

# *The Spectrum*

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## **Edith Geiger, R.I.P.**

Many of you may know already, but Edith Geiger, a long standing member of the BAA, passed away on May 2<sup>nd</sup>. I got the news just as I was finishing up this newsletter. Edith joined the BAA in 1962 and became a member of the College of Fellows in 1977 (according to the Buffalo News). I did not get to know her, but I do remember her humorous Christmas party slide shows. I think I even made it into a slide or two towards the end. I remember her always taking photos with her old 35mm camera. She was also very involved in producing this newsletter in the past and I would like to dedicate the July/August Spectrum to her. I will need help. If you have pictures or could write some kind words about your memories of Edith, please get them to me and I will put them in the next Spectrum.

Edith is survived by two sons and a daughter. She was 96.

## **COLLEGE OF FELLOWS REPORT**

Two College of Fellows Awards were presented at the annual dinner meeting held at the Classics V restaurant. Larry Carlino received an award for his highly informative telescope evaluation reports that are available on various internet sites. The other award went to Alan Friedman for his prize winning astrophotographs that also have appeared frequently on the internet. In the past year Alan wrote an article on his photographic techniques that appeared in *Sky and Telescope* magazine.

No new members were inducted into the College this year. The current members are: Bill Aquino, Marilou Bebak, Larry Carlino, Darwin Christy, Edith Geiger, Bob Hughes, Steve Kramer, Jack Mack, Dan Marcus, Beverly Orzechowski, Joe Orzechowski, Rowland Rupp, Bill Smith and Bob Titran [and Alan Friedman].

The highlight of the dinner meeting was a talk by Wayne Johnson, "Mister Galaxy", who spoke on his solar eclipse expeditions and observations. Approximately seventy guests showed up. There would have been a few were it no for the wintry, snowy weather.

Rowland A. Rupp

## BAA Officials

### BAA Officers

President – Dan Marcus  
(716) 773-5015  
Vice Pres -- Joe Orzechowski  
(716) 839-1752  
Secretary – Mike O'Connor  
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Treasurer – Chris Mullen  
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### At Large Directors

Janice Gardner  
Jack Mack  
Mike Anzalone

### Observatory Directors

BMO – Pat Lannon  
(716) 827-8836

Remick – Paul Tabor  
(716) 434-7148

### Membership

Alan Friedman  
(716) 881-4310

### Robotic Telescope Project

(open)

### Star Parties

Dan Marcus???  
(716) 773-5015

### College of Fellows

Rowland Rupp  
(716) 839-1842

### Spectrum Editor

Richard Fusani  
313 Central Ave. Apt 2  
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### BAA Website

[www.buffaloastronomy.com](http://www.buffaloastronomy.com)

### BAA Voice Mail Box

(716) 629-3098

### Location/Time of Meetings:

BAA meetings are held on the **2<sup>nd</sup> Friday of the month** from **September to June** in the **Science Building on Buffalo State College Campus** (Except the March Dinner Mtg). Meetings start at **7:30 P.M.**, in the first floor auditorium near the entrance. See above web site for a map of the location. **Non-members are encouraged to attend.**

### Spectrum Deadline

Articles for the next Spectrum are due by: June 23<sup>rd</sup>

### BAA Webmaster

Mike O'Connor

### BAA Yahoo E Group

#### Coordinators

Dennis Hohman  
Mike O'Connor

## **The BAA Brings Outer Space to the Inner City**

BAA members Malena Villarreal and Mike Anzalone have just begun a one year once a week science mentoring program at the Valley Community Center (<http://www.thevalleycenter.com/>) in Buffalo, NY. The program know as "Science First Hand--Partners in Discovery" (<http://www.firsthandlearning.org/sciencefirsthand.html>) is a NSF-sponsored project that provides 1 or 2 urban youth with an adult volunteer who becomes the child's "partner in discovery" during out-of-school time. Malena and Mike have four children ages 10-13 with whom they will introduce to astronomy. They meet every Wednesday evening at the Valley Community Center.

Topics will vary greatly throughout the year. They're starting with the Sun, space weather, and the Moon which hopefully stimulate further inquiry by the kids into other aspects of related science. The focus of the program is to be very hands-on science so they will be doing a lot of observing as well as many class based fun projects - use of telescopes, prisms, spectrometers, pop bottle magnetometer, building solar ovens, moon crater model building, SOHO and other NASA spacecraft model building, telescope building, and more. If you want to participate let them know. If you know any fun projects give them a call.

