tracey Haley has said that the 16in. Meade is still in pieces and is still working on the problems • Working sessions for the AstroAssembly will be on the 14th & 21st of September • There are new eye pieces for the Clark

Star Parties: September 12th Cub Scouts • September 12th ASSNE • September 15th Cub Scouts • October 17th Women's Wilderness Weekend

Librarian Report Open for Business

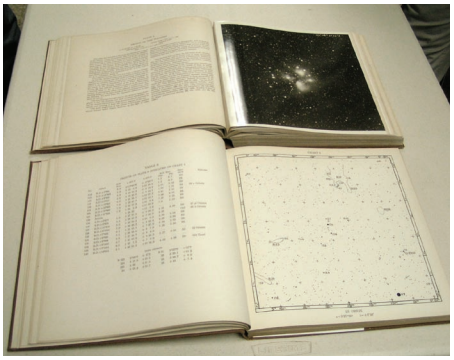
Historian: Not Available at this meeting

New Business: None to report

Old Business: New member postponed for the vote until the November meeting

Good of the Organization: Trip to DC with Bob Horton, $300.00 per person, October 25th & 26th • Trip to the Clay Center will be postponed until further notice • John Briggs brought in 2 books Atlas of Selected Regions of the Milky Way by Barnard part II Charts and Tables and Part I Photographs and Descriptions Thank you John for letting us look at your cool books!

Meeting adjourned at 9:42pm motion made by Steve Siok • 49 members in attendance



At the September 2008 meeting, John Briggs shows his recently acquired *A Photographic Atlas of Selected Regions of the Milky Way* **by E. E. Barnard. The book can be viewed on the web at http://www.library.gatech.edu/barnard/. Photos by John Kocur.**

Greetings Jim and Jim,

I received your check. Thank you, and all members of the Skyscrapers, very much for sponsoring the clear sky chart for Seagrave Observatory: **http://cleardarksky.com//c/SeagraveObskey.html**

I much appreciate your support.

attilla danko
danko@pobox.com
http://cleardarksky.com/csk

Treasurer's Report

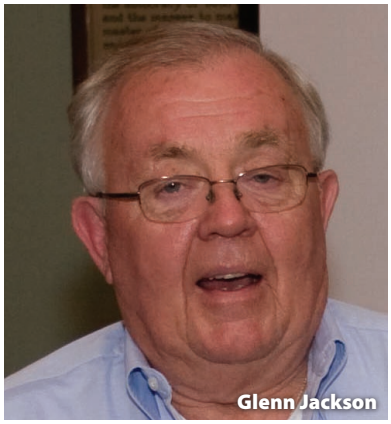
4/1/2008 through 10/28/2008
Jim Crawford

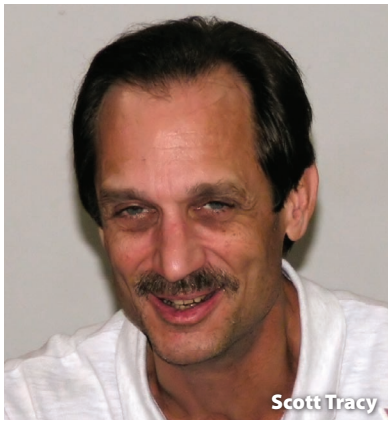
INFLOWS	
75th Yr T-Shirt Sales	345.00
Astroincome:	
astro-banquet	1,139.00
astro-grille	552.50
astro-misc	18.00
astro-raffle	730.00
astro-registration	1,420.00
TOTAL astroincome	3,859.50
Bookincome	
75th Anniversary Book 1st Print	450.00
75th Anniversary Book 2nd Print	627.00
TOTAL Bookincome	1,077.00
Cookoutinc	405.00
Other donation	365.50
Dues:	
Contributing	125.00
Family	750.00
Junior	10.00
Regular	1,980.00
Senior	320.00
TOTAL dues	3,185.00
Interest Inc	168.06
Magincome:	
Astronomymaginc	306.00
Skytelmagincome	296.55
TOTAL Magincome	602.55
Magsales	8.80
Preservation Fund	10.00
Starparty	550.00
TOTAL INFLOWS	10,576.41
OUTFLOWS	
75th Yr T-Shirt Exp	572.56
Astroexp:	
astro food Fri-Sat	39.46
astrocater	980.00
astrogrille	212.40
astromisc	86.72
astrorestroom	175.00
astrowine-cheese	125.15
tentrental	585.00
TOTAL Astroexp	2,203.73
Astronomy Day	30.12
Charity	25.00
Clarkproject	513.50
collation	308.46
Cookoutexp	677.08
Corporationfee	20.00
Other Insurance	2,410.00
Membersubscriptions:	
Astronomymagexp	306.00
Skytelexp	296.55
TOTAL Membersubscriptions	602.55
Postage and Delivery	186.35
Presidents Fund	60.16
Printing and Reproduction	802.50
Trusteexp	846.62
Utilities: Electric	92.31
TOTAL OUTFLOWS	9,350.94
OVERALL TOTAL	1,225.47
Checking Acct Bal:	$3,704.00
Capital One Acct Bal:	$16,014.62
Savings Acct Bal:	$0.00

