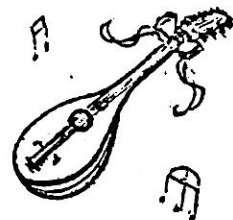




# The Spectrum

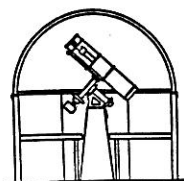


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## BUFFALO ASTRONOMICAL

ASSOCIATION, INC

NOVEMBER-DECEMBER 1993



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### IN CASE OF EMERGENCY

If for any reason there might be cause for cancellation of the meeting of the B.A.A., tune your radios to **WBBN 930** or **WGR 550**. Also, if Buffalo State College has been closed because of inclement weather, so will the meetings of the B.A.A. be cancelled.

#### PERMISSION TO REPRINT

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**"SPECTRUM" DEADLINE FOR THE JANUARY/FEBRUARY ISSUE IS DECEMBER 10, 1993. DO NOT FORGET!**

## >> MEETING NOTICES <<

NOV 12th: The Moon: Short topics; lunar eclipse preparation  
DEC 10th: Universe slides, Candid camera and holiday party

Meetings: 2nd Fridays @ 7:30pm Jan-June and Sept-Dec.

Location: Auditorium of the New Science Building at Buffalo State College on Elmwood Ave.

We hope to see you all there at our meetings.  
As usual refreshments will follow!

In November, members will present short topics on the Moon: evolution, what's to see, how to prepare for the lunar eclipse (visually and photographically) and member's photos/slides. Comparison of a \$2 and \$2000 mount useful for photography. Bring lunar slides/photos (handheld landscapes, telescopic photos to CCD images) to share!

The December meeting will have a showing of a new public night program on the wonders of the universe. Edith's "Candid Camera" and our yearly wine/cheese holiday party will follow. Got any "Murphy slides"? - we'll show them! Bring some cookies, delectables or yummys to pass.

Mark your calendar and plan to attend!



## >> MARCH DINNER MEETING? <<

Yes, the traditional "May" dinner meeting will be held on Friday, March 11th. Melissa and Dan Marcus have graciously agreed to organize this event. The month change was done to allow better selection of a restaurant away from the busy month of May and to allow April public event visitors a club meeting to go to before their visit fades from memory. A couple of potential speakers have been contacted. In the meantime please give Melissa and Dan, (773-5015), your thoughts on this earlier dinner meeting date.



## >> BOARD POSITIONS <<

New board of director positions started in September. Outgoing board members are Edith Geiger, Ken Kimble and Tom Nigrelli. They've helped immensely in both the observatory expansion and programs renovation. They deserve a sincere round of thanks.

Please extend a hearty welcome to our new board members: Rowland Rupp and Joel Stuckey. They bring different backgrounds and new ideas to the board. Contact them or any board member with ideas you'd like to see happen.

Tom Nigrelli was re-elected to the board in June; but has, regrettably, had to resign from the position due to demands on his time. Tom's talents are valuable and in demand by other groups he's involved in. We'll miss his ideas and enthusiasm on the board.

Joe Drabek was elected at the October meeting to fill Tom's position.

## ASTRONOMICAL OPTICS: EXPLORING THE DEFINITIONS

## INTRODUCTION

In order to assist in understanding what important terms in astronomical optics mean, and especially to derive important numbers on the observing field, it is useful to cross-compare two popular telescopes for illustration. The first telescope that we will use for examples is the generic 8" Schmidt-Cassegrain (SCT), of which the majority are made by Celestron and Meade. It has an effective focal length (EFL) of 2000 mm (80") (the term will be explained later), and a diameter of the primary of 203 mm. Secondly, we The second telescope that we will use for examples is the 13.1" Newtonian, of which the majority are made by Coulter Optical. It has an EFL of 1476 mm (59"), and a diameter of the primary of 333 mm. The discussion here is split up into six sections, the first three involving characteristics of the telescopes alone, and the last three involving characteristics of telescope/eyepiece combinations.

## IMAGE SCALE

A telescope will focus without an eyepiece in place: try holding a white card behind the drawtube when pointing at a bright star or planet. In order to determine how large an image a telescope projects of an object, we define a term called image scale. In practice, the EFL is determined from the measured image scale. For the purposes of our examples, we calculate the image scale from the EFL. The image scale is defined as the tangent of the actual angle separating a given feature (sky angle) divided by the separation of the feature at the film plane (measured in linear distance (mm)).

The EFL is just the reciprocal of the image scale. For actual numbers, we don't have to calculate the tangent of the sky angle. If the sky angle is very small, the tangent of the sky angle is nearly equal to the angle itself if the sky angle is measured in units of radians rather than arcsecs. For conversion, there are 206265 arcsecs in one radian (recall that there are 3600 arcsecs in one degree). In our example, the SCT has an EFL of 2000 mm.

Simply put:

$$\text{Scale (in arcsec/mm)} = 206265 / \text{EFL (in mm)}$$

Therefore, for our SCT the image scale is 103 arcsec per mm. Applying the same operation to the Newtonian, its image scale is 140 arcsec per mm.

by Nils Tumer

## FOCAL RATIO

The focal ratio (f-ratio) is closely related to the idea of an f/stop in the terrestrial photography field. The difference between the two is that so much light is available in the terrestrial case that it is practical to close the opening to the lens (making the lens effectively smaller in diameter) to achieve various different f/stops with the same lens. In the astronomical case, we are so starved for light that we wouldn't think of making our telescope smaller in diameter (except possibly for lunar, solar, or planetary viewing- it also has ramifications for resolution, to be discussed in the next section). The telescope therefore has a fixed f-ratio (or f/stop if you prefer, the numbers represent the same thing).

