

The Spectrum

Volume 4 Issue 1

Early Winter Edition

Jan / Feb 2002



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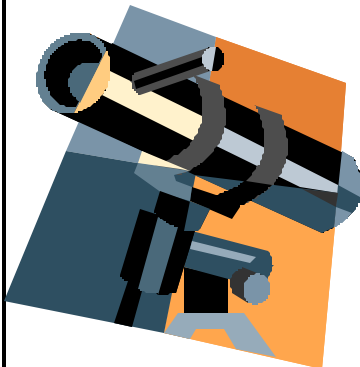
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Measuring the Astronomical Unit

Joe Orzechowski spoke at the November 9th BAA meeting on "The Scale of the Universe." His grand tour included a description of measuring the distance to nearby stars by means of parallax. Now a baseline of a known length is the starting point for parallax measurements. They used the distance from the sun to earth, the A.U., therefore the question arose, and how the length of the A.U. measured was. I didn't know, Joe didn't know and apparently no one else in the hall knew the answer to that question.. Pondering sometime later over why this fact wasn't better known I decided to look it up.

As a result of the work of Kepler 1612 and 1619 and others and the observations of the planets in their orbits the general structure of the solar system was pretty well known early in the 17th century. Over the period 1640-1660 Gascoigne, Wren, Huygens and others successfully applied the micrometer to the telescope making much *more* accurate measurements possible. On this foundation the orbits of the first 6 planets and the relative sizes of the orbits were well established by the 1st half of the 17th century, but not the absolute sizes.. Later refinements came only with Newton 1687 and Einstein 1915.

In the last half of the 17th century navigators were becoming aware of the fact that the earth was not a true sphere and the equatorial bulge was throwing their observations into error. It became highly desirable to know the shape and size of the bulge and several attempts were being made to measure it. Newton and Huygens worked on the problem with indifferent success as did the Paris Academy of Sciences. To further their investigation the Academy wanted to measure gravity in Paris and in the tropics and they enlisted Cassini at the Paris Observatory in the effort. The year was

1672 and there was to be a close opposition of Mars in that year so Cassini sent a colleague Richter, to French Guinea with a second pendulum to measure gravity and with instruments to measure parallax on Mars(The gravity was different).

To make simultaneous observations of Mars relative to background stars from points on earth 4000 miles apart posed some problems in those times. Since the point of observation, Earth, and the target, Mars, were both moving rapidly perpendicular to the direction of observation accurate timing was essential. By observing the inner satellite of Jupiter in eclipse they timed their readings.

If my calculations are correct they were looking at an offset of about 3.5 arc seconds, certainly within the ability of the instruments of the day. From these readings Cassini was able to publish a finding of 87 million miles for the A.U. not too far off from the 93 million miles we accept today.

Great acclaim, The Nobel Prize, no way, the finding wasn't greatly accepted until Romer 1676 and others timed the transit time of light across the orbit of Earth and Bradley 1726 estimated the velocity of light by aberration was Cassini's work confirmed.

So I guess knowing the A.U. in miles or kilometers was no big deal in an age that measured the distance from New York to Boston as two days by stagecoach. Joe, one last question about the scale of the universe. How is the velocity of gravity determined in a vacuum? In a solid?

—Carl Ericson—

Observatory Report by Bill Aquino

The Leonid Meteor Shower

We were fortunate this year to have superbly clear skies at the observatory for the spectacular Leonid Meteor Shower on the night of November 17th. Although the observatory was officially closed to the public back in October we found ourselves the hosts of a large public crowd for the well-publicized Leonid shower. At least a dozen members decided to observe from BMO and were joined by almost a hundred observers from the

public. This is remarkable considering we did not advertise public viewing from BMO. Folks who knew about the BAA and BMO simply showed up including dozens of boy scouts staying the night in the Fred T. Hall Nature Center. A GREAT time was had by all that attended this informal spontaneous observing party. We even had a visitor (a professional meteorologist) and his children from as far away as the state of Michigan. I guess BMO

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BAA OFFICERS

President—Daniel Marcus
Phone: 773-5015
Vice President—Dr. Jack Mack
Phone: 632 6210
Secretary—Joe Orzechowski
Phone: 632-7091
Treasurer—Bev Orzechowski
Phone: 632-7091

