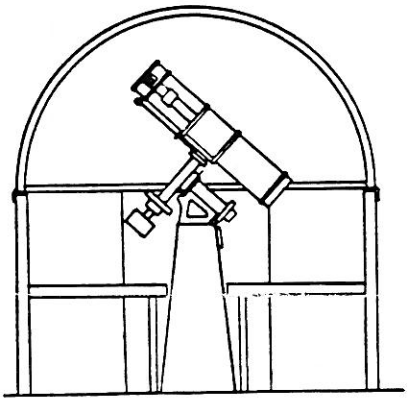
THE SPECTRUM

BUFFALO ASTRONOMICAL ASSOCIATION, INC.
MARCH - APRIL 1993



IN CASE OF EMERGENCY

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

PRESIDENT'S MESSAGE

MEMBERS and FACILITIES UPGRADE

Our club has many talented members, with so much to offer! If we keep a positive interest in maintaining our club's goals, I know we can accomplish many things. A big part of the club's activity involves the formation of friendships. As we reach out to recruit new members and partake in activities, we should remember that people associate us with this club. We can give these people a positive experience, encouraging them to join us as members or support our endeavors.

We were awarded a very generous $6000 grant in dedicated funding from the Buffalo Audubon Society towards our building expansion. This comes on the heels of a $5000 grant from the Buffalo Foundation towards our new 20-inch Obsession telescope, associated gear, computer equipment and the building expansion. Our members have donated or pledged over $3300 dedicated for the new scope. This is $14,300 toward upgrading our facilities. With these grants come the obligation and responsibility to put them to good use. Along with member's use of the new facilities, we need to rebuild our public programs. People get involved when they are shown something that they can see and do themselves. They remember experiences -- good and bad. We want them to have good experiences to broaden and enforce their interest in nature and conservation.

Come, enjoy, experience and learn. Oh, and bring a friend.

Bill Smith

>> MEETING NOTICES <<

MARCH 12th: A review of the 17th century astronomer Giordano Bruno who was burned at the stake for his beliefs.
APRIL 9th: A slide, lecture and video show on an undergraduate project in radio astronomy.

Meetings: 2nd Fridays @ 7:30pm Jan-June and Sep-Dec.
Location: Auditorium of the New Science Building at Buffalo State College on Elmwood Ave.

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

In March Dr. James Birx of Canisius College will present a review of the outspoken Giordano Bruno. Dr. Birx spoke to us back in 1984.

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The April meeting features Dr. Carol Lucey from Jamestown Community College. She will present a multi-media show on her student's work in mapping the sky with the radio telescopes at Greenbank National Radio Observatory in West Virginia. Dr. Lucey is a very energetic speaker who will present a topic we seldom hear about.

Bring a friend and let's give a warm welcome to our speakers!

MEMBERSHIP CORNER

Did you have to beg, borrow, or steal this copy of the Spectrum? Are you eager to find out what topics will be discussed at upcoming membership meetings, what club and observatory activities are planned for the coming months, or what progress has been made on the new 20" scope and the associated observatory modifications? Do you enjoy reading "Astronomical Happenings", "Spy and Tell", "BAA Annals", or any of the other informative and entertaining articles found in the Spectrum? Would you like to have each issue of the Spectrum mailed to your home (again)? Please consider membership in the BAA; dues are only $15 ($10 if you are a student or senior). You may join the BAA by contacting one of us at a general membership meeting or by mail at 125 Roycroft Blvd, Snyder NY 14226.

The 1992-1993 BAA Membership Directory will soon be distributed. Please take a moment to find your listing in the directory and make sure that all of the information is current and correct. If you finally purchased that 6" refractor, married that research assistant who works at Kitt Peak, added a 66 MHz 80586 PC to your list of astronomical tools, or moved to a home with darker skies and a domed observatory in the backyard, please let us know so that we can update your entry in the database. Thanks.

Joe and Bev Orzechowski

BEAVER MEADOW OBSERVATORY *457-3104*

Now that we have had our year's quota of sunny skies all in one month, let's hope it stays this way for public nights.

OBSERVATORY NEWS: By the time you read this, we will have our 20" scope, and a 286 computer! The Beaver Meadow Audubon Center has given us $6,000 towards the construction of an addition to the Observatory to house the new scope, and computer area. Tristan Dilapo has volunteered to act as a general contractor for the building of the new addition. Anyone with connections to building supplies - electrical, heating, building materials, cabinets, counter tops, concrete, who can get labor, and or materials supplied for free, should contact Tristan at 941-5613. We expect to begin construction this spring!!!! There will be a work detail for painting, and maintenance some time early this summer when construction is finished.

STAR PARTIES & OBSERVATORY EVENTS: It is that time of year! As usual all will be rain or shine! See me, Dan Marcus at 773-5015 for openings if you wish to hold a star party. Oh yes, don't have room at home? hold one at the Observatory!! Can't go wrong with a 20", a computer, picnic area, and a bunch of friends ☺. Never been to a star party? They are informal gatherings of club members where we all drag out our scopes, all our toys, and enjoy each other's company. Some people hold all day get togethers, others have just evening viewing. It has been my practice to schedule club events rain or shine, rain days can cause confusion since Buffalo weather can be very localized!

Saturday March 20: Messier Marathon at Beaver Meadow Observatory. Come out and try to bag all 105 Messier objects in one night!! Great way to check out the new 20", and the computer.