As of their first meeting with the kids they have already had provided them their first views of the Sun, crescent Moon, Mars, and Saturn. Each had a rather significant "COOL! AWESOME!" response.

Additionally, they would like to have a community night at the center where additional BAA members could help put on a Star Party for the community.

Any project ideas or want to help?

Want to be their "Guest Astronomer"?

Do you have any "astronomy stuff" you just want to get rid of and donate to the program?

Contact:

Mike Anzalone [backcare@roadrunner.com](mailto:backcare@roadrunner.com)

Malena Villarreal [malevmtz@gmail.com](mailto:malevmtz@gmail.com)

## What Time Is It? (Part II)

by Joe Orzechowski

Part I of this article covered the topics of time zones, Greenwich Mean Time (GMT) and its replacement, Universal Time (UT). In this second, and last part, I'll discuss some more modern timekeeping systems including UTC.

### A Brief Recap

As the mechanisms for measuring time improved it slowly became evident that the rotation of the Earth was not a terribly uniform motion. On top of all the short term random and periodic fluctuations in rotation rate, the Earth's rotation is gradually slowing down at a rate of about 1.4 ms per day per century. This means that after one hundred years the day becomes about 1.4 ms longer and the year becomes about 0.5 seconds longer (1.4 ms x 365 days). This makes any time interval based on the Earth's rotation non-uniform. In particular, it was astronomers early in the 20<sup>th</sup> Century who began to notice that there were errors in their calculated predictions of lunar and planetary positions. These errors were attributed to the non-uniform time scale (GMT and later UT) they were plugging into the equations of motion they were using to make their predictions. Astronomers led the push for a definition of the "second" that is a more stable and uniform measure of time. This meant a second that was not defined in terms of the Earth's rotation.

### Ephemeris Time

It turns out that the orbital motion of the Earth around the Sun is much more uniform than the Earth's rotation. So in 1956 the International Committee for Weights and Measures defined a uniform time scale called Ephemeris Time (ET) which is based on the length of the tropical year, the interval of time between successive vernal equinoxes. Computations of the length of the tropical year were based on formulas and data tables published by the American astronomer Simon Newcomb in 1895 which in turn relied on astronomical observations made between 1750 and 1892. The time interval used by the ET time scale is the ephemeris second which is defined as  $1/31,556,925.9747$  of the tropical year 1900. The origin or start of the ET time scale was set at Jan 1, 1900. The definition of ephemeris time and of the ephemeris second were ratified by the Eleventh General Conference on Weights and Measures in 1960.

Ephemeris time did not replace Universal Time. Rather it was established to serve as a uniform time scale for astronomical purposes. Before atomic clocks, ET was the closest available approximation to a uniform time for planetary motion calculations.

And here is where things start to get a bit muddled. The length of the ephemeris second was not equal to a mean solar second in the year 1900 or any year since then. In fact, because the ET time scale was based on astronomical observations made back in the 18<sup>th</sup> and 19<sup>th</sup> Centuries the ephemeris second most closely agrees with the mean solar second for the year 1820. So, while ET and UT1 coincided sometime at the beginning of the 20<sup>th</sup> century, ET is currently just over 1 minute ahead of UT1. (Recall from Part I of this article that UT1 is tied to the rotation rate of the Earth.)

### Atomic Clocks

During the 1940's the first atomic clocks were used to establish atomic time scales and the first formal atomic time scale was defined by the US Naval Observatory in 1959 and was called A1. Its origin or start point was set to January 1, 1958. In 1961 the Bureau International de l'Heure (International Time Bureau at the Paris Observatory) established a time scale based on taking the average of the readings from three atomic clocks. This time scale, initially called AM but soon renamed A3, was synchronized with the A1 scale so that it too aligned with the UT1 time scale on Jan 1, 1958. In 1967 the Thirteenth General Conference on Weights and Measures defined the SI (Système International or International System of Units) second as being equal to "the duration of 9,192,631,770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the Cesium-133 atom". This definition was established to make the SI second equal to the ET second. Since the ET second most closely matches the length of a mean solar second back in 1820, this means that all clocks (including atomic clocks) ticking off SI seconds are running fast with respect to the rotating Earth!