OBSERVATORY DIRECTORS

Bill Aquino 731-9366
Neil Dennis 322-7596

MEMBERSHIP DIRECTORS

Tristan Dilapo 941-5613
Alan Friedman 881-4310

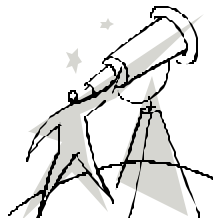
SPECTRUM STAFF

Editor —Jamie Seibert
Phone: 689-3349
Circulation—Ella Abate
Phone: 773-2398

**President's Column**

Well, it is the start of a new year. I hope you all have clear skies to try out all your new Astro Toys! Just a reminder the next board meeting will be 7:30pm Wednesday February 6, 2002, at Buff State. The next Speakers Committee will be January 3, contact Jack Mack or the Orzechowski's for the location, and time. The Speakers Committee is always looking for suggestions on topics and speakers, so feel free to make suggestions. In case you missed it, I will be bringing videos of the Leonid Meteor Storm to the January meeting for show and tell. See you all there!

Daniel Marcus

**MEETING CANCELLATION POLICY**

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

BEAVER MEADOW TELEPHONE

The telephone at Beaver Meadow, 716-457-3104, is for emergency use only at no cost. Local calls may be

placed for a small charge - see the collection box by the phone. This phone cannot make long distance calls.

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Meeting Notice by Joe Orzechowski

Member Fred Gordon will be our main speaker at the January 11, 2002 meeting. Join Fred in the planetarium where he'll be mixing science and folklore in his discussions of the stellar groupings we call constellations. He'll not only show us where the constellations are in the sky and how to find them but also regale us with the tales of kings, queens, gods and sea monsters that have been associated with the constellations.

On February 8, 2002 we open the floor to members who may have an astronomy video to share with the rest of us. Both professionally made videos and home made videos (some of which are no less professional looking than the store bought variety) may be presented. Members who wish to have one or more of their videos included in the program should contact Dr. Jack Mack and let him know the approximate running time and the video

format (e.g., VHS tape, CD, DVD, etc.) Please don't be overly critical of your own work. Most of the other members realize how much time and effort are involved in capturing photons on film, tape or disk. When the captured photons actually form a recognizable image, we are amazed. So please let us enjoy the fruits of your labor. Besides, what's the point of doing all that work if you can't show it off once in a while.

As always, the BAA meets on the second Friday of each month from September through June (except the March dinner meeting) at 7:30pm in the New Science Building, Room NS213 on the Buffalo State College campus. Visitors are always welcome at any of our meetings.

Membership Corner

In the spirit of the season and thoughts of keeping in touch with our friends, work has begun work on the 2002 edition of the BAA membership directory.

For the first time this year we will make the directory available in digital (pdf) format which can be read on your home computer and printed out for reference on standard paper using a free software program - Adobe Acrobat Reader. The benefits of providing our directory in this format are many. The document can be live and current - updated and distributed as the club grows or the need arises - rather than being a once a year project that omits many of our newest members. And we can save the club hundreds of dollars annually in printing costs which can help to fund other purchases or projects.

The new directory will be emailed to all members in good standing in the beginning of the new year. To ensure that we have

your current email address on file send a quick note to me at alan@greatarrow.com. Include any other changes to your listing - and include a favorite astronomy link to share in the *Favorite Sites* section of the directory.

A warm welcome to our newest members,

Jeff Albert
Jerome and Tammy Banks
Michael and Marie Bergal
Derek Bill
Steve Cohen
Paul Heinen
Ed Kahn
Sharon Krawczyk
Jay McDonnell
Keith and Elaine Price
Hezekiah Webster

And best wishes for happy holidays to everyone.

Alan Friedman
and Tristan Dilapo

Naked Eye Viewing Program by Bill Smith

NAKED-EYE VIEWING PROGRAM

... *A first step in astronomical observing*

Get acquainted with the large scale features of the sky. Naked-eye viewing involves both atmospheric phenomena that can be seen in daylight or twilight and many astronomical things that can be seen only at night. 34 objects are listed, plus 6 more "premium" or more difficult objects requiring dark skies, unusual conditions or are rare events.

WHAT YOU NEED

1. This checklist/guide
2. Extra outerwear. Dress warmly as observing means you're not moving much! Summer nights are often cool. If you are uncomfortable, you will not be enjoying yourself.
3. A few trips outside. The 'first step outside' is often the most difficult. The second and so on are much easier!

HANDY TO HAVE ALONG

1. Planisphere or monthly star chart
for orientating yourself to the sky and constellation and star identification
2. Red light (Flashlight covered with red paper napkin)
for reading the planisphere & references or for making notes
2. Blanket or reclining chair
for just relaxing and gazing at the sky, either to study or just enjoy the view

As you see more you will want to know more. Try some of the references listed in the "observing club" supplement. Many are in the library or at the observatory.