Saturday March 27: Bill Smith and Carol Lorenc invite you to their home in Jamestown for Bill's annual Messier Marathon. This is an all night affair, bring your sleeping bag! Spouses and children are encouraged to come. Bill and Carol's "petting zoo" (3 horses, 1 burro, 1 goat, half dozen or so cats, and one dog), along with 20 acres of land make a great play ground for the kids. A pancake and waffle breakfast will follow on Sunday!

Saturday April 1: Our first public night!

Saturday April 17: Astronomy day at the Observatory! 1 pm to 5 pm with public night to follow from dusk to 10 pm. **I need a volunteer to help organize and advertise this event.** Since Buffalo State College is not having a Astro Day I would like to have activities for the kids, and possibly a solar system tour like they had at Buff. State, as well as out computer and telescope show.

Saturday May 1: Public Day at the Observatory. 10 am to 5pm, with public night to follow. Need the usual help to man the observatory.

Daniel R Marcus

INSTRUMENT NOTES

Of the several forms of lens aberrations the one that causes the most confusion is chromatic aberration. This may be because there are two forms of this malady - axial or logitudinal and lateral.

A lens with longitudinal aberration will bring light of a distant onject to focus at different points along the optical axis, depending on the particular color. Red light will come to a focus farthest away from the lens while blue light will be sharpest nearest the lens. This is for a positive lens which forms a real image.

Peter Dollond, the pioneer British optician, found that a negative lens had this effect opposite to a positive lens. If a negative lens follows a positive lens in the optical train teh negative lens will offset the dispersing action of the positive one. That is, the action of the negative lens will be to bring red light to a focus closer to the lens and blue light to a focus at a point farther away from the lens. If the relative thicknesses and dispersive power of the two lenses are correctly matched the light of all colors will all arrive at the same point on the axis, for the invention of which, in 1758 at age 28, the Londoner, Peter Dollond, was justly renowned.

Refracting telescopes use an achromatic lens as the objective lens. The front element is of Crown glass with the surface of highest curvature forward. The back surface may be concave, convex or plano. The rear element is the Flint glass which is of higher dispersive power so that the lens can be made thinner. If the inner curves match the two lens elements they may be cemented together. But lens designers like an air spaced combination better as it gives them freedom to correct other lens aberrations. Crown and Flint glasses are much used as the formulae have been standardized for many years and the ingredients are commonly available.

A refracting telescope gives a good sharp image. But when an area is imaged there will often be troublesome color fringes. This is because of lateral color aberration. The achromatic lens has different magnifying powers for light of different colors. There may be a red fringe all around the desired area being observed. Observers learn to live with this annoyance by mentally tubing it out. It can also be attacked by using glass filters of whichever color needs reducing.

For photography, a lateral chromatic aberration is most troublesome. It can be cleared up by making a second lens combination just like the first one but pointed in the reverse direction and moving it in back of the first lens. This is not done on the simple refractor as it greatly increases the cost and makes the objective end of the telescope very heavy. On the advent of moderately priced reflecting telescopes has solved the troublesome problem of chromatic aberration.

Ed Lindberg

A SURVEY OF GLOBULAR CLUSTERS

Globular clusters, those snowballs in the sky, are amongst the oldest objects in the galaxy dating back to the beginning of galaxy formation. They are still active and evolving as a couple novae have occurred within them and many contain periodic variable stars. Generally they are visually easy to spot unlike many galaxies and gas nebulae. However they can be an observer's test piece in detecting individual stars (resolution) and surface details.

They are excellent objects for small scopes as they are brightly concentrated and a great deal of what is observable in *any* amateur scope can be seen in small (4-8") scopes. There is a lot of variety in globulars and much can be seen with time and diligence. The observations I present were from 40 hours of viewing time since July on 70 of the 88 Messier and NGC (New General Catalog) globulars north of -40 declination. The 29 Messier globs provide a great study of the variety of globulars. I used a 10" Dobsonian with powers of 28 (for locating), 110 (general appearance), 210 (detailed study) on all globs and on selected ones some viewing at 370x.

History: First observed as a non-stellar object by Abraham Ihle in 1665, they remained classed as "nebulae" even through the time of Herschel. Their true nature was discovered by spectroscopic analysis of their light, discovery of variable stars in them and the discovery of our location in and the distance to the center of our galaxy by Shapley.

GLOBULAR ASPECTS: Visibility and detecting detail on globulars depend on many aspects. I'll briefly describe several definitions and visual influences.

Concentration class: The Shapley classification scale for globulars ranges from I (most concentrated) to XII (least). It has to do with the degree of stellar concentration. I'll use 1-12 instead of the Roman numerals. Class 1 globs have tight, intense cores; class 12 globs are loose in structure and more difficult to see as they are spread out without a strong nucleus to help detection. Loose concentration does not guarantee resolution of individual stars as the stars must still be bright enough to see. NGC 6144, class 11, whose 25 brightest stars average mag 16; shows up only as a glow in my 10". The more concentrated a glob, the higher surface brightness it has and so can be seen at larger distances. M75 is the most distant Messier glob at 35000 parsecs (pc). Its conc. class is 1 and this helps its visibility. M55 is class 11 and only 4600 pc distant. Both are in Sagittarius, compare them and see for yourself.