After 1967 more atomic clocks were added to the A3 time scale. It was renamed Temps Atomique (TA) and

finally in 1971 was renamed Temps Atomique International (TAI). Today TAI is a weighted average of the time kept by about 300 atomic clocks in over 50 national laboratories around the world. Many but not all of these clocks are cesium atomic clocks. It must be noted that TAI is a uniform time scale that is a mathematical construct based on a specific physical property of the cesium atom. It is not derived from, nor is it directly related to, the Earth's rotation.

According to Einstein's theory clocks at higher elevations (lower gravity) run faster so in 1977 a relativistic correction was applied to TAI. The readings of all atomic clocks were corrected to mean sea level and this lengthened the SI second by a factor of about  $1 \times 10^{-10}$  (one part in ten billion). Even this definition wasn't quite precise enough so in 1997 the International Bureau of Weights and Measures added the following to the definition of the SI second: "This definition refers to a cesium atom at rest at a temperature of 0 K". How's that for splitting hairs!

### **Coordinated Universal Time**

Despite all of the improvements in timekeeping the time scale that is most applicable to people's everyday lives is one that agrees with the rising and setting of the Sun. Therefore, it should come as no surprise that civil time was based on the GMT and UT time scales. Until the 1950's the time signals broadcast by stations like WWV, CHU (in Canada) and other stations around the world were based on Universal Time. When atomic time scales became available in the mid and late 1950's these stations matched their time signals to the UT2 time scale but used the rate of the atomic time scale to maintain a stable frequency (tick rate). Since the atomic clocks were all running fast (as I mentioned earlier), a scale factor had to be applied to the atomic clock rate so that the broadcast signal ticked exactly one second for every 1.00000001 seconds of atomic time. Even so, errors between the broadcast signal and UT2 accumulated so that short steps of 20 ms were inserted into the broadcast signal to keep it in step with UT2 (the Earth's rotation). Sometimes even the frequency (tick rate) of the signal was adjusted. Initially, the application of these adjustments to the time signals were made by the individual broadcast stations. In 1960 an international agreement was reached that synchronized all of the broadcast signals around the world. The atomic time scale factor was set at 1.000000015 seconds of atomic time per broadcast second and the Bureau International de l'Heure would be in charge of determining when, what type and what size adjustments would be made. The goal was to keep the broadcast time signal within 0.1 seconds of UT2. This was the inception of Coordinated Universal Time (UTC) which officially started at midnight January 1, 1961.

This state of affairs continued for more than a decade but during that time there was significant dissatisfaction expressed with the UTC system. The primary issue was the frequent jumps or discontinuities in the time scale. In 1967 another issue arose when the SI second was redefined in terms of the atomic clock. This meant there were two different types of seconds, the SI second and the UTC second. This was resolved with a proposal to keep the length of the UTC second equal to the SI (TAI) second and that only jumps of 1 full second be inserted as needed to keep UTC within 0.9 seconds of UT1. It was at this time that UTC started to track UT1 rather than UT2.

So at the end of 1971 there was a final irregular jump of 0.107758 SI seconds inserted into UTC and 1972-01-01T00:00:00 UTC became exactly equal to 1972-01-01T00:00:10 TAI. Note the 10 second difference between the two times. This difference is due to the error that accumulated up to that point by the faster running TAI time scale since its beginning on January 1, 1958. Since that synchronization of UTC with TAI, the difference between the two time scales has always been an integer number of seconds. The 1 second jumps inserted into the UTC time scale to keep it in step with UT1 are called leap seconds. There have been a total of 23 leap seconds inserted into the UTC time scale since 1972 and today UTC is 33 seconds behind TAI. All this means that UTC is a uniform time scale but is still tied to the Earth's rotation rate! The UTC scale is uniform because its rate is related to the ticks of atomic clocks (TAI) but the occasional adjustments using leap seconds keeps UTC matched to the Earth's rotation (UT1).

Have you ever wondered why the letters UTC are used as the acronym for Coordinated Universal Time? Well, as you may have guessed it was the result of a committee and a compromise. It was long decided that the same time scale acronyms be used throughout the world regardless of language to eliminate any confusion. When Coordinated Universal Time was introduced the English speaking nations wanted to adopt CUT as the internationally recognized acronym but the French speaking nations wanted to use TUC (Temps Universel Coordonné). The compromise decision was to use UTC (Universal Time Coordonné, I guess). The argument in

favor of using this acronym was that it fit neatly into an existing set of time scales where UT was the base and a single character was appended to that (remember UT0, UT1, UT2 from Part I).

