NEWSLETTER OF THE BUFFALO ASTRONOMICAL ASSOCIATION INC.

The Spectrum

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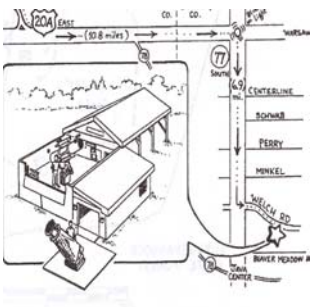

BAA Observatory (BMO)

The Sun – As Understood In 1902

Rowland A. Rupp

Whenever I read an old astronomy book, a pastime of mine, I reflect on how much better informed we are today than were our predecessors of fifty or a hundred and fifty years ago. The authors of those books, some texts, some for informed laymen, were certainly as knowledgeable and intelligent as any of us, probably more so (after all, they thought themselves erudite enough to write books on the subject); it's just that the state of knowledge in their day was far less than in ours. Even as amateurs we are much better informed about the issues they guessed at, or drew erroneous conclusions about, in their time. Wouldn't they marvel at what we have to tell them. That's all right, half a century from now someone will be writing the same thing about our views.

I picked off the shelf Manual of Astronomy, by Charles A. Young, Ph.D., LL.D, Professor of Astronomy at Princeton. It was designed as an intermediate level textbook in 1902, with some updates in 1912 after the author's death. Since the book is comprehensive, I decided to concentrate on just one topic -- the sun. Early in the 20th century much less was known about the sun than today, not that astronomers and physicists have unlocked all its secrets even now. There is enough unknown and uncertain about the sun to keep it a target of active study for the foreseeable future. Here is some of what Young had to say a century ago.

By the beginning of the 20th century the photosphere, what appears to us as its "surface", had revealed the phenomena we know today as granulation, limb darkening and, of course, sunspots. Granulation was variously described as "nodules" or "rice grains" about 400 to 600 miles across. That they might be convection cells transporting energy was not addressed. "Filaments", long streaks seen near sunspots, were described as "drawn out nodules". The photosphere itself was believed to be "a sheet of clouds floating in a less luminous atmosphere". These clouds, likened to clouds of water vapor on Earth, were thought to be composed of liquid particles that had condensed from exposure to the intense cold of outer space. As we shall see later these particles were believed to play an essential role in stabilizing the sun's temperature.

Limb darkening, although that modern term wasn't used in the text, was attributed to the general absorption of sunlight by the lower parts of the sun's atmosphere. In fact, it was speculated that if the sun's absorbing atmosphere were removed completely, the sun's luminosity would increase by a factor of two to five times. The color at the limb was described as "verging toward chocolate", a tasty astronomical description I have not encountered before or since. (contnued on page 5)

BAA Members Publish Research Paper

Flickering and Periodic Activity in the 2004 Outburst of BZ UMa

Price, A.l; Vanmunster, T.2; Starkey, D.l; Boyd, D.3; Zissell, R.4; Gary, B.5; Graham, K.6; Macdonald II, W.l; Aquino, B.l; West, D.7; Blackwell, J.l; Walker, G. 1; Simonsen, M.8; Renden, A.9; Templeton, M. R.l; Mattei, J.A.l

(1)*American Association ofVariable Star Observers (AAVSO),* (2) *Center for Backyard Astrophysics - Belgium* (3) 5 *Silver Lane, West Challow Oxon OX12 9TX UK £mail: drsboyd@compuserve.com* (4) *Williston Observatory, Mount Holyoke College, South Hadley, MA* 0175, *USA* (5) 5320£. *Calle Manzana, Hereford, AZ85615* (6) 23746 *Schoolhouse Road Manhattan, IL* 60442 (7) *West Skies Observatory P.O. Box* 517, *Derby, KS* 67037, *USA*

Abstract: The AAVSO has received 4,270 CCD measurements of BZ UMa over four nights during its March, 2004 outburst. Analysis of the measurements reveals rapid flickering and quasiperiodic behavior but no coherent periodicity (beyond the orbital period) and the notable absence of superhumps.

