

# SPECTRUM



**NEWSLETTER OF THE BUFFALO ASTRONOMICAL ASSOCIATION, INC.**

**FRIDAYS: MAR 14, APR 11**

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**MEMBERSHIP CORNER***Joe Orzechowski*

First of all, I'd like to thank all those who have renewed their membership in the Buffalo Astronomical Association. Our membership currently stands at 99 with Individual and Family Memberships both counted as one member. It looks like we may have actually lost a bit of ground this year but I won't know for sure until after I compile my annual membership statistics which I'll present in the next issue. There are no new members to introduce this time but I guess that's not so surprising considering the weather we've had recently. There just haven't been many opportunities to observe. Let's hope that the weather and our membership count both improve as the year progresses.

It seems that every year at about this time the BAA is faced with the same question: "Why do some people choose not to renew their membership?" There are probably many different and legitimate reasons people don't continue as members. On a number of occasions in the past we have tried taking member surveys to find out what works and what doesn't. Unfortunately, almost all of the surveys received were filled out by members who are active in the club and regularly renew their membership.

**I'd like to ask that all our members (especially new members) make an effort to participate in one or more of the BAA's many activities like the monthly meetings, star parties, public nights or any special events.**

So, instead of surveys, I'd like to invite all members to feel free to voice their gripes or concerns to me. You can give me a call at one of the numbers listed at the end of this column or drop me a note at 125 Roycroft Blvd, Amherst NY 14226. And, if you'd like to remain anonymous, that's just fine. At the same time I'd like to ask that all our members (but especially new members) make an effort to participate in one or more of the BAA's many activities like the monthly meetings, star parties, public nights or any special events hosted by the BAA or by one or more members.

Our monthly meetings give members an opportunity to learn a little more about the BAA, to meet and exchange information with other club members and perhaps learn some astronomy too. If monthly meetings are not your cup of tea, check out the upcoming star parties advertised elsewhere in this issue. You're sure to have a good time at one of these events but don't let the name fool you. You can also learn some good astronomy at these informal observing events. Star parties are a great way to look through other members' scopes and see some really neat stuff. And if you have your own binoculars or telescope, bring it along; someone will be happy to show you how to find some object you never knew you could see with your own equipment. Members are also welcome at our regular public nights at the Beaver Meadow Observatory. These events are not just for the public. Again, you'd have an opportunity to observe some interesting objects, enjoy some spectacular views through our 20" scope, learn some new observing techniques, and quite possibly have some good times. (P.S. The heaters in the observatory work just fine so you'll always have a place to go and warm up.) And, after attending a few public nights, if you feel you'd like to lend a hand at the observatory, call Dave Fliss at 668-6969 or Neil Dennis at 322-7596. They'll be more than happy to get you started on the road to becoming a public night staffer. You are not required to pass any entrance examinations. If you enjoy combining astronomy with a weekend camping trip, consider joining the BAA delegation to the StarFest convention in Ontario, Canada this summer.

As always, if anyone has any kind of question about BAA activities, about astronomy or about equipment and doesn't know where to turn for

answers, feel free to give me a call at 632-7091 days or 839-9109 evenings. I don't have all of the answers. I don't even have most of the answers. But I may be able to help you find the answer you're looking for.

**BAA ANNALS***Rowland A. Rupp*

**5 YEARS AGO** - Fred Price spoke in March 1992 on "Astronomy on Cigarette Cards". Packages of English cigarettes had astronomy cards as inducements to buy years ago--sort of like baseball players in bubble gum packages these days, and Fred used to collect them. Our speaker in April was Paul Mazierski whose topic was "Volcanism in the Solar System".

The SPECTRUM had an article on eyepieces by Bill Smith that deserves attention for most observers. Edith Geiger wrote a profile on Vern Siegel. All the regular contributors were there: Darwin Christy with "Astronomical Happenings" and "Ancient Constellations", Ed Lindberg with "Instrument Notes", Edith with "Spy and Tell" and her unique masthead, Dan Marcus with an observatory report--and my BAA Annals were there too.

**10 YEARS AGO** - Jim Stegner was the speaker at our March 1987 meeting. He spoke of his experiences while directing work on America's first Orbiting Geophysical Observatory. Our April speaker was John C. Croucher, a student at Erie Community College, who had just won first prize in the Dow Chemical Magnesium Design Contest for building a low weight, low cost telescope. He described his prize winning project to us.

The SPECTRUM was packed with material. Rowland Rupp wrote on a conference held at the University of Rochester featuring Fred Hoyle, Robert Jastrow and Harlan Ellison. The central theme of the conference was "creation". New member Dave Czuba wrote a commentary on Leslie Martin's article about the anthropic principle in the January-March SPECTRUM. Steve Kramer completed the oration by David Rittenhouse he started in the preceding issue. Observatory Director John Yerber gave a report, and Bill Rogers reported on the activities of the study section. There was a report on the NFCAA meeting planned for Elmira-Corning in May, and an observation report by Carl Milazzo. Paul Noyes' obituary also appeared.