It is calculated by dividing the EFL by the diameter of the primary. Notice that the two numbers have the same units (or should: please don't mix inches and mm!), so the division will create a unitless number.

Simply put:

$$f/\text{ratio} = \text{EFL (in mm)} / \text{primary dia (in mm)}$$

In our example, the SCT has an f-ratio of 9.9 while the Newtonian has an f-ratio of 4.4.

## RESOLUTION

Resolution is one of the harder things to explain because many people don't have the familiarity of what the numbers mean. Imagine that we see an oncoming car with its headlights on. There is a point at which the lights, which first appear as one to the eye, split into two distinct lights. This point of resolution defines, in practice, what the resolution of our eye is. Now we must come up with a way to measure it for a telescope.

Any practical definition must include the distance the car is away from us when the split occurs, and also must account for different car headlight separation. We could also define it as the headlight separation at a given distance away. We can combine both of these parameters into one that we call the subtending angle of separation, in this example, between the two lights. It is easy to see the application to astronomical bodies where we know neither the distance to the object in question nor the actual physical

separation. We find from experimentation and a lot of optical theory (not gone into here) that the resolution (in radians- recall the conversion to arcsecs) is given by the multiplication of 1.22 and the wavelength of light, and dividing the product by the diameter of the primary mirror, given in the same units as the wavelength of light. Notice again that the division creates a unitless number. A typical wavelength of light (in the visible, somewhere in the yellow) is 0.00055 mm.

Simply put:

$$\text{Resolution (in arcsec)} = 1.22 * 0.00055 \text{ mm} * 206265 \text{ arcsec/diameter (in mm)}$$

or

$$\text{Resolution (in arcsec)} = 138.40 / \text{dia. (in mm)}$$

In our example, the ultimate resolution of the SCT is 0.68 arcsec. The ultimate resolution of the Newtonian is 0.41 arcsec.

## MAGNIFICATION

Whenever we see a number for magnification, it is specifically referring to the combination of telescope and eyepiece. The telescope has an EFL, either obtained from manufacturer's data or measured as discussed above. If the telescope is non-Newtonian, the EFL is often written (usually in millimeters) on the side or in the telescope literature. Each eyepiece has a focal length as well. In the case of eyepieces, the focal length is almost always stamped on it in mm. To calculate the magnification, divide the EFL of the telescope by the focal length of the eyepiece.

Simply put:

$$\text{Mag.} = \text{EFL (in mm)} / \text{eyepiece FL (in mm)}$$

In our example, the SCT coupled with a 25 mm eyepiece gives us a magnification of 80. Notice that the two numbers that we divided were both in mm, resulting in yet another unitless number. To let one another know that the number in question is a magnification, we follow it by an "X". So our magnification is 80X. If we couple the SCT with an 18 mm eyepiece we get a magnification of 111X. Notice that in order to increase the magnification, we *decrease* the focal length of the eyepiece. Applying these eyepiece combinations to the Newtonian we get magnifications of 59X and 82X.

## EXIT PUPIL

The exit pupil is something specifically related to human observing. When a telescope points at a star, the incoming light is collimated, or in parallel rays. This is not strictly true, but because stars are so much farther away than the diameter of the primary mirror, it is a very good approximation. The diameter of the collimated beam is then the diameter of the primary mirror. The emerging diameter of the collimated beam coming out of the eyepiece is the exit pupil: this is what gets injected into the pupil of our eye.

It is calculated by dividing the diameter of the primary mirror by the magnification. Simply put:

Exit Pupil (in mm) = diameter (in mm) / mag.

In our example, the SCT with the 25 mm eyepiece gives an exit pupil of 8.1 mm while the 18 mm eyepiece gives an exit pupil of 11.3 mm. The Newtonian gives exit

pupils of 13.3 mm and 18.5 mm respectively. It is worth noting that exit pupils of larger than 7 mm are largely unused by humans due to the fact that the maximum that a human pupil can open is on the order of 7 mm. With age, our maximum pupil dilation decreases: in our sixties, we may only have a maximum pupil size of 3 mm.

Another useful formula which yields the same result:

Pupil (in mm) = eyepiece FL (in mm) / f/ratio

## CHROMATIC ABERRATION

Up until now, we have only been talking about reflective optics. With reflective optics we don't have to worry about different colors coming to a focus at different points. This effect, which takes place in all refractive optics, such as eyepieces, refractors, and the human eye, is called chromatic aberration.

The reason lies in the index of refraction of the materials used, in most cases glass. Glass "bends" the blue part of light much

more than it "bends" the red part of light. This effect is exploited in the prism: Therefore, if the two wavelengths of light pass through a transmission optics system that has "prism-like" elements, chromatic aberration will be introduced into the system. What we mean by "prism-like" is any transmission optical element that does not have parallel sides; eyepieces qualify as do our own eyes. The most notable effect of chromatic aberration in stellar images is a blue halo around the bright pinpoints of light. To demonstrate your eye's own chromatic aberration (which is terrible!) look one of the dark-blue bulbs illuminating our city MARTA rails at night: the large halo surrounding it isn't from the bulb: it's from your eye!