BZ UMa was detected in outburst visually by Mike Simonsen on Feb 25.3,2004. The AA V SO immediately began an intensive CCD campaign to observe BZ UMa (price et al., 2004). Eleven AA V SO observers made 4,270 CCD observations over the course of four nights. Reduced data were reported to 0.01 magnitudes. The observations were combined into four data sets, representing each night of observations, and analyzed separately. A 2nd order polynomial fit was applied independently to the first, second and fourth night of observations, before their data were combined, in order to remove the long term fading trend and to remove zero-point differences from filtered and unfiltered observations.

Complete paper at: http;//www.konkoly.hu/cgi-bin/IBVS?5526

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Paul Tabor
Articles: various authors

BAA Web Site	BAA Hot Line / Voice Mail Box
www.buffaloastronomy.com	716-629-3098

Location /Time Of Meetings

BAA meetings are held on the ***2nd Friday of the month*** from ***September to June*** in the ***New Science Building on Buffalo State College Campus***. 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 will be due by: ***August 16, 2005***

Managers Of BAA Computer Sites

BAA Web Site	E-Spectrum Web Site*	YAHOO E-Mail Group*
Timothy Finucane	Timothy Finucane	Dennis Hohman Mike O'Connor

* members only

President's Message

Peter Proulx

I set up a new number for the BAA Hot line, which includes a voice mail box for leaving messages: **716-629-3098**

I have recorded an announcement and we can be notified by email when a message is left. Bill Aquino -- as the BMO Director -- was set up as the person to be notified and was also given instructions on changing the message. Anyone else, who would like to have access, can e-mail me and I will send you the instructions. We can even have an auto attendant to dial "1" for observing information, and "2" for highlights of the next meeting etc. Let me know what you think. Call and check the message out.

No words of wisdom this month other than enjoy the summer! Hope to see you at public nights. Until September, Clear Skies!

NO FRIDAY NIGHT MEETINGS DURING JULY AND AUGUST

STAR PARTIES

Bill Smith

It's BAA Star Party sign-up time!

Ground rules:
1) BAA Star parties will not be scheduled on Public Event nights (1st & 3rd Saturdays).
2) Have a great time.

Traditional parties are held in the summer -that's June through August believe it or not. Open dates look like: July 9, 23 & 30; Aug 13 & 27. If you want to do a fall party, let me know and I'll put that on the list.

Advantages of Star Parties are many:
Have a fun time sharing and learning from others.
Interested in imaging / image processing -- someone will probably be doing it.
Need some tips in finding objects -- there will be seasoned observers of all types. Interested in space exploration -- they'll be there.
Try before you buy. If you are interested in a particular scope/eyepiece/gizmo you may well see it at a star party.

You do not:
Need to plan a big spread. Most times folks bring something snacky. If you want to do a bigger cookout -- fine!

You do:
Need to let me know if a problem occurs and you can't be there as host. You can hold them anywhere: your house, friend's place, BMO ..

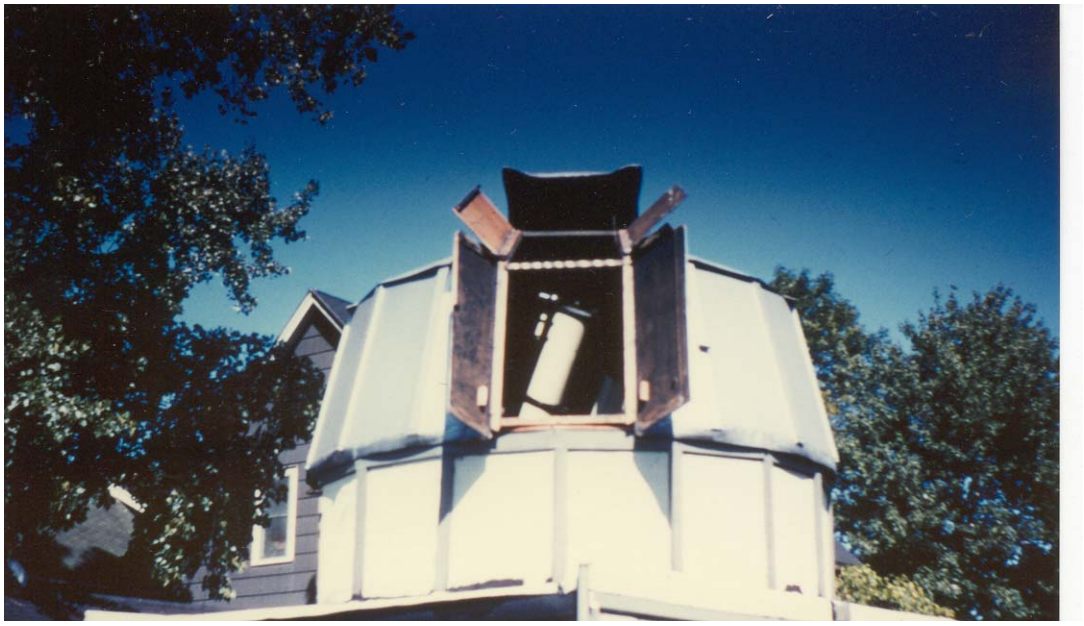
Send me:
Who you are; when you want it; any info (start times, cookout, special requests); map if at an unusual location ...