Resolution: To resolve a globular means some of its individual stars can be seen. The average of the 25 brightest stars of M13 is mag 13, some are mag 12, yet NGC 7006's 25 brightest average 17.5! 7006 is of concentration class 1 (very high) so lots and lots of mag 17 and fainter stars make it not too hard to see, but totally unresolvable, in a 10". Often the edges of a globular will resolve as there is more separation between the stars relative to the core.

Magnitudes and visibility factors: Integrated (catalog) magnitude *is not* a reliable factor for visibility. An extended object of sparse concentration means the light is spread out evenly. Defocus a mag 9 star to the diameter the ring nebula, M57. Can you see it? Try a dimmer star or defocus to a larger diameter. Palomar globular clusters discovered on sky survey plates are of sparse concentration (class 12). Pal 5 is integrated mag 11.6, 10' in diameter conc. class 12 and at best only suspected in my 10" on a superb night. NGC 6426 is mag 11.5, 2' diameter, conc. class 9 and readily visible in my 10".

Catalog vs. visual diameter: Catalog values include the distant dim outlier stars of a globular which simply are not visible in amateur scopes. Some Messier globs do appear near their catalog sizes. Most NGCs to me appear 1/3rd their catalog sizes. I use a 12mm Kellner double cross-haired guiding eyepiece (from Orion) to measure sizes. The box formed by the lines is .51 minute of arc across for my 55.6" focal length mirror.

Atmosphere: Sky conditions greatly affect visibility. Nothing beats a clear, dark sky. Take advantage of a clean southern sky to try for some globulars (and other objects) in the deep south. Sometimes you have to leave other objects alone to treat yourself to the far south. There are too few nights to view within 20 degrees of the horizon.

Viewing power: As in viewing the planets, you need power to see details. Except for globulars like M13, M22 and M4, 100x doesn't show much; 200x seems adequate for most details in many globs; and 350+ is certainly useful on nights when it can be used. I've seen detail and resolution at 370x not seen with 200x five minutes earlier or later. Very faint, loose globs often benefit from the higher powers (200x) just to be seen.

Obscuring dust: Galactic dust absorbs light from objects behind it. This dims and reddens the light of any observed object. M14's light is dimmed by 2.4 mags; this makes its individual stars that much harder to resolve.

Distance: As their distance from us increases, light spreads and dims, and the angular separation between cluster members decreases. This makes it hard to resolve distant globs. The nearest Messier globular is M22 @ 2270 pc. Distant globs are visible in amateur scope only if they are of a high concentration (class # near 1). Thus M5, M13 and M92 being *close* (within 7400 pc), of high conc. class, and bright individual members make them impressive indeed.

There is very little gas remaining in globs having been used up in star formation. The haze you see is the image of thousands of unresolved stars, individually invisible. Stars on the verge of visibility appear as a graininess. Globs showing graininess will show some resolution on better nights or with larger scopes. Reserve some time on exceptional nights to revisit objects that previously showed tantalizing glimpses of detail.

Being formed of a concentrated group of stars, therefore of high luminosity, globs have been discovered in our local group and other galaxies. In our northern sky only NGC 1049, a glob in the Fornax dwarf galaxy, is the only non-Milky Way galaxy NGC globular.

PULLOUT

Enclosed is a pull out listing the 88 globulars north of -40 declination. I have included hints on what to look for and selected objects that show certain details. Having it now allows you to start slowly and practice on the 15 globulars visible in early evenings from January through May before the summer and fall rush.

Bill Smith

The "pull-out" mentioned to be included with this issue will not be herewith but will appear in the next issue of the "Spectrum". Save this newsletter and the article herewith to go with the "pull-out"

BAA ANNALS

5 YEARS AGO – Speakers in March and April 1988 were drawn from the BAA membership. In March, Dr. Jack Mack spoke on the supernova of 1987. Bob Hughes followed the next month with "Sounds of Astronomy in Short Wave".

There were several articles in the SPECTRUM. "It's Cold Out There" by Leslie Martin dealt with planetary temperatures. Al Kolodziejczak had a second installment on "Advice to a New Member". There was an article by Ed Lindberg on dark adaptation, and the first part of a profile of Dave Sepulveda by Edith Geiger. A reprint of Dr. Fred West's article (1971 SPECTRUM) on the analysis for a unique method of measuring the curvature of a mirror also appeared.

10 YEARS AGO – In March 1983 we heard from Jesse Eichenlaub, a member of the Syracuse Astronomical Association, who spoke on "The Amateur Space Telescope". It was to be launched late in the 1980s – was it? In April, BAA member Dr. Gil Brink from U.B. talked on "Lasers and Lunar Ranging". We were also looking forward to hearing Dr. Frank Drake of Cornell University speak at the Buffalo Museum of Science on Extraterrestrial Civilization.

Michael Idem had a remarkably comprehensive article on "Deep Sky Observing & Light Pollution". He had conducted a thorough three-year study of viewing conditions at his observing site in Cheektowaga. Steve Kramer wrote on an Astrological Computer he bought at Radio Shack, and Edith's profile was of Doris Koestler. Observation reports by Carl Milazzo, Ed Lindberg and Darwin Christy appeared, as did a report on the Study Section by Ken Kimble. Ken also wrote the BAA Annals then.