Nils Turner served as Society vice-president for 1991-1992, and is active in Society observing, and one of the primary participants in the HLCO MTT project. He is completing his Ph.D. in astronomical interferometry at GSU.

## ORIGIN OF THE NEBULAR THEORY OF PLANETARY FORMATION

Not only do theories in astronomy change with time, but so does emphasis. Pick up any comprehensive current book on the subject and you will find a significant section is devoted to cosmogony—the origin of the universe. Have any of us escaped the hotly argued issue over whether Hoyle's Steady-State cosmology or Gamow's Big Bang cosmogony offers the better description of the origin of the universe? And now we have Alfvén and his plasma universe to contend with as well.

It wasn't always that way. Try to find out about the origin of the universe in an astronomy book written a century ago and you are out of luck. But you will find the nature of the stellar system discussed. How is the Milky Way organized? Is it bounded? What are the nebulae? Those were questions addressed by authors in those days; how it all originated was seldom, if ever, mentioned. The issue of origin was an impractical topic before the structure and extent of the universe was understood.

The nature of the solar system was understood and, with this firmer footing, theorists *did* address how it came into being. Like recent controversies in cosmology, different theories held sway at different times. Ideas that passed muster in the eighteenth and nineteenth centuries were discredited and replaced early in the twentieth. More recently, the theories prevalent a hundred years ago have returned to favor. Even so, the current hypothesis of the solar system's origin leaves some embarrassing gaps—unexplained details that remain for future theoreticians to ponder.

In 1755 Immanuel Kant conceived a nebular theory that explained many of the dynamical features known about the solar system. In his view the system started as a huge cloud of gas and dust in chaotic motion. Denser parts of the nebula, acting as seeds for the formation of the sun and the planets, attracted this material. As the gas and dust accreted, the forming bodies were set into a whirling motion that accounts for the rotation seen today.

Continued on page #4

## MEMBERSHIP CORNER



We have a wide variety of topics to discuss in this issue. First, we are obliged to inform you that it's membership renewal time again. We would like to thank those of you who have already renewed for the 1993/1994 membership year but if you have not yet done so, you can see us at the next general meeting or mail your renewal to us at 125 Roycroft Blvd., Snyder, NY 14226. The BAA is once again holding the line on prices with annual dues for each of the membership categories set at the same level as last year: \$20 for Family, \$15 for Individual or Regular, and \$10 for Student or Senior Membership.

A practice which was discontinued several years ago has been reinstated at our monthly meetings beginning this year. An attendance roll will be taken at each general meeting and this roll will be placed in the BAA's archives at the end of each year. So, when you come to the meetings we would appreciate it if you would take a minute to stop by the membership table at the back of the room and check in. Sorry, but there will be no gold stars awarded for perfect attendance.

Complimentary copies of the Spectrum are sent to other astronomical clubs and societies around the US, Canada and even Japan. In turn, many of these organizations send copies of their newsletters and journals to the BAA. Among the publications I have available are the Journal of the Astronomical Society of the Atlantic, Via Stellaris from the Von Braun Astronomical Society, Focal Point from the Atlanta Astronomy Club, SCOPE from the Royal Astronomical Society of Canada Toronto Centre, and the Rosette Gazette from the Rose City Astronomers of Portland, Oregon. If anyone would like to scan some of these publications for articles which may be of interest to them, catch us at the monthly meetings or give us a call at 839-9109.

Finally, we ask that you give a warm BAA welcome to our newest member, Mr. Ed Cerasani, 328 Crestwood Ave., Buffalo NY 14216 whose interests include scope building, cosmology, amateur radio, and electronics.



Joe and Bev Orzechowski



Kant was a philosopher, not a mathematician, and his theory suffered accordingly. He failed to account for the conservation of angular momentum and the effects of centrifugal force. Pierre Laplace (1749-1829), the famous French mathematician, took up where Kant left off. Laplace was attracted to the nebular theory because he saw that it explained why the planets revolved in the same direction and in nearly the same plane around the sun, why the planets all rotated in the same direction—the same direction as their solar revolution, and because the system's origin was consistent with Newtonian dynamics.

According to this hypothesis the primeval solar nebula was composed of very hot gas and dust in slow rotation. Knowing about the conservation of angular momentum forced Laplace to assume the nebula rotated from the start. Since all the material participated in this rotation it is clear why the planets and the sun all revolve and rotate in the same direction. As the nebula shrunk through gravitational attraction the whirling nebula threw off rings of material that eventually coalesced into planets which cooled off. That the nebula was hot appeared to be evidenced by the fact that the Earth still has a hot core (if you descend into a mine it gets hotter as you go), the remnant of the enormous heat retained from the past. Also, the sun, by virtue of its enormous mass, has remained hot to this day. The satellites formed in the same way, except the individual planets were the core of each system instead of the sun.

There is a story that Laplace, who was Minister, Chancellor and eventually Count in Napoleon's government, once explained his theory to the emperor. Bonaparte inquired of Laplace how his explanation could omit the activity of God. Laplace's response that God was not required in his theory was received coolly by the emperor.