ATMOSPHERIC OBJECTS

Astronomy doesn't concern just 'outer space'. Many events occur right in our atmosphere. Consult Marcel Minneart's book Light and Color in the Outdoors for several hundred!

- Rainbow
- Complete sunset (or sunrise) starting 5 minutes before sunset to 90 minutes after.
- Any meteor (from a major shower or a sporadic)

- An artificial satellite
- Premium*: A secondary rainbow
- Premium*: An aurora (sometimes the TV weatherman announces anticipated nights)
- Premium*: The 22° halo around the sun or Moon (somewhat rare)

What to look for:

A rainbow has different colors and its arc length may vary. Scan along the rainbow extend the arc along where the rest of it would be and look for bright spots. Search nearby the rainbow for parts of other arcs in the sky.

Watch the sky colors change from sunset through twilight to dark sky. Look all around you, above and in the opposite part of the sky from the sunset/sunrise.

Meteors or shooting stars are streaks of light from a particles of grain of sand and smaller enter our atmosphere and burn up. Perhaps 6 per hour can be seen anytime (most often behind you!) and several times that number during a 'meteor shower'.

Artificial or man-made satellites are best seen up to 2 hours after sunset or within 2 hours of sunrise. This is because they reflect sunlight and their orbits are quite close to Earth thus they disappear upon entering Earth's shadow. There is a best season to avoid the Earth's shadow and it is: May to August. Most satellites move W to E; some N to S or S to N.

THE MOON

We all know our moon has phases. Lets take a look at them. A 2-day old moon is not all that easy to see as it is often cloudy! Once seen, it may seem that a 1-day old shouldn't be much harder, but ... well try it and see. The last quarter moon may be seen in the morning daytime sky if 3-5am is too early!

- Two day old or two day from new moon
- First quarter Moon
- Full Moon
- Last quarter Moon

What to look for on the Moon:

The terminator, the line that separates the dark and bright sides of the Moon. It is also the line of sunrise or sunset as seen on the Moon's surface.

Note any jaggedness in the terminator. This is caused by craters.

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ters and other changes of elevations. Think of the shadow of a tree at sunrise casting long, strong shadows. Can you see any bright and dark areas on the Moon. Do some appear at one phase yet disappear in another?

During full Moon many people see figures: the Man in the Moon, the Lady in the Moon, a rabbit, a crab, .. what do you see? For thin Moons the "dark side" is often prominent. What might cause this?

PLANETS

Besides good ol' Earth you can see all the planets from Mercury all the way out to Saturn with just your eyes!

- A bright planet: Venus, Jupiter or Saturn (in order of decreasing brightness)
- A dimmer planet: Mars
- Premium*: Mercury

What to look for:

Using the monthly newspaper star map, identify which planet you are seeing.

Twinkling. Compare how a planet and a bright nearby star looks. They both look like dots but one, the star, will probably be twinkling. A planet can twinkle but it takes a very unsteady night. You can tell a star from a planet by whether it twinkles.

Does the altitude of the planet off the horizon have an effect on twinkling?

Using one eye, try to block the light of a star and planet using a distant telephone wire. Is there a difference? A star is a point, a planet subtends a tiny arc and will show a disc in a telescope. For Mercury you will need a good locating guide from Astronomy or S&T magazine.

STARS and NIGHTTIME OBJECTS (location is 2 hours after sunset)

Every time you go out (check off only first viewing of each):

- Observe many bright stars and note any differences in color.
- Find a distinctly reddish star: Regulus in Leo, Betelgeuse in Orion, Antares in Scorpio or Aldebaran in Taurus.
- The band of the Milky Way (reasonably dark site needed)

Spring:

- Spring is when the Milky Way hugs the horizon in the early evening.
- The constellation of Leo the Lion (high south of overhead

March - May)

- Coma Berenices open cluster (high overhead April - June)
- Asterism of the Big Dipper (high in the north April - June)
- Double star Mizar and Alcor, the central "star" in the Big Dipper's handle

Summer:

Summer again brings the Milky Way in the evening sky. Unlike the winter sky with its bright stars and pale Milky Way this is the opposite. Look south in July and August and note that the Milky Way is not only wider but brighter. Our galaxy's central bulge lies here.

- The constellation of Scorpius (low but due south June - August)
- The constellation of Lyra (overhead in July and August)
- Trace this curved line of stars starting at the Big Dipper: Follow the arc of the handle to Arcturus, then speed to Spica and keep curving to Corvus! This is a snap to remember.