### **Future Disaster?**

For those of you who were disappointed when the Y2K computer disaster never materialized, here is another calamity to which you may look forward. All GPS satellites use the GPS time scale which runs at the TAI rate. Data transmitted from the satellites to a GPS receiver includes an 8-bit quantity that specifies the current difference between GPS time and UTC time. As leap seconds continue to be inserted into UTC, this difference will eventually exceed the maximum value that can fit into this 8-bit field (127 seconds). When this happens all the GPS satellites and receivers will become obsolete. The Earth's rotation is not slowing down at a constant rate so it is difficult to predict the exact end of GPS as we know it but it should happen some time in the latter half of the 21<sup>st</sup> Century.

## **Observatory Report**

This month, April has all but flown by. With two public nights already past and the Earth Day Festival, history, it seems that we've gone from the freezing grip of winter straight into summer. Speaking of the Earth Day Festival, it should be noted that as usual, Mike Anzalone came through again and put together a dynamite display for the attendees of the Buffalo Audubon Society's Earth Day festivities. This is the second BAS activity that Mike has been instrument in making our club look great to the BAS and the public. All I had to do was act as point person to make the show a great success. Further, I'd like to thank Scott Smith and Alan Friedman for both sharing their time on this first glorious weekend, with the BAA and sacrificing whatever they could have been doing at home.

Going back to the end of March 29<sup>th</sup>, Mike Anzalone and I pulled off a two day Maple Harvest Festival at BAS. We showed about 1000 people, the sun spots and prominences of the sun, over and over and over... There was a lot of interest shown and we certainly could have used a few more scopes and voices. I know this was an even early in the year, but maybe you can put this event on your calendar for next year, as we will be setting up our scopes again for the Maple Festival.

We have some upcoming events that I would like you to try and put some time aside for, in addition to our Public Nights. Astronomy Day is May 10<sup>th</sup>, and will be held at Tift Farm. This will be from about 2:00 to 10:00 PM and Mike Anzalone has the wheel turning on this event already. Please contact me regarding attending and providing a scope for this. On Saturday, May 3<sup>rd</sup> & May 17<sup>th</sup>, I need speakers at BMO for Public Night. Don't be shy. We have a digital projector now, that you can show your PowerPoint Presentations with.

Let's hope we can generate a few more new memberships this year.

Pat Lannon, Observatory Director BMO

## Dark Energy Identified

by August A. Cenkner Jr., B.A., B.S., M.S., Ph.D.

Observational astronomers have concluded that galaxies, in the outer reaches of the universe, have actually accelerated. It was anticipated that these galaxies should have decelerated, due to gravitational retardation from other entities.

They have attributed this acceleration, identified in 1998, to a mysterious and unidentified repulsive force that has been labeled dark energy.

For the first time, in Reference 1, laboratory simulations were used to identify this elusive dark energy as the energy contained in traveling shock waves. These shock waves would originate from numerous violent processes, such as hypernovas, supernovas, star collisions, etc, throughout time and space.

Figure 1 illustrates the process that was to be simulated in a plasma wind tunnel. A main sequence star is gravitationally constrained by two stationary rigid dark bodies. A shock wave travels into the vacuum of space, passing by the star. The key question is "What happens to the star when the traveling shock wave passes?"

In the small-scale simulation, of Figure 2, high temperature plasma was struck between two stationary rigid electrodes. An electric field replaced the gravity field, and was used to constrain the plasma. As the shock wave passed the plasma, photographs were taken and a spectroscopic technique was used to map the isotherms in the plasma. The observed temperatures were essentially the same as the surface temperature of some main sequence stars.

It was determined that the plasma behaves like a solid deformable elastic body. There is a change in the cross sectional shape of the plasma and a low-pressure wake is formed downstream of the plasma. As the flow passes the plasma, it cannot expand fast enough to fill in this low-pressure wake. The net effect is unbalanced forces that cause the plasma to accelerate in the direction of travel of the shock.

These traveling shock waves would therefore produce star accelerations anywhere in the universe, where they occur, and not just in the outer reaches of the universe. They would act as the driving force that results in the rotational motion seen in galaxies and other star groups and in the creation of wild stars.