The nebular theory with subsequent refinements remained almost uncontested until the Twentieth Century. It had practically everything going for it. Observers scanning the sky with powerful new telescopes saw many examples of gaseous nebulae; in fact, some of them were seen to be spiral—strong evidence of forming planetary systems. Clearly, the sun had once been large and had contracted over time. The energy released by this contraction was the best explanation available then for the sun's heat and light through the ages. How else could one account for its energy source? The dynamical behavior of the components of the solar system were consistent with theory and with one another. Moreover, the asteroid belt and the rings of Saturn gave clear testimony that some material had not condensed into solid bodies. Finally, if the sun's diameter were increased to the size of each planet's orbit, as it must once have been, conservation of angular momentum would result in a solar rotation period that nearly matched the planet's period of revolution. What more could one ask for?



Leslie Martin

Luann Szucs

Our secretary is a young lady with many interests who finds joy in living. She was born in Buffalo, and received her early education at Bowmansville Elementary School. Luann was a lively little tomboy during those years, and enjoyed climbing trees and doing all the things little tomboys do. She went to junior high in Lancaster and found great pleasure in playing clarinet in the concert and marching bands. Her love of music also led her to study guitar.

In high school she became captivated by a most uncommon hobby from reading an ad in *Boy's Life Magazine* for a taxidermy mail-order course. She responded to the ad and became extremely fascinated by the subject, and still is to this day. She enjoyed preparing and mounting various specimens, including birds, a black squirrel, a pheasant, and a cat. Many were "road kills," and dead creatures which students brought to her to mount.

It was in high school that Luann first became interested in astronomy, and purchased an Edmund 3" reflector. Her mother knew of Darwin Christy so she and Luann took an inspiring daylight trip to see the radio telescope, and also a few optical telescopes in Darwin's possession.

After high school, Luann enrolled at Buff State, majoring in math and physics with the idea of becoming a math teacher and possibly with future study to become a professional astronomer. She had a couple of classes with Dr. Jack Mack, and Dr. Fred West, a former BAA member. She stayed with her major for two years, but decided in her junior year to switch to an art major, and graduated with a degree in art. Her main interest lies in the field of animal art. She was commissioned for several pet and wildlife portraits in pastels. While at Buff State, she was on the staff of the *Record* newspaper doing ad paste-ups for one year, and also serving as editorial cartoonist for a year. Israeli, Greek, and Middle Eastern Folk dancing rounded out her spare time in college.

After graduation, she moved to Florida where she worked at the Rat's Hole as a T-shirt artist for her boss who was called "Big Daddy Rat." After five years she came back and moved in with her sister in North Tonawanda, and together they ran Country Tole where they taught tole and decorative painting in her home, attended by up to 200 students per week over a five year period. In 1990, Luann took a course at the museum under a scientific illustrator where students sketched animals using mounted specimens at the museum.

An opportunity presented itself whereby Luann could work as a "temp" at the Erie & Niagara Insurance Association. As she is a detail-oriented person, she was soon hired as a regular employee in the accounting department where she has now worked for five years.

She continues to enjoy music, singing alto in the choir of the Abundant Life Assembly of God Church, in North Tonawanda, and being a member of the church quartet, called "Forgiven," singing at area nursing homes, Christian Coffeehouses, and visiting the Buffalo chapter of "Teen Challenge" to sing and minister to troubled youth. Lately she has listened to songs composed and sung by a girlfriend, and picked the tunes out on the guitar to write out the music for her. She also finds pleasure in listening to Russian opera and other classical music.

It was Carl Milazzo who first told Luann about the BAA, and she became a member in 1988. We are all familiar with her beautiful calligraphy work on our members name tags, and on our BAA signs seen on Astronomy Day. She is not only our efficient secretary, but is also a very willing worker on any of our projects. Luann is a quiet, gracious, affable, and warm-hearted human being with many talents, and we are fortunate to have her among us.



Edith L. Geiger

## ASTRONOMICAL HAPPENINGS

NOVEMBER 1993

- 2 - Conjunction - Venus & Spica  
S. Taurid Meteors
- 5 - Mercury at inferior conjunction  
Transit of Mercury across the Sun
- 7 - Last Quarter Moon
- 8 - Conjunction - Venus & Jupiter
- 9 - Cepheid Meteors
- 11 - Indian Summer Begins  
Mu Pegasid Meteors
- 12 - Moon at perigee (360,142 km)  
Conjunction - Jupiter & Moon  
Conjunction - Venus & Moon  
Meeting of the BAA beginning at 7:30 PM  
Arietid Meteors (see below)
- 13 - New Moon

A partial eclipse of the Sun will take place throughout the northern portion of Australia and Antarctica as well as the southern portion of

## South America.

### N. Taurid Meteors

- 14 - Conjunction - Mercury & Sun

Mercusry stationary

Bielid Meteors

- 17 - Conjunction - Pluto & Sun

Conjunction - Neptune & Moon

Conjunction - Uranus & Moon

Leonid Meteors

The Sun leaves Libra and enters Scorpio

- 20 - Indian Summer Ends

Conjunction - Saturn & Moon

First Quarter Moon

- 22 - Mercury at greatest elongation (20° west)

- 24 - Moon at apogee (405,302 km)

The Sun leaves Scorpio and enters Ophiuchus

- 28 - Andromedes Meteors

- 29 - Full (Beaver) Moon

A total eclipse of the moon will take place throughout the United States and Canada. It will begin at 10:27 PM EST, reach mid-eclipse at 1:02 PM EST on the 29th and fade out at 2:25 PM EST. This eclipse will last nearly six hours through the night skies.