15 YEARS AGO – Speakers in 1978 were Richard Karlson from the Rochester astronomy club, who spoke on Stonehenge, and Dr. Gunter Wessel whose topic was "Stellar Evolution". The SPECTRUM carried a "Sky Test" report by David George on the Criterion RV-6 six-inch reflector, a very popular, inexpensive six-inch telescope. His findings were – good optics, poor mount.

Edith Geiger's profile was of Walter Whyman, a fellow of the BAA and the Rochester Academy of Science. Astrophotos by Charles Miess. Tom Dessert and Bill Hewitt appeared. but they reproduced poorly. Although Darwin Christy was not yet editor of the SPECTRUM, he had two articles on his favorite topics - "Constellations of the Ancients" and meteor showers. Larry Carlino was editor in 1978.

25 YEARS AGO - Orrin Christy spoke at the BAA's March 1968 meeting on "Solar Influence on the Lower Ionospheric Transmission of High Frequency Radio Waves". He was studying physics at Canisius College at the time - obviously. Articles on the German equatorial mount by Rom Clippinger and on quasars by Kurt Erland were featured.

In April Walter Whyman spoke on "Comet Ikeya-Seki and Other Comets". Incidently, a total lunar eclipse occurred that night. and since we met at the museum then. we only had to go to the roof to use Kellogg Observatory. Edith Geiger contributed an article on the antics that ensued during the 1910 apparition of Halley's Comet. Orrin Christy wrote on the topic he gave at the March meeting.

The SPECTRUM carried an announcement of the intention to organize the Niagara Frontier Council of Amateur Astronomical Associations (NFCAAA). Ed Lindberg was the key person in forming this still active group, which we hosted. thanks to Dave Fliss and others, this past fall. According to the announcement in the SPECTRUM its purpose was:

1. The formation of a speakers exchange pool and a program planning pool.
2. Joint meetings or joint summer star nights or both.
3. Coordinated observing projects extending over large and remote areas.

Rowland A. Rupp

WALTER WHYMAN

While writing the BAA Annals. I came across Edith Geiger's 1978 profile of Walter Whyman who, because of a severe stroke suffered eight years ago. has not been able to participate in club activities. Walter, a Batavia resident, joined the BAA in 1952. He was also a member of the Lockport and Rochester astronomy clubs. He served as a BAA Board Member-at-Large on two occasions. and was elected to the College of Fellows in 1970.

In mid-January I spoke to his wife, Gertrude, who told me that Walter is currently at the Wyoming County Nursing Home in Warsaw, N.Y., following a serious bout with pneumonia. He remains partially paralyzed and unable to speak. She hopes that some of his old astronomy cronies will visit him.

Rowland A. Rupp

ASTRONOMER from the PAST

Harold Jacoby

An Amercian Astronomer, HAROLD JACOBY was born in New York City on March 4th 1865. Upon graduation from Columbia University in 1885, he applied himself to astronomical research. He was then appointed as an assistant astronomer for the United States eclipse expiditon to West Africa in 1889-1890. Later, in 1894, he became professor of Astronomy at Columbia University where he was an active member of the leading astronomical and scientific societies at home and abroad.

His many writings include technical monographs in astronomical photography, stellar paralax and star clusters. Those have been published in many Russian, English and French societies as well as having been frequent contributions to the periodical press in popular astronomy and standard textbooks. Among some of his works are:-

"Practical Talks by an Astronomer"; 1891
"Astronomy, a Popular Handbook"; No available date
Navigation"; 1900's

After retiring at the age of 75, he relaxed until his death on July 20th 1932 in New York City.

Dawrin Christy

From the newsletter (REGULUS) of the Royal Astronomcial Society of Canada, Kingston Centre, dated Jan/Feb 1993 is the follwoing article pertaining to light poluution. It was reprinted from the 'International Dark-Sky Association' in Tucson, Arizon.

LIGHTING AND CRIME

Does outdoor nighttime lighting prevent crime? The answer is nobody knows. There have been studies in the United States and in Europe examining this issue, and they have come to no defifnite conclusions that can be applied to society as a whole. Some studies suggest that lighting a particular neighborhood or park reduces the local crime rate. These types of studies often suffer from poor controls, poor scientific methodology and failure to include long term follow-up. Other studies show no significant change in crime rates after the installation of lighting, then we should have made considerable headway by now. Our cities have never been brighter, yet the crime rate is higher than ever. The connection between crime reduction and increased lighting is vague at best.

It is safe to say that good lighting in a park, neighborhood or shopping mall may indeed bring more people out for shopping and recreation. If this is the case, there may be less crime, as more people are present. On the other hand, harsh excessive lighting with glare may give a trashy wasteland appearance to a street or neighborhood causing people to auromatically associate it with a high crime rate area. Think about how many places there are in our big cities that are brillaintly overlit and devoid of pedestrians. There are anecdotal reports of increased crime and vandalism after the installation of lights. An article in "Building Operator"(*) discussed how school distraicts across the country are actually turning off lights on school grounds to reduce vandalism. This also saves money by reducing the energy use. There is no scientific evidence that nighttime blackout of lighting will always reduce vandalism, just as there is no evidence increased nighttime lighting necessarily crime. A poorly conceived lighting program instituted by public hysteria over crime and vandalism can cause more harm than good. It often inflames public passions and magnifies the problem out of proportion to its size. It offers people a solution that won't be effective, giving the public a false sense of security, and it wastes funds that could be better spent on other social needs, such as more police or a better recreation program for school dropouts.