Fall:

Fall finds the Milky Way seemingly to always be overhead but rotates around our zenith. Use a planisphere to speed up and visualize this.

- Asterism of the Summer Triangle (high overhead August - October)
- The constellation Cygnus, the Swan (high overhead August - October)
- The constellation of Sagittarius, a teapot shape (low but due south August - October)

Winter:

Winter has lots of bright stars and easy constellations. Also the Milky Way is high in the sky and is fainter than the summer Milky Way.

- Asterism of the Great Square of Pegasus (high overhead November - January)
- The constellation of Cassiopeia, a 'M' shape (high north of overhead December - January)
- M45, the Pleiades, a big open cluster (high overhead January - February)
- Hyades open cluster (high south of overhead January - February)
- The constellation of Orion, the Hunter (high south of overhead January - March)
- M42, the Great Nebula in Orion (locate "fuzzy" star in Orion's sword in January - March)
- The constellation of Canis Major (high in the south February -

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- April)
- The constellation of Gemini, the Twins (high overhead February - April)
 - M44, Beehive open cluster (high south of overhead February - April)
 - Premium*: Andromeda galaxy (go to a dark site, look above Cassiopeia in December)
 - Premium*: Perseus double cluster (go to a dark site, look right of Cassiopeia in January)

What to look for:

Stars are predominantly bluish but there many tints (the far tip star of the bowl and far end star of the handle differ somewhat from the rest of the Big Dipper).

Asterisms are made up of several stars that form a memorable pattern. They are not 'official' constellations but are often part of a constellation (Big Dipper) or come from stars in several constellations (Summer Triangle, Great Square).

Constellations are technically an area of the sky. The bright stars within that area often form a shape. The ones listed here are big, bright, and key for locating other objects in the sky. These are the 'signpost' or reference constellations. Make up your own patterns!

Many stars are double -- either gravitationally bound to each other or happen to be viewed along the same line of sight. Few are close enough and bright enough to see with just your eyes.

Note the brightness difference between Mizar and Alcor. Can you see them from the city or do you need a darker site. These two are only 1/3rd the apparent diameter of the Moon apart. The Pleiades, Beehive and M42 are visually smaller than the width of a finger held at arm's length; the Hyades and Coma Berenices cluster are perhaps 2 fingers wide.

The objects listed are big ones compared to most. There are perhaps two dozen more that can be seen as dim fuzzy patches the size of a pea held at arm's length. Spend some time scanning the sky slowly (from a very dark site!) and see if you independently discover any!

The Milky Way is our disc-shaped galaxy. When we look along the disc, the light of innumerable faint stars combine and appear as a band of 'fog'. It will appear at different angles in the sky depending on when you look for it. Can you see any shape of the perimeter and are there any bright or dark areas in it?

LIGHT POLLUTION

- General appearance of the sky from where you live and from a

dark site (if you live in the city) or an urban park (if you live in the country).

- On a clear night from a dark site with low horizons 10-30 miles from a small city or town, scan the horizon for domes of light.

What to look for:

How does the sky change from viewing it from the city and then from the country? What happens to recognizable constellations or star patterns?

Can you identify what towns, businesses or nearby lights are causing the horizon glows. How do they interfere with naked-eye viewing of constellations or stars.

OBSERVING TIPS FOR NAKED-EYE VIEWING

Naked-eye viewing is the **best way** to start observing the universe. Don't make it difficult by trying to use a telescope or even binoculars first!

When you first go outside at night, your eye's pupils open up quickly but it takes some time, perhaps 15 minutes, for you to 'see well' at night. You will see more and more stars during this period of **dark adaptation**. You can lose this night vision in an instant by exposure to white light and you'll need another 15 minutes to regain it. **Red light** does not interfere as much with this dark adaptation so rubber band a red cellophane or red napkin over your flashlight. Bright red light is bad so use more layers to tone down a bright flashlight. When reading a star chart or book by red light, the light level should be so you have to look a bit closely else the light is probably too bright.

When they are above the horizon you can see up to 5 planets in the sky: Mercury, Venus, Mars, Jupiter and Saturn. Looking down you can see a sixth, the Earth! Perhaps 3000 stars can be seen on a dark night. With time and knowing what is where you can see color tints to many stars and, depending on the star, a few will change brightness over a period of days to months. These are called **variable stars**. A few stars that at first glance look single are under scrutiny double. Most double stars require a telescope. **Meteors** are something that are very rarely seen except with the naked eye. **Constellations, asterisms and other star patterns** are too big for telescopes and even most wide field binoculars and so are perfect for the naked-eye.