## DECEMBER 1993

- 5 - Phoenicid Meteors

- 6 - Last Quarter Moon

- 10 - Conjunction - Jupiter & Moon

Moon at perigee (365,357 km)

Meeting of the BAA begins at 7:30 PM

"SPECTRUM" DEADLINE

Monocerotid Meteors (see below)

Chi Orionid Meteors Northern)

- 11 - Rho Hydrid Meteors (see below)

Chi Orionid Meteors (southern)

Delta Arietid Meteors (see below)

- 13 - New Moon

- 14 - Geminid Meteors

The Sun leaves Ophiuchus and enters Sagittarius

- 15 - Conjunction - Saturn & Moon

Conjunction - Uranus & Moon

- 16 - Ceres stationary

- 18 - Conjunction - Saturn & Moon

Conjunction - Pallas & Moon

- 20 - First Quarter Moon

- 21 - Winter solstice - Hurray!!! The longest night of the year!

- 22 - Moon at apogee (404,515 km)

- 23 - Ursid Meteors

- 26 - Conjunction - Mars & Sun

- 28 - Full (Cold) Moon



## METEOR SHOWERS

### ARIETIDS

The Arietid meteors may be seen on the 12th of November coming out of radiant 02h 00m and declination +20d. This short, vague shower is supposed to last only 5 days either side of the peak. Little is known of them, but it is believed that they are about 4th magnitude and appear white in colour. This shower could be a challenge for any avid amateur astronomer, persuing meteors.

### BEILIDS

One of the more known showers are the Bielids. They come out of radiant 01h 36m and declination +44 d., on November 14th. They appear in the skies only a short time of about 5 hours. It is an irregular shower with short, swift streaks, averaging 4th magnitude of whitish-grey. In 1826, Comet Beila appeared and as a result of that comet, we have been having great displays, as many as 10,000 were counted in one hour in 1877 and 1885. Perhaps one day (or night) we might be awarded such a display once again in the near future. The Beilids are sometimes referred to as the Adromedes or Andromeidis. Good luck!

## RHO HYDRIDS

On December 11th meteor shower comes out of radiant 08h 24m and declination +02d. It lasts about 12 days giving up about 12 hourly. Magnitude and colour have not as yet been established, but as meteors go among the lesser known, they are probably in the 4th mag range and white in colour. Another challenging shower for you astronomers.

## DELTA ARIETIDS

Another shower appearing on the 11th of December are the Delta Arietids. They appear out of radiant 03h 28m and declination +22d. At least they are far enough from the previously mentioned shower to show distinction between them. Although they are little known, they have been seen to appear red and as bright as 3rd magnitude. But--- as many showers go, they are also a shower to be challenged and proven what they are.



*GLOBUS AEROSTATICUS*, vel *Aetherius*, the Balloon was a constellation situated between *Microscopium*, the Southern Fish's tail and the body of the *Capricorn*. It was, as so many ancient constellations, disappeared from the maps and charts containing the archives of astronomical history.

It was created by La Lande in 1798 for what ever reason is disputed. Bode picked up on it and placed it in his *Dei-Gestirne* as the *Luft Ballon* and *Ideler* gave it 22 stars referring to it as the *Luft Ball*. Still, *Father Secchi* included it in his maps as the *Aerostato* in Italy.



## B.A.A. GRAMS

Astronomy anagrams. Use clue to find astronomy term. Hidden term will be one or two words. Answers will be found in the next issue of the B.A.A. SPECTRUM.

### 1) ALPINE ULCERS

Up in the sky on November 29th.

### 2) BLUING PITCH

First and third in North Java and it's NOT baseball.

### 3) SIRENS COPE

1950 and 2000 is due to this.

### 4) FRIEND SCOPE

Change only the first word and it will be this.

### 5) SHOW CORK SIZE

If it's due(s), then give it to them.

BN11/93

Answers to last issue: 1) messier objects 2) dew shield  
3) polar aligned 4) sidereal time 5) light year

## STAR PARTY REPORT: Roofing and howling at the Moon

The July 24 star party was moved from my house near Jamestown to the club's observatory as an observatory work party was there that morning holding an old fashioned roofing party. I think the roofers got experience in all phases and nobody escaped without at least a "dot" of roofing tar on themselves somewhere, to take back home as a memento. To all — a great big THANKS!

In the afternoon Tom Bemus arrived with the Marshall Martz (Jamestown) club's Solaris telescope. This scope isolates the hydrogen-alpha line in the solar spectrum thus yielding intricate views of the chromosphere and solar prominences. There were a couple small prominences on the sun's perimeter and interesting surface detail. Similar views can be seen at the Museum of Science observatory during their summer sun shows.

The roof was essentially complete by 7pm and the 10 roofers were joined by another ten for a chicken and steak cookout with plenty of trimmings. Everyone had a rather relaxed look about themselves. However, there was plenty more to do after sunset! The sky which was a pretty blue all day did show some streaky but thin high altitude clouds that passed. These clear skies called to us and like sunflowers to the sun our necks bent toward the dark skies.

Six instruments were present from big 16x80mm binoculars to Joe Drabek's 4" Astroscan to the club's 20" Obsession. Two 8's, a 10" and the club's 12.5" were also used. Joel Stuckey and Tristan DiLapo toiled with the 12.5" with CCD gear trying to work system bugs out and got some results using dogged persistence.