Horrendous violent processes, that occurred at essentially the center of the spherical-like Voids, and created powerful spherical shock waves, would eventually result in the creation of the Voids, galaxy Clusters and Walls.

Fig 1 Shock Impacts Star

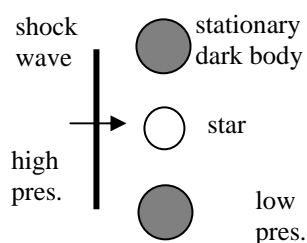
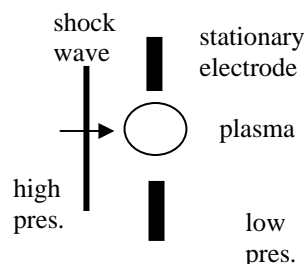


Fig 2 Laboratory Simulation



- (1) Cenkner, August A. Jr, Dark Energy – Laboratory Simulations Lead to Predictions of: Star Accelerations; Creation of Spiral Galaxies; Formation of Voids, Walls, and Clusters, 2<sup>nd</sup> edition, ISBN 978-1-4343-0661-6 (sc), 194 pp, Authorhouse, 8/22/2007 (1<sup>st</sup> edition 08/23/2005).
- (2) Introduced at "Origins of Dark Energy Conference", McMaster University, Hamilton, Ontario, Canada, May 2007.

## BAA ANNALS

5 YEARS AGO - Joe Orzechowski spoke on astronomy "facts and trivia" at our May 2003 meeting. In June, Bob Hughes presented some ongoing NASA plans including the Space Shuttle, the International Space Station and coming missions to the planets. President Joe Orzechowski encouraged members to head out to BMO and assist Observatory Directors Bill Aquino and Paul Tabor on public nights. Just for the record, I noted in *The Spectrum* back then that the BAA had five bankers' boxes of archives that I had intended to turn over to Bev Orzechowski for safe keeping, but somehow I still have them. We really need to find some permanent and accessible home for these valuable records of the BAA's past.

Bill Aquino and Bob Titran were inducted into the College of Fellows at our March dinner meeting. Some early season star parties were already scheduled: one at Cherry Springs and another at the Rupp's cottage at Lime Lake. Janice and Jeff Gardner were the star party organizers for 2003.

Alan Friedman wrote an article on his trip to Florida to participate in the Cedar Key Star Party organized by Tom and Kat Bemus. Larry Carlino did an equipment review of the Orion Apex 127 Maksutov-Cassegrainian telescope. He was guarded in his approval of this Chinese built instrument. Tom Bakowski reported on a gamma ray burst he and Bill Aquino observed in Leo.

10 YEARS AGO - Local author Barry DiGregorio was our speaker in May 1998. He spoke on the book he had just recently had published, *Mars: The Living Planet*, in which he made a case for the possible discovery of life on Mars as seen during the 1976 Viking missions. Carl Klingenschmitt spoke in June on "Artificial Earth Satellites". Membership Chairman Joe Orzechowski noted that each year the BAA picks up a few new members, but a few previous members drop out as well. The good news is that the number of the former generally exceeds the number of the latter.

BAA member Bill Halpert reported on observing in Germany with a small telescope. Bill has taken up residence in Germany, where he is pursuing his operatic career. Fred Price, aided by his own detailed sketches, wrote about his observations of the lunar crater Rutherford. Speaking of Fred, elsewhere in this *Spectrum* it was noted that his latest book, *The Planet Observer's Handbook*, is available in paperback. Rowland and Irene Rupp combined efforts to write a report on the total solar eclipse they observed on February 26 from a cruise ship in the Caribbean. Tom Bemus wrote about the virtues of the wide angle views one can obtain using binoculars or rich-field telescopes. We even had an astronomical cross word puzzle, thanks to Bill Smith.

15 YEARS AGO - Our annual dinner was still being held in May back in 1993. That year it was to be at the Coachman's Inn. Dr. Dave Toot from Alfred University was scheduled to speak on solar research at the university. A planetarium show, "Legends", was the feature for June.

Ed Lindberg's "Instrument Notes" dealt with spherical and chromatic aberrations in early telescopes and the techniques employed to correct them. Edith Geiger wrote a member profile of Bill Smith, who was then President of the BAA. An anonymous article on globular clusters gave observing hints, technical definitions, and an extensive listing of more than fifty targets within reach of amateur instruments.