Naked-eye astronomy is not only the best way to start getting oriented to the sky but is a lot of fun too.

BAA Annuals by Rowland A. Rupp

5 YEARS AGO - "High Resolution Video" was the title of Gene Witkowski's talk at our November 1997 meeting. Gene's outstanding lunar and planetary videos were obtained using a surveillance camera. Imaging was the topic in February as well when Greg Saxon came from St. Catherine's, Ontario to present "How to Shoot the Sun" with a CCD camera. Rounding out the relatively new discipline of video imaging, *The Spectrum* carried an announcement that Dan Marcus planned to hold CCD classes monthly. Much of this *Spectrum* was devoted to Allen C. Goodrich's articles on the physics of the universe. In the preceding issue he presented his "fundamental equation", relating it to the tides. In this issue, Joe Orzechowski and Rowland Rupp responded to some of these assertions, and Mr. Goodrich's second installment, dealing primarily with electromagnetism and particles, also appeared. Edith Geiger wrote a detailed obituary for Walter Semerau. Walter was one of the BAA's most accomplished members having constructed his own solar observing equipment. His outstanding workmanship and superb solar photographic achievements were recognized by amateur and professional astronomers alike during the 1960s and 1970s.

10 YEARS AGO - Our January 1992 meeting was held at the Hum-

boldt Room at the Buffalo Museum of Science, our old meeting venue in decades past. Steve Kramer's demonstration of the astrolabe led off. He was followed by a question and answer period with Dave Fliss, Dan Marcus and Joel Stuckey as our experts. In February we returned to Buffalo State for a planetarium show hosted by the planetarium's director, Art Gielow.

Dave Fliss wrote an article, The Eve and Astigmatism in which he commented on his own astigmatism and noted some eye muscle exercises he uses to mitigate its effect. Ed Lindberg's *Instrument Notes* dealt with eyepieces. He concluded orthoscopies were excellent, and not much improvement beyond them could be expected. Any comments? Let us know in the next *Spectrum*. Darwin Christy submitted a brief note on nineteenth century telescope maker Alvin G. Clark. Trudy Brown wrote about observations she and her husband Ken made on a trip to Europe, noting the effect of observing from a more northern latitude.

15 YEARS AGO - The January and February meetings in 1987 were held at the Museum of Science. In those days we met at Buffalo State

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is more widely known about than we realize.

2002 Public Night Season

We have put together the public night schedule for the 2002 season. The schedule will be the same as usual with public nights being held at the observatory on the first and third Saturdays of each month between April and October. All public night activities begin at sundown and last at least two hours or more depending on the nights weather conditions.

Public Night	Moon Phase
April 6	2 days past last quarter
April 20	first quarter
May 4	last quarter
May 18	day before first quarter
June 1	2 days before last quarter
June 15	5 days past new moon
July 6	4 days past last quarter
July 20	3 days past first quarter
August 3	2 days past last quarter
August 17	2 days past first quarter
Sept 7	new moon
Sept 21	full moon
Oct 5	day before new moon
Oct 19	2 days before full moon

2002 Public Night Speakers

Now that we have the public night schedule its time to start recruiting "guest" speakers from within the ranks of the membership. This is a most rewarding experience for both the speaker and the audience and I encourage everyone in the club to give it a try at least once. If anyone is interested in speaking this year please contact Bill Aquino at 731-9366 or via the e-group. This opportunity is strictly restricted to club members only in order to provide an opportunity for the public to interact with the membership. Talks can be on any subject of your choosing but astronomical or at least scientific subjects are encouraged (for example geology or meteorology). A wide range of prepackaged slides and AV equipment is available for your use. Every effort will be made to supply special request equipment/materials like com-

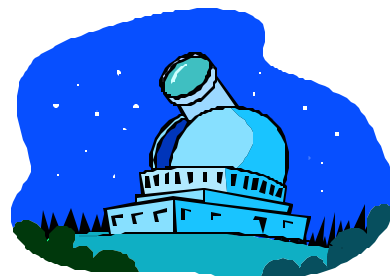
puter platforms for Powerpoint presentations. I think we did this twice last year and the talks were both very well received.

A Special Thank You

Needs to be extended to a member and friend of the BAA for making recent contributions to BMO. It is generous donations of both time and resources that make BMO such a dynamic facility.

Pete Proux has recently donated a new modem card for use in the spare computer system. The existing modem broke down recently. Peter's donation has been installed and tested and works just great. We use this modem only occasionally but it is indispensable when needed. It is used for such things as checking weather satellite images for potential clearing trends on partly cloudy nights, verifying the fly-overs of satellite's or the Space Station, and is most helpful during real-time observing sessions such as GRB hunting. The modem is also used extensively during public nights.