Is there then a public need for nighttime lighting? Of course there is! Numerous studies demonstrates reduced automobile and pedestrian accidents on properly lit busy roads and arterials. Reasonable lighting levels are necessary for urban living. However, quiet suburban neighborhoods probably do not need any street lights whatsoever or, at the most, lights only at busy corners. Malls and shopping center parking lots need reasonable lighting levels during business hours. After hours, the lighting levels can be greatly reduced or the lights entirely turned off. As in all cases with outdoor nighttime lighting, the lighting must be well thought out and well designed for the tasks at hand, keeping in mind the need for public security and recreation as well as the need to protect the beauty of the nighttime sky.

Author's name unknown

Editor's note:- The newsletter, REGULUS, from the Kingston Centre of the RASC, plans to publish the article on, "Building Operator" in a future issue, and with their premission it will be in our newsletter at some future date.

ASTRONOMICAL HAPPENINGS

MARCH
1 - PLUTO statioanry
FIRST QUARTER MOON
3 - Conjunction - MARS & MOON
5 - Conjunction - CERES & SUN
8 - MOON at perigee (356,528 km)
FULL (WORM) MOON
MERCURY at inferior conjunction
9 - VENUS statioanry
Conjunction - JUPITER & MOON
10 - VIRGINID meteors
11 - ZETA BOOTID meteors
12 - BAA MEETING
The SUN leaves AQUARIUS and enters PISCES
14 - LAST QUARTER MOON
16 - CORONA AUSTRALID meteors
17 - Conjunction - NEPTUNE & MOON
Conjunction - URANUS & MOON
20 - Conjunction - SATURN & MOON
VERNAL EQUINOX
CAMELOPARDALID meteors
23 - NEW MOON
24 - Conjunction - VENUS & MOON
26 - The SUN grazes CETUS
VIRGINID meteors *****
30 - JUPITER at opposition
FIRST QUARTER MOON
31 - Conjunction - MARS & MOON

APRIL
1 - VENUS at inferior conjunction
4 - KAPPA SERPENTID meteors
5 - MERCURY at greatest elongation (28° West)
MOON at perigee (358,381 km)
6 - Conjunction - JUPITER & MOON
FULL (PINK) MOON
7 - DELTA DRACONID meteros
9 - BAA MEETING
ALPHA VIRGINID meteros
13 - Conjunction - NEPTUNE & MOON
Conjunction - URANUS & MOON
LAST QUARTER MOON
14 - Conjunction - MARS & POLLUX
16 - Conjunction - SATURN & MOON
Conjunction - MERCURY & VENUS
The SUN leaves PISCES and enters ARIES
17 - RHO LEONID meteros
18 - MOON at apogee (405,951 km)
19 - Occultation - VENUS & MOON (This occultation will take place throughout most of the United States. It will begin early morning in Hawaii and by midnoon will have crossed to the Atlantic Coast.)
VENUS statioanry
Conjunction - MERCURY & MOON
20 - Heliocentric conjunction - URANUS & NEPTUNE (The last time this accurred was in 1821, even before NEPTUNE was discovered.)
21 - NEW MOON
22 - NEPTUNE stationary
LYRID meteors
25 - MU VIRGINID meteors
26 - URANUS statioanry
28 - Conjunction - MARS & MOON
ALPHA BOOTID meteros
29 - FIRST QUARTER MOON

The VIRGINID meteors of March 10th are not to be confused with those on the 26th. It is a far lesser shower but does have significant bright meteors with a greenish glow. When observing them, they might seem to be sporadic meteors as their radiant does not converge to a central point, only close.

The DELTA DRACONID meteors are not a significant shower but are worth the time to observe them. The brightest meteor might show as a 5th magnitude streak with a yellowish hue. They are short in length and duration. TRY THEM!!!

SPY and TELL

Rowland and Irene Rupp are planning a sojourn to Albuquerque in March. Should be an exciting trip with so much to see and enjoy.

Son, Anthony, passed his bar exam and is now a lawyer. Congratulations!

Joel Stuckey is a very busy student at Buff State, majoring in physics. He expects to receive his degree in '94. He works part-time at ORCHARD SOFTWARE SYSTEMS out of Eagle Heights in Orchard Park, where they make computer systems for businesses and also sell monitors and so forth.

On February 5th, it was announced in the Buffalo News, the date and place that the volunteer examiners from Western New York would be giving ham radio exams for amateur licenses. Those interested could contact Vernon Siegel. Vern, as many of you know, has been an amateur radio operator for many years with an extra class Amateur Radio License. He is also a volunteer examiner, and teaches courses for ham radio.

Joe and Beverly Orzechowski went to Orlando where they were godparents at the christening of their nephew. They were in Orlando for five days relishing a break from our deep chill.

Tom Nigrelli has been a runner for a number of years, and every Saturday morning he and a group of runners take off from Chestnut Ridge Park and continue on a 6 mile loop south of the park and return to Chestnut Ridge.

Tom and Nancy have three bird feeders at their home, and Tom is becoming an interested observer. With the help of a bird book, he is beginning to recognize various species. Don't be surprised if he becomes a birder.

Donald Wessel is a principal of a small Christian school in North Tonawanda. Son, David, graduated from U.B. in accounting and moved to Newark, New Jersey, in February, to become an accountant analyst with the Prudential Life Insurance Company. Donald and Mrs. Wessel went along with their son to help him with the settling of his apartment.