AstroAssembly 2008

Photos by Jim Crawford & John Kocur


Kathy Siok


Glenn Jackson

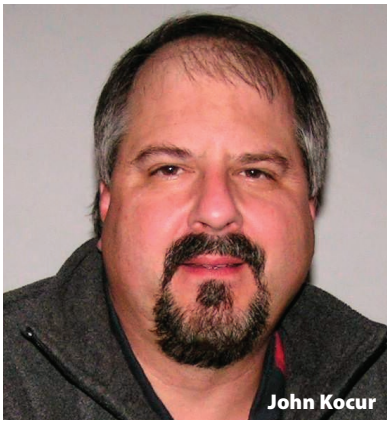

Scott Tracy


At the registration table, Sue Hubbard, Kathy Siok and Linda Bergemann


At the lunch grill, Steve Siok and Dan Lorraine


Gerry Dyck provided musical entertainment


At the lunch grill, Joel Cohen, Steve Siok and Dan Lorraine


John Kocur

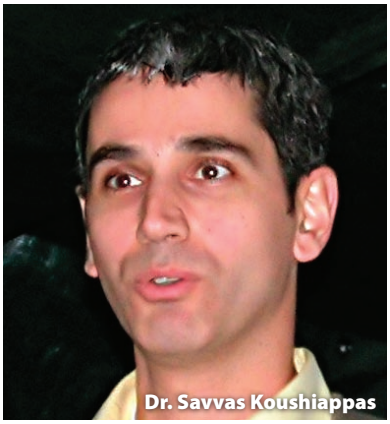

Dave Huestis

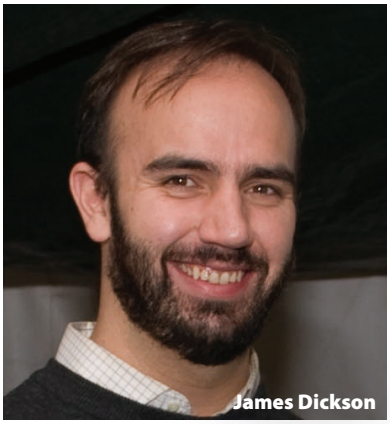

Professor Alan Marscher

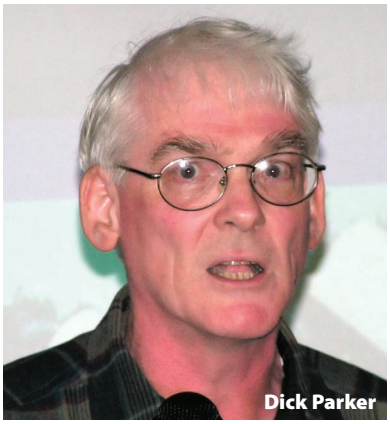

John Briggs


Tony Costanza


Gerry Dyck


Dr. Savvas Koushiappas


James Dickson


Dick Parker


Al Hall

Home-built telescopes on display at AstroAssembly. Top: Dick Parker's 16" Cassegrain. Bottom: Bob Horton's 6-inch Dobsonian.

On-site vendors at AstroAssembly: Top: Deep Sky Printing; Middle: Camera Concepts & Telescope Solutions; Bottom: Astronomy Shoppe.

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.

SKYSCRAPERS INC.

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