Beth Aquino a friend of the BAA (at least whenever she is not angry with me) has donated her old vacuum cleaner for use at the observatory. I explained to Beth that this machine was just fine and in excellent condition. However, she pointed out that if I thought it was such a great machine then I could use it to clean the carpets in the house MYSELF. Needless to say, the Aquino family is now the proud owners of a brand new ultra-modern, self-propelled, wind tunnel technology vacuum-cleaning machine, as advertised on TV. Beth's old machine (which I still think is a good one) is now available for use by any volunteer interested in helping vacuum the observatory.



Spy and Tell by Edith L. Geiger

Gene Belstraz is executive director of Western New York Construction Users Council. some 50 organization-owner companies (DuPont, Oxy, Kodak etc.), contractors, architect engineer firms, labor unions, academia, and government organizations. The council is dedicated to sharing information on all topics related to the local construction industry with the goal of improving conditions, safety and cost effectiveness.

On November 10, '01, Darwin Christy gave a talk on ancient constellations to the Men's Club at the Salem United Church of Christ in Tonawanda, of which he is a member. It was the same talk he gave at the BAA meeting 20 years ago.

Paul and Leslie Curtin have a new dog which they have named Pleiades, a mix they picked up at the SPCA.

Gary Halter is an RN at Children's Hospital. He has many astronomical interests. In early November '01, he assisted a Girl Scout Troop when members were working on astronomy badges. He set up his telescope in Orchard Park and helped the group to learn more about the sky.

Ken Schlem works for Richard Hoover, a used car dealer on Transit Rd. in East Amherst. Ken rebuilt his '68 Corvette which he had had for 33 years. He built his own house, which took 6 years and where he has lived for 15 years. The house, in a modern style, was completely of Ken's design. Along with other interests, he enjoys working with shortwave radio. He graduated from Sweet Home High School where he was an honor student. He and his wife Karen have been married 25 years. They have 3 children: Ray 16, Kevin 13, and Catherina 7. Karen has been a "Special Ed Teacher" in the Newfane schools for 20 years.

On November 10, '01, the Galaxy Ball fundraiser for the

Museum was held at the WNED Studios. The following BAA members were in attendance: Marilou Bebak, Jeff and Janice Gardner, Frank Chalupka, Alan Friedman, Ernst Both and Carl Milazzo. Mayor Anthony Masiello was Master of Ceremonies, and TV Kevin O'Conner was there for the event. BAA members brought telescopes, computers, photographs, and the Club's banner. It was a cloudy night but 2 telescopes were set up outside and 2 indoors.

Steve Kramer is well-known for his work on the ancient Greek "Antikythera Mechanism," the device that was salvaged by sponge divers from a shipwreck which sank around 100 B.C. and was discovered in 1900 A.D. off Antikytheria, an island near Crete. It was broken and dried out. Steve has devoted many years to the study and reconstruction of this ancient device. It was cleaned, x-rayed, and gears and teeth were measured over many months. The various gear combinations were constructed along with correct ratios of dials causing Steve to realize that it was an ancient lunar-solar eclipse calculator. Steve had constructed the first complete model of the "Antikythera Mechanism." Steve and the late Bob Mayer together produced an exceptional replica in brass, aluminum, steel, and bronze in a beautiful mahogany frame. A fine article appeared in the Sunday Buffalo News on June 26, 1983 giving a detailed account of Steve's research, and of his and Bob's work in the reconstruction of this incredible ancient instrument. Steve continues his research. Recently, he was visited at his home by another "Antikythera Mechanism" researcher, Robert Deroski, from New Jersey. He brought his model, and he and Steve compared notes, seeing the paths each had followed. They had been in contact through several years. Best wishes for Steve's continued success in his extraordinary project.

Many happy days in 2002

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from September to December and at the Museum for the remainder of the year. The BAA's Ken Kimble spoke about the sun at the former meeting, while we had a round table on cosmology at the latter session. Experts, if available, were: Jack Mack, Rowland Rupp, Al Koldziejczak and Ken Kimble. I can't remember ever being an "expert" - maybe I wasn't available. A meeting of the Study Section, headed by Bill Rogers was announced.