Alice Mack, who is now in 9th grade, is going to Spain during spring break. She will also be singing in the Erie County High School Chorus, March 18-19, at U.B. in Slee Hall.

On February 5th, Orrin Christy and his team attended the Inventor of the Year Award Dinner at Grand Island Holiday Inn, where announcement was made of the winners in a competition sponsored by the Technical Societies Council of the Niagara Frontier, and the Niagara Frontier Patent Law Association. Three hundred patents had been submitted previously from the western half of New York State, and forty finalists were invited to the dinner. The team from Moore Business Forms, Inc. comprised of Orrin Christy, James Halliday, David Holler, Mark Matheis, and Paul Paroff, received the third place award for their invention: the Ion Deposition Web-fed Print Engine. Congratulations!

Edith L. Geiger

THE FIRE GOD

Only thirteen years after the discovery of the eighth planet, Neptune, the ninth was discovered by a French physician, Dr. Lescarbault, who lived some eighty miles outside Paris. He made his discovery on March 26, 1859 when he saw the dot of a planet transit the disk of the sun. Actually, he didn't make the announcement of his discovery immediately, he was prompted to do so a few months later upon seeing an article by Leverrier, who had successfully predicted (along with Adams) the hypothetical location of Neptune.

In 1846 Leverrier predicted the position of Neptune based on purturbations of Uranus' orbit. This work led to the discovery of the eighth planet by Galle at the Berlin observatory in the same year and established Leverrier's reputation as a master of the mathematics of planetary motion.

A year before Neptune's discovery Leverrier had predicted an intramercurial planet to account for a peculiarity in the orbit of Mercury. It must have been a new article on this phenomenon that encouraged Lescarbault to make his transit observation public. Perturbation theory combined with Newtonian gravity accounted for an eastward advance of Mercury's perihelion (its closest approach to the sun) of 570 seconds of arc per century. However, Leverrier found that the advance of the perihelion was about 40 seconds greater than predicted. In his words, (Mercury) "seems to exist for no other reason than to throw discredit on astronomers." His calculations suggested that a planet having a mass of about half of Mercury's with an orbit interior to it would account for the perturbation.

Fortunately for posterity, room was left open for other explanations based on scientific principles to be discovered in the future. One suggestion was that gravity might be minutely affected by the velocity of the object in question - a sort of precursor idea to the eventual right answer.

Based on these predictions and the French physician's observation, the new planet was believed to be only thirteen million miles distant from the sun and to complete a revolution in just over nineteen days. Lescarbault estimated the planet had a diameter of about seven seconds of arc which, at that distance, is equivalent to around 2500 miles. Given that diameter and Leverrier's estimate of half the mass of Mercury makes the density of the two planets similar, adding credibility to the observation.

The new planet was named Vulcan, after the Roman god of fire, the son of Jupiter and Juno. He was tossed out of heaven, either by his mother or his father, depending on whose account you read, but was adequately compensated - Jupiter presented him with Venus for his wife.

Vulcan, or rather his Greek counterpart Hephaestus, played an important astronomical role for the early Greeks. The Earth was perceived as flat and the land area was thought to be surrounded by water, probably a legacy from Thales. It was Vulcan's job to transport the sun from the west where it set, to the east so it could rise again the next day. Vulcan grabbed the sun as it set in the western ocean, placed it in his golden boat and rowed furiously around the northern ocean to position himself for the next day's sunrise. He then flung the sun into the morning sky with enough force to propel it across the heavens for the rest of the day, while Vulcan reversed the trip just completed so he would be ready to catch the setting sun once again. Poor Vulcan, when did he ever have the leisure to enjoy the charms of Venus?

During the summer, Vulcan heaved the sun mightily and the sun travelled in a high arc causing daylight to last long. But this made for hard rowing during the abbreviated night when he transported his heavy burden back to the east. Ultimately, his flagging strength reduced the height of the sun's flight each day. As the nights lengthened, Vulcan gradually recovered from his exertions; once again he could fling the sun high and a new summer was at hand.

The problem of confirming the discovery was vexing. With an orbit only thirteen million miles from the sun, Vulcan would never be elongated from the sun by as much as eight degrees, making it difficult to see in the solar brilliance. Two other approaches were possible. One was to look for another transit. A planet so close to the sun should transit fairly often as long as its orbit was reasonably close to the ecliptic. None were seen.

The other approach was to observe Vulcan during a total eclipse of the sun. Nothing was seen until the eclipse of July 29, 1878 when two observers, James Watson and Lewis Swift, independently claimed to have recovered the ninth planet. However, their observations didn't coincide and, worse, because of their positions neither one could be the same object predicted by Leverrier and reported by Lescarbault. Before long both observers claimed to have seen two intramercurial planets!

Finally, their observations were dismissed; Heinrich Peters, Professor of Astronomy at Hamilton College, summed it up in a paper. He concluded that Watson had seen just background stars and that Swift, who wrote several reports on his observation, was so muddled that his findings weren't worth serious consideration. The ascerbic Peters must have been right, Vulcan has never been confirmed, and the distinction of being the ninth planet has subsequently been awarded to Pluto.