The visual observers saw dozens of objects; many through several instruments which allowed comparison of the merits of different instruments, eyepieces and filters. Star parties are a good way for less experienced folks to gain some hands-on techniques from the more proficient. The variety of instruments present there is a great way to comparison shop different brands, styles and sizes. Manipulating all those various instruments around the sky is valuable experience.

If you are interested in a guided tour then star parties are an excellent avenue. All the scope owners took pride in showing objects they found. Tom Bemus and I ran the Obsession and located over 50 objects; many of these were also observed in the other scopes. The "landscape wide" views of the Astroscan and binoculars often gave a feeling of presence that the larger scopes with their limited fields of view couldn't give. The 8-inchers could be nimbly maneuvered to give fine views of objects without a lot of contortions or work on the observer's part. The 20" gave tremendous, high resolution views of objects. The views were necessarily more narrow field with more work required in locating and viewing objects.

The 20" gave great views of 31 Messier objects and 11 NGC's including the Crab and Veil supernova remnants; planetary nebulae as M57, the Helix and 6210 in Hercules; globular clusters as M4, M13 and M28; open clusters as M11, M34, NGC 752 and the Perseus double cluster; gas nebulae as M8, M16, M17 and M20; and galaxies as M31, M33, the M81 trio as well as fainter quarry as NGC's 404, 891 in Andromeda, and 7331 with attendant galaxies. Other objects included Saturn, Jupiter, Uranus and Venus; several double stars; and the wonderful red star T Lyra. To boot, a couple dozen meteors were seen that night. A few stalwarts even saw morning twilight at 5am; an appropriate time to call it a night!

Good company, good food and good viewing - what more could you want? Star parties are a great way to meet members, share and learn things and get in some fine observing. We'll try to have a fall party as well so watch the Spectrum for details.



- Bill Smith

## BAA ANNALS

5 YEARS AGO - Dr. Philip Kronberg from the University of Toronto was our November 1988 speaker. His topic was "Super Computer - How They Make Astronomical Discoveries". In December Darwin Christy told us about the references he uses to get information for his articles on ancient constellations. Ernst Both presented slides of solar phenomena taken years before by Walter Semerau, an honorary member and Fellow of the BAA. We finished with "Candid Camera" by Edith Geiger.

President Doris Koestler announced that Dan Marcus was the new Observatory Director, Diane Borowski was the new Membership Chairman, Joe Provato would take over refreshments, and Rowland Rupp had compiled an index of past SPECTRUMS (still available if you ask). Edith Geiger wrote

a SPECTRUM profile of Doug Smith. A book report by Tristan DiLapo on David Eicher's "The Universe from Your Backyard" appeared as well. It was reported that the Board had voted that Lillian Von Gerichten and Gertrude Cook were to receive complimentary SPECTRUMS.

10 YEARS AGO - We also had a Canadian speaker in November 1983. Dr. William E. Harris from McMaster University in Hamilton, Ontario talked about "Globular Cluster Systems in Galaxies". In December Carl Milazzo reported on his annual sojourn to Stellafane and Edith Geiger did her traditional thing. Her SPECTRUM profile was on Steve Kramer.

The SPECTRUM had observation reports from Darwin Christy, Carl Milazzo and Michael Idem. Michael also furnished an article on "Methods of Improving Suburban Deep-Sky Observations", which contained many tips on better observing practices he had developed over the years. An anonymous article, "Looking Back", dealt with the fact that when we view distant astronomical objects we are looking back in time.

15 YEARS AGO - Ernst Both, then the museum's Curator of Astronomy, spoke on Mars at the November meeting. The next month was the Christmas party, before the days of wine and cheese. One tradition was already well established - Edith did her "Candid Camera".

Fred Price had an article on lunar craters and also submitted his sketches of Jupiter made during its 1977-1978 apparition. Edith Geiger did a profile on Tom Dessert, our first Observatory Director. Charlie Miess, one of Tom Dessert's astrophotography proteges, had his photos of the relative motions of Mars and Jupiter published in Sky and Telescope.

25 YEARS AGO - Our own Dr. Fred Price spoke on "The Norman Lockyer Observatory" in November. In December two other BAA members, Ed and Olga Lindberg, talked about Tycho Brahe. In addition to Edith Geiger's annual slide show, entitled "Faces in the Crowd" that year, hearing from Ed and Olga was also, a Christmas tradition.

We had SPECTRUM articles from Dale Hankin—"Barker's Quadrangle in Mare Crisium" and Kurt Erland—"Future of Canadian Astronomy". Who was Kurt Erland anyway?? President Fred Price admonished those who display their astronomical work "furtively" at meetings to show them to everyone on pain of fine. The third meeting of the NFCAAA was held at the museum in early November. Nineteen delegates from various clubs discussed the future policy of the recently formed organization.



Rowland A. Rupp

## >> PRESIDENT'S MESSAGE <<

### IT TAKES MORE THAN AN IDEA

As the observatory construction is coming to a close and the 20" Obsession is about to be placed in its convenient storage garage, there comes the time to thank all those that helped to get us where we are. Before I review the history, I know I'm going to miss some folks. Omissions are not intentional — we want to thank everyone involved; so let me start by overall *thanking* everyone involved.