I will:
Schedule it and update it to the e-group, http://groups.yahoo.com/group/buffalo_astro_assoc/. Post maps & details in the e-group FILES area.
Check back with the host a week ahead. Remind everyone twice in the week ahead via the e-group.

That's pretty much it. Thanks and don't forget the bug juice!

Honey-House Observatory

Darwin Christy



The Honey-House observatory first took light when my son Orrin and I decided to build an observatory out of an old building on the property, which had been used for the purpose of extracting honey from bee's combs or supers. We had already built two 7.5 inch reflectors and it was a hassle to keep taking them out of the garage and setting them up each time. In 1963, we drew up the plans and proceeded to take down the old building, until we had a shell on which to install a dome.

Our first objective was to make sure it had a solid foundation, so we used channel iron for the cross braces at the base. This meant we had to dig deep for the footings, pour concrete into the holes, and install upright bolts in which to anchor the channels. When this was done, the sides were reinstalled and then the floor to the upper level was placed in a circular form. The center pole for the telescope was a piece of schedule 80 – it was sunk into the ground about five feet, with the pole rising upward 6.5 feet.

Now that the main building was done, we installed a round form, with a track on it, so we would be able to turn the dome. We leveled with a special level, which would show level at two distant tubes, instead of a bubble type. For the wheels, we used old roller skate wheels and, in time, added rubber wheels which were little large and more manageable for turning. To keep the dome from running off the track, we added wheels under the dome frame in a so-to-speak gutter. The dome is eleven feet in diameter.

A picture of the original observatory was published in Sky & Telescope; it shows the original one piece door. We later made double doors, as in the accompanying photo; these doors were hard to keep in place. Today, it has a single door in each level -- as it appeared when we first built the observatory .

We have been fortunate with the weather here, but we have had our bit of trouble with the winds blowing the doors off. That now has been remedied by the use of screen door hooks. After all the times we had, it has now become a victim of light pollution. No matter where we look, in the neighborhood, lights of all description have become a menace. Also, trees have grown higher and more leafy. Never-the-less it is still usable, especially with planetary observing and the ever observed moon.

The first Telescope in the observatory was an eight inch reflector, the second was a ten inch reflector, while we have a twelve inch telescope in there now. Orrin and I made all of them.

BAA Annals

Rowland Rupp

5 YEARS AGO - Star parties have replaced our general meetings in July and August since time immemorial. Here's the list for 2000: the Rupps at Lime Lake, Bob Hughes and the Celebration of Flight at Hamburg Fair Grounds, Larry Carlino at Lockport, one at Cherry Springs, and Alan Friedman at BMO. The BAA turned over a $4000 check to the Buffalo Audubon Society to help finance the addition to their Fred T. Hall building. Our members personally donated $3775, the remainder came from our treasury. Three telescope piers were installed at BMO, thanks to the efforts of several members. The pier assemblies were constructed by Anthony Davoli. Tom Bemus and Bill Smith put together a new BAA web site.

Joe Orzechowski concluded his *SPECTRUM* article on observing the stars closest to us. He not only observed these neighbors, but also commented on intriguing rest stops along the way.

Rowland Rupp summarized the work of the schools and campers education program. Over 2500 kids heard from several members who worked on this program since its inception in 1997. Bill Smith listed more than forty stars with distinctive colors, most of them binaries. This is a good observing list for old-timers as well as newcomers.