If there really had been a planet where Leverrier and Lescarbault claimed, what would it have been like? From our point of view, if we could ever see it at all because of its proximity to the sun, it would have a brightness of almost -3 magnitude when at elongation, assuming it had the same low albedo (reflectivity) as Mercury - about 0.06. This makes it nearly five times as bright as Mercury or as bright as Jupiter. Even in the solar glare one could imagine finding such a bright object if one looked in the right place at the right time.

It would be a hot little world. If the planet rotated fast enough to distribute its heat uniformly over its surface, the temperature would average close to 900 degrees F (750 degrees K), far above the melting point of lead. If its rotation rate was the same as its orbital period, a reasonable assumption for a body so close to its massive parent, the temperature directly below the sun would exceed 1400 degress F. A view of the sun from its surface would extend over 3.5 degrees, compared to 0.5 degrees as seen from here.

Just as well the ninth planet wasn't where Leverrier had expected it - for his sake. Remember, it was conjured up to explain the 40 second per century anomalous advance of Mercury's perihelion. Well, the excess advance of Vulcan's perihelion would have been around 250 seconds per century. How would Leverrier have liked that?

Leslie Martin

ABSOLUTELY YOUR LAST CHANCE!!!

No one has claimed the two sweatshirts left at one of the Lime Lake star parties. Both are extra large. One is white and has a Buffalo Bills logo printed on it, the other is red with an mammoth on it announcing the Big Chill exhibit at the Museum of Science. If you claim them call me at 839-1842.

Rowland A. Rupp

The following article is from a long ago member of the Syracuse Astronomical Society. He was an avid member of the Niagara Frontier Council of Amateur Astronomical Associations of which he served as one of its chairpersons. There are those who will remember him from his various activities in astronomy in the northeastern area of the United States. This newsletter, "The SPECTRUM," will surely reach out and find others who remeber him as a guest speaker on Breezy Hill near Springfield, Vermont at many of the Stellafane Conventions. Dr. Donald Botteron is now a member of the Rose City Astronomical Club in Portland Oregon and I am sure he is very active there as he was in our area.

LUNAR ECLIPSE WATCHING by a TYRO

My daughter from Boston sends me some information from her E-mail source which demonstrates the action of an uninformed but keen mind in the presence of astronomical phenomena, and the inaction of incurious minds in the same situation.

Gerard Fryer, a perceptive resident of Hawaii whose expertise in astronomy is pretty much limited to telling day from night and the sun from the moon, was prodded by his daughter to drive up Halaekala late in the day of 15 June 1992, with the hope of getting a picture of the rising full moon over the shoulder of Hanakauhi, which would itself be in the alpenglow. Ready to capture a dramatic picture, Gerard studies his scene: Hanakauhi was indeed in the sunset glow, but there seemed to be a cloud interfering with his full moon. Waiting for the moon to rise away from the "cloud" he lost the alpenglow and then realized that he was looking at a partial lunar eclipse.

He doesn't record whether he took any pictures now, but there were a few other sunset watchers nearby, so he pointed out the eclipse to them. They weren't impressed at all: "What's so unusual? It's just a crescent moon." No explanation that a crescent moon had to be near the shape of the shadow across the moon was totally different from the terminator line of a crescent moon. One of the group stated, "It looks fine to me. It's just a crescent Moon," and with that the group wandered away, no longer to be bothered by a conversation carrying the least bit of scienctific knowledge.

Dr. Donald Botteron

(Below is a letter from Dr. Botteron to the editor)

29 Jan 1993

Darwin Christy
216 Kohler Street
Tonawanda, NY 14150

Dear Darwin,

My daughter does all sorts of odd things via computer which I am not able to comprehend, but they work so I am in no position to complain. One of the wonders is E-mail, and just now she is in London but she and my son, here in Portland, can communicate faster than I can get this to you

Some time ago she sent me, via David, quite a bit of material relating to the lunar eclipse of 15 June, 1992, and I have written up the enclosed portion which I have turned over to our newsletter editor, and then realized that there are other editors who plead for more material. Well, if Buffalo can use it, be my guest. One kick I get out of your newsletter is the occasional article by Ed, and I always recognize his style before I get to the by-line.

We didn't hear from Ed and Olga this Xmas. I recall once before we heard from them rather late, with an indication that the creakings of old age were slowing things down for them - I hope it is no more than that for now. As a matter of fact, I'm not really sure just how old they are, but they have indicated that they are getting dependent on neighbors for shopping and such. Betty and I are both 76 and looking forward to similar problems somewhere there down the road.

I guess we older types try more to stir up old memories, and Ed's article about the formation of the NFCAAA really sank home. That was in the days when Bill Minerd was cracking the whip at the SAS, and I didn't know about the NFCAAA until the second meeting. I think the group has been a great catalyst for growth around your area, but it seems to be dragging its heels nowadays

In this remote corner of the country it is still a great pleasure to receive the newsletters from Buffalo and Syracuse, and I compliment you on turning out a fine example each time.

So long for now

Don

"SPECTRUM" DEADLINE

The DEADLINE for the **MAY/JUNE** 1993 issue is **no later than** APRIL 9th.....

FOR SALE

One MEADE Telescope - escellent condition with a diamater of 88 mm and a 1200 focal length. A very sturdy tripod with an equatorial mounting, heavy duty. Many lenses and all accessories. Asking $295.00. Call John Filsinger - (716) 693 1736.

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) SWITCH I RAN DRY
Jimmy Olson would call him chief.

2) SETS UP CHALET
No frequent flyer miles if you ride on this!