Going back several years, many members, board members and others would have liked a larger scope but it takes more than an idea or wishing to get it. Having it constantly in mind does help and Carl Milazzo probably deserves the most credit for keeping the idea alive. In 1989-90, past president Doris Koestler and then observatory director Dan Marcus pushed hard for the scope and created an atmosphere for acceptance. Jack Mack was the primary push for a scope of at least 20" size as it would substantially enhance viewing over the current 12.5".

No concrete action took place until Tom Nigrelli took it upon himself in Sept. 1991 to do an in-house fundraising effort to raise \$5000 for the scope. This first physical step got things moving in earnest - *Thanks!* By Oct. 1992 member donations grew to \$2865. In Sept. 1992 the BAA applied to the Buffalo



foundation for a grant towards our new 20" Obsession telescope, associated gear, computer equipment and the building expansion. It was based on a Martz club grant proposal retailed by Bruce Newman and Tom; and reviewed and expanded by Bill Smith, Carol Lorenc and the Arts Council in Jamestown. We were awarded \$5000 in early November 1992. The scope was promptly ordered and arrived in Feb. 1993.

This put the monkey on the back of the 1992-93 board to find a way to house the scope. There is nothing like an urgent situation to get folks moving! Clearly we needed help. With building expansion drawings by Ken Kimble and a clear outline of our club's direction we met with the Buffalo Audubon Society board and were awarded a very generous \$6000 grant in Jan. 1993 dedicated for the building expansion. Tristan DiLapo volunteered to be general contractor and work proceeded with foundation digging in May. To minimize costs, club members pitched in with much of their own labor.

Thus thanks are due many. Things start with an idea so thank Carl, Jack, Doris and Dan. Things get moving with a kick in the rear so thank Tom. Member donations were pivotal to show commitment so thanks go to all donors. Getting community grant help was vital so thank Tom, Bruce, Rowland Rupp, Dan, Bill and Carol. Thanks go to our major grant donors: The Buffalo Foundation and the Buffalo Audubon Society. The building crew deserve special thanks due to the vast commitment of time and effort: Tristan (contractor, supply runner, crew chief, tool loaner and #1 hammerer), Dan (electrical wizardry and do-it-too-much-to-yourselfer), Rowland (overseer of subcontractors, Audubon contact) and Joe Drabek (electrical wizard #2). Laborers to thank (painting, shoveling dirt, roofing and misc. chores): Tristan, Joe and Dan Drabek, Dave Fliss, Bob Hughes, John Lazarus, Dr. Jack, Dan, Bruce, Joe and Bev Orzechowski, Rowland, Bill & Carol, Joel Stuckey, Luann Szucs, Bob & Laurie Titran and Gene Wilkowski. For donated supplies we thank Tristan, Dan Marcus, Dave Fliss and Joe Drabek. Our computers are due to the work of Dave Sepulveda, Joe Drabek, Joel and Dan Marcus. Public nights were capably handled by Dan Marcus, Bruce, Dave Fliss, Joel, Gene and others. Thanks go to all of them.

The new facilities come with the obligation and responsibility to put them to good use. An expanded public program follow along with member's use. As a final note of thanks let's use this facility to instruct, impress and amaze the heck out of our visitors and ourselves.



Bill Smith

#### SPY and TELL

Ernst Both's newly published book, Boletes of North America; a Compendium, is an extensive mycological study by a noted expert in the field. Congratulations Ernst!

Art Gielow, who is the Director of the planetarium at Buff State, has plans for many interesting shows. One entitled "Legend," started September 24th, and will continue to run through November 19th. There will be special shows marking the holidays and other celebrated days such as seen in the October 22nd Hallowe'en Show and perhaps a Valentine's Day show. Art has a whole list of great shows lined up to May 1994. He is preparing a course on catastrophes to be presented to the Adult Education Class, and the Outreach Program, to be held in the reception room used in connection with the planetarium. Those attending will be enlightened concerning planet Earth's colossal catastrophes including impacts, extinctions, earthquakes, volcanoes and more. In other words, disasters from above, on the ground, and below the ground. This will be an informative, extraordinary, and lively course. In January, Art will be teaching an astronomy class in Kenmore for adults in the Continuing Education Program. Check your local newspaper for dates and time.

Joe Drabek has worked twenty-seven years for the Telephone Company. Before joining the BAA, he was vice-president of the Lockport Astronomical Society. He has also been president of the Southtowns Users Group (computers). He has three sons: Daniel age 11, Kenneth age 12, and Joe age 26, who is a new father of a little girl, Maegan, making Joe Sr. a first time grandfather.

Ken Biggie is taking full time evening courses at Canisius College. This will lead toward a second Master's degree, and certification for administration and supervision, in order to hold a position in any school district if he is a supervisor for more than twenty-five percent of his teaching time. After he has finished his courses, he will be eligible for any teaching position. He may in the future continue to further his education by working toward a doctorate at the University of Rochester. Along with his present evening courses, he will continue to sub in the schools during the day.

Bruce Newman and Bill Halbert were seen on Jones Intercable and Adelphia Public Access Channels, discussing astronomy, the BAA, and the November lunar eclipse. It was taped September 19th and was repeated several times in September and October. On January 13th on Jones Intercable, they will answer call in astronomy questions for one hour. Don't miss this program!

Joe and Beverly Orzechowski left for the Southwest on September 24th, and flew to Las Vegas for a one day visit. They then rented a car and drove to see the spectacularly beautiful abyss of the Grand Canyon. They returned home October 6.