**15 YEARS AGO** - Who spoke in March 1982? According to the SPECTRUM the speaker and topic would be announced at the meeting. Larry Carino's topic at the April meeting was "New Dimensions in Visual Astronomy".

John Riggs, our Observatory Director then, noted that the 12.5 inch telescope's clutch and drive motor had been reworked by Bob Mayer and was reinstalled in time for the spring public nights starting on March 6. An announcement concerning an amendment to the bylaws, that essentially eliminated the category of student membership, appeared in the SPECTRUM.

Bob Dietrich was the subject of Edith Geiger's profile. Our old friend Anonymous wrote "A Point of View" that described how the Earth-Moon system would look to an observer on Venus. Speaking of planets, James Machowski wrote on Saturn and Carl Milazzo wrote on Pluto. One wonders how much of Carl's article would have to be updated today because of the sophisticated observational developments we've had in the intervening 15 years. There were lots of observation reports: Carl Milazzo, Darwin Christy, Steve Desmond, Rowland Rupp, Doris Koestler and Shaun Hardy.

**25 YEARS AGO** - Ray Manners entertained us with "Astrology: Your Life in the Stars" at the March 1972 meeting. I wonder what that was all about! Fred Price's topic for the next month was "New Light on Some Lunar Problems".

John Riggs wrote on "Deep Sky Observing" in which he highlighted a

*(Continued on page 3)*

**Officers**

Bob Hughes - President  
Gene Witkowski - Vice President  
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**Board members at large**

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- Bob Titran  
Rowland Rupp - Fellow Representative  
Joe Orzechowski - Membership

**Observatory Directors**

Neil Dennis & Dave Fliss

**SPECTRUM STAFF**

Bill Smith - Editor / Layout  
Bev Orzechowski - Circulation

BAA Annals continued from page 2

couple of fairly faint objects (M64 and M94) that might be visible from the suburbs. Darwin Christy had a detailed article on polishing laps and when and how to use them. Good stuff from an almost forgotten era. The BAA was planning an astrophotography exhibit, but Edith Geiger lamented in her "Spy and Tell" that only two members had submitted pictures so far.

**35 YEARS AGO** - The SPECTRUM was very different in 1962. It came out monthly, consisted of two large print sheets and was printed by ditto. Bruce Cook was Editor and Daryl Knupp was Publisher.

Ed Lindberg was to be our speaker in March on the famous "Porter Garden Telescope". In April Fred Frederbach spoke on "Motions of the Comets, Meteorites and Asteroids". The Elementary Study Group, Advanced Study Group and Advanced Observing Group were all meeting back then.



## SPY AND TELL

Edith L. Geiger

Congratulations and best wishes to Linda Marie Leone and R. Anthony Rupp III, who were married on January 18, 1997. Anthony is the son of Rowland and Irene Rupp. After a visit to Italy and Germany in the spring, the bride and groom will be at their home in Eggertsville.

Darwin Christy is serving his eighth year as chaplain at the Masonic Temple, Tonawanda Lodge.

Larry Carlino has purchased a CCD detector for imaging the sky; the Celestron PixCel 255 Model. He also has added a focal reducer to reduce his telescope to an f/6.

Joe Sullivan works at the New York State Department of Correction. He is graduating from ECC South this year. He has several hobbies along with astronomy: paleontology, scuba diving, and military history, all of which provide him with many hours of enjoyment.

Paul Carroll has been a researcher, teacher, and author. He received his master's in physics from Notre Dame, in 1951. From '51-'56, he worked at Sylvania on Long Island, doing phermionic research; from '57-'63, he did semiconductor research at Carborundum; from '64-'68, Paul taught physics at Buff State, and from '68-'70, he taught physics at East High School in Buffalo. He also did some work at Chevrolet. Since '65, he has conducted Carroll Instruments from his home (Box 0256, Tonawanda, NY 14150). Recently, he has had the third reprinting of his book, How to Operate an Oscilloscope.

On March 13th, Paul and Mary will be leaving for Florida for a week's visit, and to see their 15th grandchild, Amelia Carroll, born October 16, 1996. Their 14th grandchild, Shannon Reilly, was 1 year old on Valentine's Day.

Antonio Cirillo went to Connecticut to attend a christening. While at a party at a friend's home, he met Daniela Franco, and he knew that she was "the one." Antonio and Daniela were married on Valentine's Day. Wishing them every happiness.

Bud Abate is excited about his new computer, a Packard Bell 150 Mhz, which is good for going fast.

Greg Pimento enjoys sports and music. He plays squash at a racket club, and finds great pleasure playing piano and the organ he has in his home. He also sings in the choir at St. Stephens R C Church on Grand Island.

Be it known that Anthony and Ruth Mohler are just loafing around, waiting for spring.



## CONTINUING COMMENTS ON "The Universe - A Unified Theory"

My view of Mr. Goodrich's articles is that he should become more familiar with the vocabulary and the extensive history of the physics community. He uses the words "angular acceleration" and treats it as a scalar quantity. What I think he means by those two words is centripetal acceleration which is a vector quantity with both magnitude and direction. Centripetal acceleration is usually treated as a scalar quantity since it is understood that the direction of the vector is always toward the center of the circle of revolution.