There were quite a few contributions to *The Spectrum* leading off with Leslie Martin's article on the then popular "anthropic principle". Readers were invited to explain what was going on with this provocative concept. To the best of my knowledge no one responded, probably with good reason. This article might bear re-reading. Part of an oration by David Rittenhouse, an American astronomer, given in 1775 was presented in *The Spectrum*. It was to be concluded in the following issue. Edith Geiger wrote a *Profile* of Jack Empson, and there were observation reports by Tristan DiLapo, Carl Milazzo, Michael Idem and Darwin Christy. A couple of poems by the BAA's resident poet, Esther Goetz, graced our newsletter too. The death of Octavia Black was reported. For many years she opened her Camp Sprucelands near Java to us for a star party, and followed it with a late snack before we dispersed. She was an honorary member of the BAA.

25 YEARS AGO - "Image Intensifiers" was the topic presented by BAA member Bill Chambers at the January 1977 meeting. Bill was chief laser engineer at Bell Aerospace. In February, another BAA member, Fred West, professor at Buffalo State, spoke on open clusters. Tom Dessert, our first Observatory director, noted that in its second year of operation BMO was in need of more telescopes. He recommended adding a 6-inch Dall-Kirkham Cassegrain on a Springfield

mount, an 8-inch, f/4 Newtonian on an English yoke mount and a 5-inch, f/4 refractor. The first and last sound expensive, maybe that's why we never obtained them. Darwin Christy wrote on his favorite topic - micrometeorites. An unidentified BAA member wrote a biography of Caroline Herschel, who at first aided her famous brother William, but later became a recognized astronomer in her own right. We even had a cartoon by Patty Rupp.

35 YEARS AGO - Members of the Observing Section and the Advanced study Section presented the program in January 1967. The Milky Way was featured. In February, Fred Price spoke on "The Igneous Origin of Lunar Surface Features". Volcanic origins for lunar features was more in vogue then. The coming three day convention to be hosted by the BAA in May was a hot topic in 1967. Chairmen for various committees were: Publicity - Paul Redding, Exhibit - Ed Stoklosa, Printing - Dick Zygmunt and Papers - Ron Clippinger. Edith Geiger served on the Papers committee too. There was a pretty interesting article by an unidentified author on the direction of rotation of spiral galaxies. Edwin Hubble concluded that the rotation is in the direction that would cause the arms to appear to "wind up". Bertil Lindblad concluded just the opposite - so as of 1967 authorities were in disagreement, giving the rest of the astronomical community something to do. Here's something for you to do - which way is it? How about reporting your findings at the January meeting or in the next *Spectrum*?

Members Image Gallery



Horse head region in Orion by Alan Friedman

Taken last October from Beaver Meadow Observatory, this wide-field image was taken with a 4.1" refractor with focal reducer at f4.3 and ST8 CCD camera. It shows the famous region surrounding zeta orionis (Alnitak - the eastern-most star in Orion's belt).

The "Flame" nebula is a visual object in small scopes while the "Horse head" nebula requires very dark skies, a large aperture and probably a nebular filter to see visually. Yet both show up easily in CCD exposures of a few minutes. This image is a stacking of 4 to 6 medium resolution raw images taken through RGB filters, and an unfiltered high resolution luminance image, processed and combined in Adobe Photoshop.

Leonid Meteor by Carl Milazzo

This shot was taken in front of Tom Day's observatory in the Rochester area. The observatory in the foreground will eventually house the World's largest amateur telescope, a 44" Reflector.

Members Image Gallery



Saturn and its moons by Alan Friedman

This image of Saturn was taken early Thanksgiving morning under steady skies taken from my Buffalo backyard with an 8" classical cassegrain working at F25. I took about 150 exposures with an SBIG ST8 CCD camera and color filter wheel - both unfiltered and through RGB filters - varying from .3 to 1 second (the field exposure including the moons was a separate 5 second shot which was processed as a grayscale image and combined with the planet at the end). The final four images (red, green, blue and unfiltered for luminosity) were averaged from the 4 to 6 best images of

each type. They were improved markedly from the raw images using unsharp masking and contrast adjustments. Then the final composite was constructed in Adobe Photoshop.

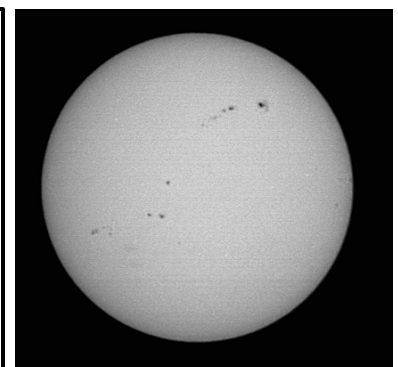
The moons are (clockwise from 12 o'clock) Dione, Rhea, Titan, Tethys and Enceladus.