10 YEARS AGO -The Rupps, Macks, Larry Carlino, and Bill Smith and Carol Lorenc hosted star parties for 1995. President Terry Farrell requested that all members respond to the survey that had been distributed recently.

Darwin Christy had just completed his sixteen year tenure as *SPECTRUM* editor. He wrote an editorial in which he thanked the many people who supported the publication, especially through the articles they submitted. A brief tribute to Darwin was included. He was later presented with a special BAA service award at a general meeting. Steve Kramer continued his article on Colonial astronomer David Rittenhouse, and Bill Smith wrote about his binocular observations made in January and February.

15 YEARS AGO - Dan Marcus arranged star parties for 1990 at the homes of Jack and Jayne Mack, Marilou Bebak, Carol Lorenc and Bill Smith, Bill and Carolyn Halbert, and the Rupps'. A note in Edith Geiger's Spy & Tell congratulated Ernst Both on becoming President of the Buffalo Society of Natural Sciences to complement his position as Director of the museum. Marilou Bebak reported that the BAA's Nancy Adams would hold Summer Sun Shows at the museum, and she thanked Dan Marcus, Gene Witkowski and Conrad Stolarski for adjusting telescopes brought by the public for "Fix-Up Day" at the museum.

Ed Lindberg's Instrument Notes dealt with master flats: metal ones used in instrument labs and shops, and glass ones used in optical facilities. Bruce Newman was the subject of Edith Geiger's continuing series of biographies of BAA members. There was also an article on sunspots by Peter 0. Taylor extracted from the Atlanta Astronomy Club Newsletter.

25 YEARS AGO - Just to be different I'll save the star parties for later. There was an announcement in the 1980 *SPECTRUM* that public nights would be held on Tuesdays at Lincoln Senior High School in Lockport where they had a 12-inch Cassegrainian telescope. Now that we're in the process of re-opening the facility I wonder if that telescope is still there and what kind of shape it's in.

Al Kolodziejczak noted our exhibit at Eastern Hills Mall "was an overwhelming success". The list of people he thanked for their exhibits and attendance is too extensive to include here. I found only five are still active: Darwin Christy, Carl Milazzo, Edith Geiger and Irene and Rowland Rupp. Carl wrote about "NGC Objects Near Messier Objects", and Anonymous wrote about Edith Geiger. There's a switch!

Oh yes, the star parties. Hosts were: Tom and Marty Dessert, Ken and Diane Biggie, David and Gilbert Brink, Joe Provato, and Darwin Christy. Edith Geiger held her annual family style picnic in Orchard Park with an appeal for dishes to pass.

35 YEARS AGO - Star parties in 1970 were held at the home of Irv and Ester Goetz, Les Stoklosa's summer home, the BAA's Newstead Observatory, and Camp Spruceland where Octavia Black, the camp's director and our hostess, fed us sumptuously. Little else was found in this four page *SPECTRUM* except for maps showing the locations of the star parties. It did contain a brief note that Kellogg Observatory at the Buffalo Museum of Science had reached its fortieth birthday and had had 500,000 visitors. Maybe Marilou can tell us why it is called the "Kellogg" Observatory, and how many visitors it has had since 1970.

BAA Policy

Meeting Cancellation Policy

If, for any reason (most likely snow or ice storms), there might be cause for cancellation of the meetings of the BAA tune your radio to either WBEN (930) or (WGR) (550). Also if Buffalo State College has been closed due to inclement weather, the BAA meeting will also be cancelled.

Beaver Meadow Telephone

The is no permanent telephone at the Beaver Meadow Observatory. For emergency use, contact a member to use their cell phone.

Reproduction Notice

(The Sun ……. continued from page 1)

The notion that sunspots were depressions in the photosphere that were filled with cool gases and vapors had been recently discredited and was replaced by the rather compromising thesis that they appear at different levels in the solar atmosphere, where in some cases they form depressions, and in others they are elevated. This idea was somehow based on sunspots emitting more radiation near the limb than when at the sun's center. Apparently more elevation accounted for more radiation. Measurements showed that sunspots weren't all that dark; they are about 1% as luminous as the rest of the photosphere (sounds kind of low to me). The text credits sunspots being "really discovered" after Galileo "invented" the telescope, the latter a misunderstanding apparently held even in high astronomical circles a hundred years ago.