25 YEARS AGO - Our meetings for May and June 1983 were held at the Museum of Science.. David Meisel from the state college at Geneseo spoke at our May meeting about asteroids. Al Kolodziejczak talked in June about quasars. Ken Kimble reported that the Study Section's topic at its April meeting was "celestial navigation". In May the group planned to discuss the exciting new topics of calculators and computers in astronomy. The BAA was planning to participate in a "Space Fair" to be held at the museum with a show including telescopes, astrophotos and mirror grinding, according to Carl Milazzo's report.

Larry Carlino wrote about the use of nebula filters, which was a new, hot topic in 1983. Claudia Bielinski was the subject of Edith Geiger's member profile. In addition to Claudia's interest in astronomy, she also studied astrology. She could actually calculate the positions of the planets; how many of us could do that? Observation reports by Shaun Hardy, Michael Idem and Carl Milazzo also appeared in this *Spectrum*. Bruce Cook's obituary was also noted. Bruce had been our *Spectrum* editor in the late 1960s despite his serious physical handicap. His 3 1/2-inch Questar telescope has since been donated to the BAA by his mother.

35 YEARS AGO - Ed Banaszak's topic for May 1973 was "Yesterday, Today and Tomorrow" but, although I attended the talk, I have no recollection of what that provocative topic was about. Ed was then a former BAA member. In June we heard from our President, Darwin Christy, who gave the club's annual report. Ed Lindberg reported on the year's activities of the Instrument Section. In those days it was traditional to have reports of the club's activities for the year at the June business meeting.

John Riggs wrote his "Deep Sky Observing for May and June 1973", and Art Young wrote about "The Alignment and Calibration of Equatorial Telescopes". Club member Dale Hankin was then in the process of launching his own astronomy magazine, *Modern Astronomy*.

Rowland A. Rupp

### **Public Astronomy and Educational Outreach**

The Buffalo Astronomical Association has been getting out and about WNY over the last year as we have been attending more events with our little troupe of traveling astronomers. You never quite know where we might show up offering many magnificent views of the celestial heavens to the public. One might actually find us guilty in the commission of some "Drive-by Astronomy". We're often providing many their first opportunity to look through a telescope. It's a great thrill to show someone their first view of Saturn!

We're always looking for some help with all our public events and you don't necessarily need to bring a telescope to help. You might just hang around and answer some astronomy related question, point out the constellations, bright stars or planets, hand out BAA information or just admire Alan in his stylish astronomy garb 8^).

### **Come join the fun and help us with the following events:**

#### **Public Nights at the Beaver Meadow Observatory**

Every 1<sup>st</sup> and 3<sup>rd</sup> Saturday, April through October 2008.

We typically have a very merry band of astronomers of all levels of expertise. Stay after the crowds leave and enjoy the dark skies as well as some of the most unhealthy late night snacks that are usually present into the wee hours of the morning.

#### **"Seeing the Stars"**

#### **Astronomy Day Celebration**

Tift Nature Preserve

Saturday May 10, 2008 2-10 PM

This is the first year of us celebrating Astronomy Day here at the Tift Nature Preserve. Lots of very hot solar observing with white light and H-Alpha filter equipped telescopes.

#### **"The Astronomers Are In"**

Impromptu Friday or Saturday Night Sidewalk Astronomy on Elmwood Avenue, Buffalo  
In front of the Buffalo Museum of Science's "Science Spot".

This is a very fun astronomy venue.

There are some very interesting views other than those in the clear albeit light polluted skies.

Bring a scope or come as you are. The Lexington market is across the street.

#### **"Star Lights, Drinks, and Bites"**

Buffalo Museum of Science

Saturday June 7, 2008

7:00-11:00 pm

There was a huge fun crowd last year on the roof of the museum

It was a great event to be at. We were all kept well "hydrated".

#### **Many Other Astronomy Related Events Throughout the Year**

Watch for them in future Spectrums and on our website.