If you look closely, you can see the northern limb of the planet peeking through Cassini's division (south is up) and a hint at the crepe ring and Encke division.



The Sun by Jamie Seibert

Both of these images were taken from Amherst on September 23 around 1:00 pm. Kodak 400 Color print film was used in a camera coupled to my 80mm short tube refractor. A 3x barlow was inserted between the camera and the telescope. The image on the left used a glass solar filter. The image on the left was through a home made solar filter. Both images were enhanced with Photoshop.



Members Image Gallery



Pleiades by Anthony Davoli

Object Data: Revered since remote antiquity, the Pleiades, or 'Seven Sisters' is the most famous of the galactic star clusters and well known to all observers through easy naked eye visibility of the seven brightest stars. The sparkling beauty of this jewel-like cluster remains the earliest celestial memory for many lovers of the night sky. Even more remarkable is the extent and structure of the beautiful reflection nebulosity which is shown to envelop the entire cluster in long exposure photographs.

Date: 10/19/00, 10/21/00 , 11/10/01

Location: Beaver Meadows Observatory

Optics: Vixen 102ED Refractor

Mount: ADM-11

Autoguiding: SBIG ST-4 tracking Orion 80mm f/6 guidescope

Camera: Nikon F3

Film: Kodak LE400

Exposure: 3 x 60 minutes

Enhancement: Three negatives were scanned using a Microteck Scannmaker 35t Plus and digitally stacked in Picture Window, then further enhanced in Photoshop.

Members Image Gallery



Object Data: The Great Orion Nebula (M42, NGC 1976) and NGC 1977 to the north (left in this photo) are located in the 'Sword' part of the constellation of Orion, just below the Eastern-most of the three stars that comprise Orion's belt. As well as being the brightest, M42 is perhaps the most famous and most photographed nebula in the night sky. The famous comet hunter Charles Messier catalogued it in October 1764. Approximately 1,500 light years distant, M42 is a very active and turbulent cloud of gas and dust and an important star forming region of particular interest to astronomers. There are many hot young stars (most notably the Trapezium stars) which fuel the dense swathes of surrounding gas, causing it to ionize and produce the red emission glow. M42 has a particularly complex range of emission sources as part of its spectrum, as well as a strong component of reflected broadband light, which probably accounts for the wide range of visible colors.

Date: 9/30/00 and 11/10/01

Location: Beaver Meadows Observatory

Telescope: Vixen 102ED Refractor

Autoguider: SBIG ST-4

Camera: Nikon F3

Film: Fuji Super G 800 and Hypered LE400

Exposures: 1 x 60 mins., 1 x 30mins, 1 x 5mins (bring out detail in the core)

Notes: Stacked in Picture Window and enhanced in Photoshop.

Members Image Gallery



Aurora by Carl Milazzo

This aurora shot was taken with the Beaver Meadows Building in the foreground.



Moon Shots by Jamie Seibert

Both of these images were taken from Amherst. Kodak 400 Color print film was used in a camera coupled to a 80 mm short tube refractor. A 3x barlow was inserted between the camera and the telescope. Both images were enhanced with Photo-shop.

Leonid Meteor by Carl Milazzo

This shot was taken in front of Tom Day's observatory in the Rochester area.



College of Fellows Meeting

The annual College of Fellows meeting will take place on January 31, 2002 at 7:30 PM at my house at 132 Burroughs Drive in Snyder. All members of the college are invited to attend. Please let me know whether or not you can come. My telephone number is 839-1842.

Rowland A. Rupp

Why Some Amateurs Build a Telescope

1. Because they have come up with a better design, or one that weighs less, easier to assemble, more compact, or performs better.
2. Some people like to make things with their hands, the craftsmanship, or like to customize it, and make it unique and beautiful.
3. Some companies have very long backorders, one can sometimes make a scope much faster, rather wait months or years for one to be shipped.
4. Some amateurs, like students and retired people have more time than money, and can make a scope for only a fraction of the cost of a commercial scope.
5. Many amateurs enjoy the learning experience, from hands on, they understand things better, from designing to collimating.

By Carl Milazzo

BAA Web Site

Tom Bemus and Bill Smith put together a club web site at :
<http://members.aol.com/BuffAstro/>

Meetings

BAA meetings are held on the 2nd Friday of the month from September to June in the New Science Building on the Buffalo State College Campus. Meetings start at 7:30 pm and all members and guest are encouraged to attend.

For Sale

Discovery 8" f/6 Dobsonian Telescope
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