Sunspots were observed to have a tendency to form in prominent pairs, although their magnetic properties, the cause of this phenomenon, was not mentioned. It was known that "solar disturbances" cause magnetic storms on Earth and correlate with auroras. This correlation, however, was attributed to "external influences", suggesting that the solar disturbance was not the cause of auroras, but that both resulted from some unknown outside influence.

The eleven year sunspot cycle was known, as was their forming around 400 latitude at the start of the cycle, which ended when they neared 5°. That new spots begin to form at high latitudes two or three years before the old cycle ends was also known. It was speculated that sunspot counts at maxima might vary with a 35 year period, but it was admitted this idea was very tentative. There was no mention of the Maunder minimum from 1645 to 1715 during which few, if any, sunspots were observed.

What were sunspots? "The most probable view is that they are the result of eruptions", something like geysers in the sun's atmosphere. In doing so they produce a hollow in which cooler gases and vapors collect. Apparently the depression hypothesis was far from dead. Another idea, this put forth by the highly regarded Sir John Herschel, was that sunspots form from cool matter descending from above, probably from meteoric material. Still another, this one attributed to one E. Oppolzer of Vienna, was that gas and vapor ascending from the sun's polar regions drift toward the equator where they descend becoming warmed and dried(!) in the process.

Spectroscopy was coming into its own. Almost a hundred years earlier, Fraunhofer had observed dark lines in the solar spectrum. By now its visible spectrum could be spread out to twenty feet and more than ten thousand lines could be observed. Astronomers knew still more lines existed in the infra-red. Thirty-six elements had been identified, including elements unknown on Earth such as helium and coronium. The quantum mechanics that explained these lines was only in its preliminary exposition in Young's day.

Some elements were unseen in the spectrum. It was speculated that these substances simply weren't included in the sun's composition, or perhaps were among the lines unidentified, having been modified by the extreme conditions on the sun. Norman Lockyer suggested that some elements may not be elementary at all, but were broken into their constituent parts by the intense solar heat.

The chromosphere, lying just above the photosphere, was identified with a "reversing 1ayer" where some spectral 1ines were bright rather than dark, the tell-tale sign of emission against a cooler background. This reversing layer could be seen for two or three seconds during a solar eclipse just after the beginning of totality and again at its end. This is the brief time when the moon obscures the photosphere but not the chromosphere, hence the description "flash spectrum". Hydrogen lines were the most prominent, but signs of helium and calcium were there as well. When the bright yellow line of helium was first seen in 1868 it was attributed to sodium. It was identified as a distinct element found on Earth in 1895, just a few years prior to publication.

The chromosphere was seen to be 5000 to 10,000 miles thick, and was identified as the source of prominences. It was thought to be composed largely of "vapor" (a vague term Young used frequently when describing solar phenomena) similar to material found in the photosphere, with the exception of helium which seems to be unique to the chromosphere.

The corona was a mysterious extension of the sun, also seen only during total eclipses. It was concluded that the corona was made up of filaments and rays that were "strangely curved". Moreover, near the poles, rays curve both ways. These were descriptions of magnetic fields shaping the ionized (a property that was then understood) materials in the corona. It was suggested that forces other than gravity must dominate the strange shape of the corona, and one prescient astronomer, Bigelow, thought electric and magnetic forces might have something to do with it . There was also the idea that the corona was not entirely gaseous but, in addition to coronium, contained "dust and fog". Its extraordinarily high temperature was unknown at the time.

If you're wondering what coronium turned out to be (as did I), it was not a new element at all; it was "forbidden transitions" of highly ionized iron. The million degrees, or more, temperature in the corona strips many electrons from iron atoms, and in this near vacuum allows metastable (slow) transitions to occur to the consternation of early spectroscopists. The true nature of these mysterious emission lines was discovered in the early 1940s.

Each square meter of the Earth was known to receive the equivalent of two horsepower from the sun, of which 70 percent penetrated the atmosphere and arrived at the surface. Knowing the distance to the sun and its diameter, astronomers were able to calculate that each square meter of the sun radiated about 100,000 horsepower. Based on this, and using Stefan's Law for the radiation flux produced for a given blackbody temperature, the temperature of the photosphere was calculated to be around 7000°C, about 1500° too high by today's standards. Stefan's Law was only one of several radiation laws in vogue back then, the others giving temperatures ranging from 1500°C to millions of degrees.