Contact Mike Anzalone for more info: [Backcare@roadrunner.com](mailto:Backcare@roadrunner.com) 716-228-0727(cell)

## President's column

Thanks to Janice Gardner for another successful March dinner meeting in spite of the weather. Janice has the banquet down to a science, but the President gets to coordinate the weather. Guess we will have to impeach the President ☹. The current plan for next year's banquet is to have a joint event with the Buffalo Museum of Science. We are on the lookout for a well known speaker to give a talk for the museum as well as the club. Since we are pooling our resources we should be able to have a really high profile speaker. Speaking of speakers, we have speakers lined up till the October meeting. Ideally we should be working on the rest of next year! If over the summer you hear any good talks, formulate a talk, want a talk on anything specific, give me a call at 773-5015, email me at [DMa3141551@msn.com](mailto:DMa3141551@msn.com) or let any of the board know. We would greatly appreciate it. Better yet, if you go to any star parties, take lots of pictures since the October meeting may be a show and tell of what we did last summer. Usually we do this at the September's meeting, but Dr. Quillen has a conflict with our October meeting date, and is willing to give a talk on her collaboration with NASA on the Centaurs A galaxy.

**We still need volunteers to run for officers** for the June election. There are openings for President, and Treasurer (Secretary and Vice President are also up for reelection but have offered to run again). If you are interested in running for an office, or run from office and know of a person who wants it please contact Rowland Rupp at 839-1842.

The next meeting for the robo scope will be Saturday June 7.

For all of you that missed the Earth Day celebration on Saturday April 19, you missed out on a really fun day. We had a couple hundred visitors, who got to see the Sun in hydrogen alpha, view Venus in the daytime. Mike A's BAA display was super! We finally have a really nice information setup to show off the club. The "bring a dish to pass dinner" ( btw, the food was GREAT) was followed by a night of viewing the stars between the clouds. We all had a really great time – as usual I might add! The weather was perfect, (except for the clouds at night). I am looking forward to the Earth Day Celebration on May 10 at Tiff Farms.

We still need people to write articles on all the fun stuff we do. We could use a club reporter!! Usually the person organizing the event has their hands full just getting the event organized. If you like to write, it would be a great way to help out. See you at the next meeting.

Daniel Marcus

## Buffalo Astronomical Association Members Astronomy Websites

Compiled by Tom Bakowski

- Tom Bakowski -- [www.tomseyeonthesky.com](http://www.tomseyeonthesky.com)  
-- Wide Angle images of the sky thru the seasons, from dark skies of PA, using a dslr camera and lens.
- Thom Bemus -- [www.upstateastro.org/stars/index.html](http://www.upstateastro.org/stars/index.html)  
-- Astronomy resource site.
- Anthony Davoli -- [www.astro.premcom.com/ADM/index.htm](http://www.astro.premcom.com/ADM/index.htm) -- [www.admaccessories.com](http://www.admaccessories.com)  
-- Images of deep sky objects using a Takahashi FSQ-106 and a dslr camera.
- Tristan Dilapo and Mike O'Connor -- [www.orbitjetobservatory.com](http://www.orbitjetobservatory.com)  
-- Images of deep sky objects and transient events.  
-- Tristan uses a fully robotic Meade 12" LX200 and CCD.  
-- Mike uses a fully robotic Celestron 9.25", Takahashi TOA-130 and CCD.
- Alan Friedman -- [www.avertedimagination.com](http://www.avertedimagination.com)  
-- Highest resolution images of the solar system using a Astro-Physics10" - 6,5,4" refractors.
- Mike Israel -- <http://poochpa.myalbum.net/>  
-- Images of solar system and deep sky objects using a TeleVue NP101 and Meade 8" LX200GPS with a webcam or dslr camera.
- Dr. Jack Mack -- <http://facstaff.buffalostate.edu/mackje/>  
-- Astronomy resource page.
- Mark Percy -- [www.williamsvillek12.org/planetarium](http://www.williamsvillek12.org/planetarium)  
-- Williamsville Planetarium schedule.
- Peter Proulx -- [www.gotastronomy.com](http://www.gotastronomy.com) -- [www.ip4ap.com](http://www.ip4ap.com)  
-- Images of deep sky objects using a Meade 10" RCX and CCD camera.

If you're a BAA member, and not on the club's message board, then you're missing out on communication and current events. This message archive, started in 1999, has 134 members and had over 12,130 messages!

-- [http://groups.yahoo.com/group/buffalo\\_astro\\_assoc/](http://groups.yahoo.com/group/buffalo_astro_assoc/)

**The Spectrum**

**The Newsletter of the Buffalo Astronomical Association**

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