3) ELECTS MY HALO
One that Levy DIDN'T discover!

4) LUNAR BEING
Did H.J. Heinz name this?

5) NOW AT NINE
Dual mirror model - top and bottom.

BN 3/93

Answers to Jan-Feb issue: 1) solar eclipse 2) Pleiades 3) asteroid 4) Orion nebula 5) solar flares

MAY DINNER MEETING

The Annual BAA Dinner Meeting will be held on May 14, 1993 at the Coachman's Inn, 10350 Main Street, Clarence, N.Y. (759-6852). Our Speaker will be Dave Toot, Solar Physisist at Alfred University. His topic is "The Sun's Up At Alfred University". The cash bar cocktail hour starts at 6:00 p.m., dinner is at 7:00 p.m. The sit down dinner includes: soup, salad with creamy sweet and sour dressing, baked potato, vegetable, bread and butter, dessert, coffee or tea, and a choice of either Breast of Capon (boneless breast of chicken stuffed with their own special dressing), or Tenderloin Tips Chasseur (tenderloin tips sauteed with bacon, mushrooms, and burgundy served over rice). In the case of dietary restrictions, special arrangements can be made, call Melissa Marcus at 773-5015 for details. Tickets are $15; please send check (payable to the Buffalo Astronomical Association) and entree choice form to Steve Kramer, 80 Donna Lea Blvd., Williamsville, N.Y. 14221 (634-7694). ***ADVANCE TICKET SALES ONLY***, please reserve as soon as possible, deadline is April 24!

Yes I would like to come to the May 14 dinner meeting:

Name_____ number attending:_____
phone# _____
My selection(s) for the Entree(s) are:
_____ for the Chicken Entree
_____ for the Beef Entree
_____ Total X $15 = _____ amount enclosed.

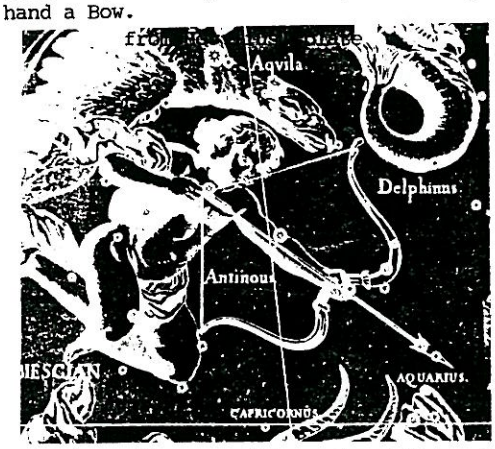
Send to: Stephen Kramer
80 Donna Lea Blvd
Williamsville, N.Y. 14221
phone: 634-7694

please make checks payable to Buffalo Astronomical Association

ANCIENT CONSTELLATION

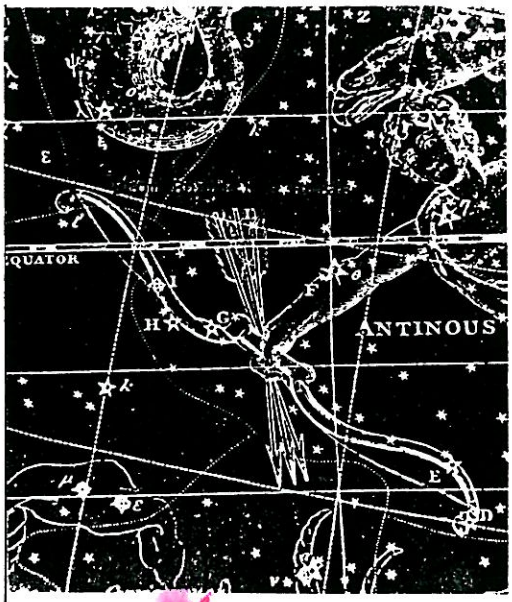
ANCIENT SAGITTA

When 'Antnous' was first invented, (see the July-August 1992 issue of the "SPECTRUM") he appeared to be clutching a Bow & Arrow in his hand. Antinous lies below Aquila, whereas the present day Sagitta lies above Aquila. This little known ancient constellation, "Ancient Sagitta", was given its name when it was discovered with the ancient constellation, Antinous. This constellation is from Hevelius' "Pordromus", which he later added after founding Antinous. In it, he included, not only the Arrow, but also placed in Antinous' hand a Bow.



The only charts and/or maps I have found this allusive constellation are pictured on one of Burritt's maps; and on one of Hevelius' plates. As pictured on Burritt's atlas shows Antinous holding the Bow & Arrows in one hand. In the plate by Hevelius, Antinous is pictured as actually drawing the Bow & Arrow as if he were hunting. This, as well as other constellations of the past have vanished since well before this century..

Darwin Christy



Treasurer's report

General fund - $1075

Observatory fund - $382

New Telescope fund - $2928

Checking - $3073

Savings - $1312

Steve reminds you if you have donated to the NEW SCOPE or the COMPUTER FUNDS - it is **TAX DEDUCTABLE!!!**

A TECTRON 26" f/5 on a custom built cart. Eyepieces finder extra **$For Sale$**

A TECTRON 25" f/5 telescope on custom cart, asking $5,500.00. Eyepieces and finder extra. Call Ted Zendarski - (716) 826 2488

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* The "SPECTRUM" *

BUFFALO ASTRONOMICAL ASSOCIATION, Inc.

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

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