The terminology of the time was interesting, like using horsepower to express solar energy. Elsewhere one finds "candle-power". For instance: "the sun's surface appears to be about 190,000 times as bright as a candle flame". I used the term "blackbody radiator", but the equivalent term used then was "standard radiating power" (where the "standard" was lampblack). This was an era before we understood that solar energy results from atomic fusion of hydrogen into helium. The explanation then was one hypothesized by Helmholtz decades before, which postulated that the radiant energy arose from the conversion of gravitational energy released by the continuing contraction of the sun, a process that would cause the sun's temperature to rise as time went on. (Actually it does rise, but not for that reason.) So what stabilized the sun's temperature? It was the cooling effect of those little droplets of liquid formed in "sheets of clouds floating in a less luminous atmosphere" mentioned earlier.

(continued on page 6)

Spy And Tell

Edith Geiger

Christopher Mullens and his wife are enjoying their 18 month old son, Harry. The couple have also formed a new company producing excellent driving sun glasses.

The **Orzeckowski's** have been having a high old time with Joe's June 15th birthday celebration. They have enjoyed some trips, a trip to North Carolina among them. They had a big party for Grandma. Fun! Fun! Fun!

Carl Ericson and his wife are planning a trip to Arizona. They will be gone 10 days. They have a grown son in California, with three grandchildren. The Eriksson's were impressed with the beautiful flower gardens.

In September, **Darwin Christy and Ann** will be going to Shreveport, Louisiana for the l0th reunion of the Fighter Squadron. Darwin is the official photographer for the group.

[**Lynn Sigurdson** is supposed to be sending a list of their ratings in ice skating competitions. It hasn't arrived yet.]

Membership Corner

Alan Friedman

Summer is a great time to get to know our new members. Short sleeves and late twilight make for good attendance at BMO public nights and (at least for a while) the pleasure of putting faces with the names. We've had a bunch of members join the club over the winter and we look forward to seeing some of these new faces at BMO this summer.

Ellen and Craig Chertack, David Cooper, Doug Hanes, Susan Kelley, Elbert Marsh, Ben McCabe, Steven Scheuermann, Matthew Tanner and Tricia Zuranski -welcome to the BAA!

(The Sun ……. continued from page 5)

What went on in the sun's core, its "central nucleus" , was anybody's guess. The author thought it was entirely gaseous, immensely hotter than the surface, and at enormous pressure, all consistent with current views. But the older idea that it might be solid or liquid was not yet discarded entirely, nor would it be for decades to come. Supporting the notion that the central nucleus might be semi-liquid was the supposed observation that sunspots tend to "break out repeatedly in the same region" thereby suggesting that something relatively fixed in location must cause this property.

That's about it for the sun as seen in 1902. Remember, the author of so much material, erroneous by current standards, was a Professor of Astronomy at Princeton, not a shabby post at all. There's something humbling when one realizes that brilliant people at the forefront of their field can appear to be hopelessly dated and misinformed when their conclusions are viewed in hindsight. Our turn awaits us.

BAA Beaver Meadows And Lkpt Remmick Observatory News

Bill Aquino

Public Viewing Nights At BAA Beaver Meadows Observatory (BMO)

Public Viewing	Speaker	Topic	Sunset	Moonrise	Moonset	Phase Of The Moon (% visible disk illuminated)
2 July	Fred Gordon	The Constellations	8:58 p.m.	3:00 a.m. following day	8:58 p.m.	Waning crescent (14% illuminated)
16 July	???	NEED SPEAKER	8:52 p.m.	4:11 p.m.	1:37 a.m. following day	Waxing gibbous (71% illuminated)
6 August	Joe Orzechowski	To Be Announced	8:30 p.m.		9:34 p.m.	Waxing crescent (2% illuminated)
20 August	Gus Cenkner	Visual Tour Of TheUniverse	8:10 p.m.	9:01 p.m.		Waning gibbous (99% illuminated)
3 Sept	???	NEED SPEAKER	7:46 p.m.		8:00 p.m.	
17 Sept	Rowland Rupp	To Be Announced	7:22 p.m.	7:24 p.m.		Full moon at 10:00 p.m. EDT
1 Oct	???	NEED SPEAKER	6:57 p.m.		6:24 p.m.	Waning crescent (3% illuminated)
15 Oct	???	NEED SPEAKER	6:33 p.m.	5:47 p.m.	11:56 p.m. moon transit	Waxing gibbous (95% illuminated)