Larry Picchione has been a bus driver for the KenTon School System for 4 years, and is responsible for 48 children on his bus route to the Franklin Middle School and Kenmore East High School. During the summer he enjoys playing golf and going fishing. He goes to Campbellford, Ontario, about 100 miles into Canada to fish in the Trent Waterway System.

Bob Rzoska reports that as August 11th was a poor night for viewing the Perseids, he went out on the nights of the 12th and 13th and saw 6 to 7 meteors each night between 2:30 and 3:30.

Congratulations to Bill Smith who sold 90 of his photographs of landscapes and "critter" at the Fair in the Park, at Carnegie-Melon Civic Center and Gardens, in Pittsburgh, the second weekend in September.

May you have happy holidays and all good things in the New Year!



Edith L. Geiger



#### NOTICE

LAST CALL

ASTRONOMY MAGAZINE

&  
RASC OBSERVER'S HANDBOOK

LAST CALL

Astronomy renewals and RASC orders are going out before the next meeting. Send checks - made out to BAA - to me before Oct. 25th.

ASTRONOMY. Whoops! Not \$16, but \$18 per year (\$36 for two years).

OBSERVER'S HANDBOOK. Still \$10.50, a savings of \$5.37.

Steve Kramer  
80 Donna Lea Blvd.  
Williamsville, NY 14221



#### THINGS TO COME

An ancient constellation, "The Three Ice Men", "Welcom, new members", "Oh, What a Wondrous Morning!" and many other astronomical articles.

#### EDITORIAL

**PLEASE!!!** Articles are needed for future "SPECTRUM". There are those who **do** and ther are those who have the talent but are afraid to come forward. **Lets DO!!!**

## >> PRESIDENT'S CHALLENGE <<

The President's Challenge is a selected list of objects designed to get you "out there". It is a way to motivate oneself into viewing phenomena in the sky, solar system objects, members of our galaxy and deep sky objects. The hope is to inspire you into viewing things you may not have otherwise. 40% of the objects do not require a telescope. You will need ambition, perseverance and the willingness to be outside on cold nights. Everything can't be seen easily in the summer! Once you start and get a taste of the beauty and fascination of objects in this list, the ambition, perseverance and willingness will come naturally.

There are 100 objects in this list which is broken down into 3 sections. The sections cover 3, 4, and 5 month blocks of time. The objects in each section can be seen during the time from sunset to 11:30 PM. Thus all objects are organized to be seen well above the horizon in the evening -- prime viewing time. References are given on most objects so you can read up on them as well as view them. Help will be given at club meetings on this project and you are encouraged to use the club telescopes. Join with other members to make it a group effort. Use the lists to get lost in the splendors of a starry night!

I have seen 94 of these objects so I know they exist and can be seen reasonable easily in a 10" scope in rural skies. I believe you should be able to find everything at a not too light polluted site with a 6" scope. I will use a 6" scope from Jamestown to test my words!

The lists and a supplementary explanatory pamphlet are available at the membership desk or by calling me at 664-0841. If you are interested in expanding your viewing experience then give this challenge a try!

Bill Smith



## >> RE-APPOINTED <<

The board of directors are delighted to report that the following members have volunteered to renew their positions. The board has appointed:

Newsletter editor: DARWIN CHRISTY  
Observatory director: DAN MARCUS

They've done a yeoman's job last year and take special pride in what they do. Please thank them for doing what is mostly a behind-the-scenes, taken for granted, time-consuming job!

\* The "SPECTRUM" \*

BUFFALO ASTRONOMICAL ASSOCIATION, Inc.

Darwin Christy, editor  
216 Kohler St.  
Tonawanda, NY 14150

**\*\* FIRST CLASS MAIL \*\***

☀ BEAVER MEADOW OBSERVATORY ★457-3104★ ☺

The Trash and Treasure weekend was a resounding success, the weather was tolerable, and public night was really well attended! Thanks to Bob and Laurie Titran we had our usual picnic dinner before the public arrived! Public nights have been well attended when the weather was clear, and well attended by members who come on cloudy nights to help with the construction of the new addition. Our computer now has our own 40meg hard drive, and is anxiously awaiting the addition of a CCD camera. At the time this article was written, we needed to get the "closing" inspection, so we can get the drywall up. Jobs we need to complete:

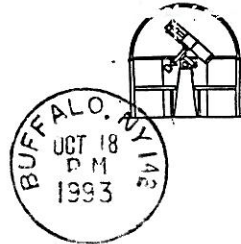
- 1: Molding
- 2: North window repairs
- 3: Inside window
- 4: Painting
- 5: Rug installation
- 6: Bookcases, and shelves

If you have any skills in these jobs please ☎ contact me about times you can help. (my phone # is 773-5015)

**Public Weekend- Saturday November 13 & Sunday November 14** ☺ from 1pm to 5pm. As usual I will need your help, to run the computer, show Sun Spots, show Venus, and enjoy our usual picnic dinner (a bring a dish to pass party!!). If enough help comes we will be able to do construction work as well. ☞ So here is your chance to give a hand with the construction, even if you don't have any construction skills!! We will be having our last public night Saturday November 13 from 7pm till 10pm.

Daniel Marcus

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ROWLAND RUPP  
c/o ARCHIVES  
132 BURROUGHS DR  
SNYDER NY 14226