Check Weather At BAA Observatory At Beaver Meadows (BMO)

http ://wwwa.accuweather.com/adcbin/public/sat_index_large.asp ?type=sti11&sattype=ir&getArea=NY_&btnGet=btnst

http://www.cleardarksky.com/c/BvrMdwObNYkey.html?1

New Combination At BMO

The combination number was recently changed at BMO. Checked out members were notified by the observatory directors and given the new combination.

BMO Speakers Needed

The public night season is in full swing at BMO and we are still looking for several public night speakers. If your interested in giving a short talk to the public we are looking for speakers on July 16, September 3, and October I and 15.

Remmick Public Nights

The Remmick observatory should be starting public nights in late June. We will be looking for volunteers to give talks and setup their telescopes to share views with the public. Remmick public nights are tentatively scheduled for the second and fourth Saturday of each month.

Access to the Observatories

At BMO combination locks are used to secure the building and at Remmick a key is used. The policy for gaining access to the each of the observatories is;

1. The member must be in good standing (dues paid).

2. To achieve "checked-out" status at a particular observatory a member must attend 2 public night events to learn the basic operations and procedures of the observatory.

3. After attending 2 public nights the member must then participate in a walk-through of the facility with one of the directors to review procedures and building operation, such things as locks, lights, heaters, roof, telescope storage etc.

4. The members name will be added to the list of checked out members maintained by the observatory directors.

5. In order to keep checked out status for the next year a member must have helped out at the observatory on at least one day during the previous year. This could be for a public night, a work party, or a special public service event. The member must have signed into the observatory logbook for that day to obtain credit for attending. Please try to remember to sign the logbook whenever visiting an observatory .

6. If you're checked out status lapses for whatever reason on any particular year, all you need to do is show-up and help out at an observatory event and you will be reinstated.

7. The observatory directors will change the combination or locks at the observatories on a yearly basis or as needed for security reasons. Checked out members will be contacted automatically by the directors whenever this occurs.

Special Thanks

A special thank you to several of your fellow club members for helping out at the observatories. Tom Frank for donating anew heavy-duty lock hasp for the front door at BMO and to Pat Lannon for installing it. Wolf Buechler for re-wiring the Remmick Telescope. Remmick work party volunteers Jeff Gardner, Rick Fusani, Pat Lannon, Wolf Buechler, Jim Lehman, Bill Aquino, and Paul and Andy Tabor. BMO Public night speakers so far including, Paul Tabor, Gus Cenkner, Roland Rupp.

BAA Member Publishes Research Book

A Dark Energy Theory
Correlated With
Laboratory Simulation
And
Astronomical Observations

(First edition)

Mr. Sean Carroll recently noted in his article (Sky And Telescope, March 2005, page 32), "Dark Energy & The Preposterous Universe", that astronomers have still been unable to identify what dark energy is and how it causes some distant galaxies to accelerate. In the **recently published book, "A Dark Energy Theory Correlated With Laboratory Simulations And Astronomical Observations"**, a plausible classical explanation is given for dark energy. The explanation is used to predict main sequence star accelerations, using Newton's Law of Motion., and to show how dark energy could have also created galactic Clusters, Voids, and Walls. It is also shown that dark energy may account for other unexplained phenomena like revolving binary stars, revolving star clusters, counter rotating galaxies, and galactic collisions or close encounters that are the result on one galaxy overtaking and passing another galaxy. Finally, it is shown that under certain conditions dark energy will create wild-stars and wild-dark-bodies; i.e. free floating bodies that have radial velocities that are opposite to the direction of expansion of the universe. The explanation is guided by small-scale laboratory simulations of dark energy, in a plasma tunnel, as it starts interacting with a main sequence star. Predictions are shown to be consistent with reported astronomical observations

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