Angular acceleration is somewhat more complicated than a vector quantity. It is like a 3 dimensional vector with 3 scalar quantities and 3 directions, so it would need 9 components to describe it fully. It is a tensor.

Joe Orzechowski was right on the mark with his first question in the last issue of the SPECTRUM. Kinetic energy is indeed proportional to the square of the velocity of a mass and not to its acceleration.

I was unable to follow Rowland Rupp's critique completely because my copy of the SPECTRUM for Nov. & Dec. has already been recycled. I do know that a complete analysis of tides must be treated by tensor analysis. That probably accounts for the differences in times of high tide that Rowland found.

An example of tensors can be seen in the Coriolis force on an object moving on the surface of the earth. There are two velocities involved and one force, the force of gravity. Since there are three vectors involved there are twenty seven possible components of the tensor. The two velocities are the velocity of the object with respect to the surface of the earth and the velocity of the object with respect to the axis of rotation. Only two of the 27 components have values other than zero. In the northern hemisphere there is a force to the left of the direction of motion and in the southern hemisphere the force is to the right. This can be seen by the motion of the Foucault pendulum in the Buffalo Museum of Science.

In Mr. Goodrich's treatment of subatomic particles he ignores the Heisenberg Uncertainty Principle. He also ignores the dual nature of the particles. They need to be treated as particles in some cases and as waves in others. The full treatment is accomplished by wave mechanics by the world's leading physicists. The uncertainty principle states that we cannot know the position,  $x$ , and the momentum,  $p = mv$ , exactly. The product of the two is always limited by the Heisenberg Uncertainty Principle.  $m$  is the mass of the object and  $v$  is its velocity. Momentum and velocity are vector quantities.

We do owe Mr. Goodrich a debt of gratitude for rekindling our interest in the fundamentals of science.

Paul E. Carroll

## We're always looking for your submissions of...

articles	quotes
artwork	more!
book reviews	
CCD images	<i>plus</i>
comics	
equipment reviews	comments
for sale items	suggestions
observations	your ideas
photographs	
poetry	

### SPECTRUM DEADLINE

The deadline for the May-June issue is

**Apr 11th.**

Send all submissions to Bev Orzechowski  
125 Roycroft Blvd., Buffalo, NY, 14226.

Preferred format is typed or PC readable WordPerfect for DOS 5.1 or earlier, MS Word for DOS or ASCII.

-- scanning available --

Handwritten or other formats are fine too -- we really like submissions!



## ASTRONOMICAL HAPPENINGS

## TIME WELL SPENT IN ASTRONOMY

## Moon

Last Qtr. Mar 2	New Mar 8	1st Qtr. Mar 15	Full Mar 23	Last Qtr. Mar 31	New Apr 7	1st Qtr. Apr 14	Full Apr 22	Last Qtr. Apr 29
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NOTE: After midnight events are listed for the proper day! Thus 1 am on the 10th means you must be prepared be up late on the evening of the 9th.

## STAR PARTIE AT BMO

A Star Partie will be hosted by Dan and Melissa Marcus at the Beaver Meadow Observatory on Saturday, March 29, 1997, beginning at 5:00 pm. Bring a dish to pass. Call Dan and Melissa at 773-5015.

## CELESTIAL DELIGHTS

Many thanks to Bill Aquino for volunteering to put out this year's issue. Watch for it at the April or May meeting and at the observatory.

**Don't miss the lunar  
eclipse on evening  
of March 23!**

## BRIGHT METEOR SPOTTED

On Saturday, Feb 15th, Mark Reville and other club members were observing with the club's 20" when they spotted a huge meteor that left a trail almost across the entire sky. This meteor broke into 8 pieces and was golden-yellow in color and the brightest Mark had ever

## JUPITER MARKS the SPOT

In early March, Jupiter marks the location of Uranus low in the SE in the morning sky.

## Neptune near Globular M75

Throughout 1997, Neptune is 2° above M75. Starts to become visible in April in the morning sky 20° above the SE.

Date	Event, elevation above noted horizon @ time listed [binos or small scope helpful]
Mar 6	Jupiter below thin moon, 10° above ESE @ 7:00 AM
Mar 10	Can you spot Saturn 8° below the thin moon, 10° above W @ 7:10 PM
Mar 13	Almost 1st qtr. moon forms equilateral triangle w/ Hyades & Pleiades, W @ 8 PM
Mar 23	92% deep partial eclipse of the moon: starts 9:57PM, deepest at 11:39 PM
Mar 25-Apr 13	Best evening viewing of comet Hale-Bopp in the NW
Mar30-Apr 5	Best week all year to see Mercury, in the WNW in the evening dusk
Mar 31	M17 & M18 3° above last qtr. moon, 23° above SE @ 4 AM
Apr 2	Thin moon marks area where Neptune & Uranus are; 18° above SE @ 5 AM
Apr 3	Jupiter is 4° right of thin moon; 12° above SE @ 5 AM
Apr 8	Good opportunity for a young moon in the west at evening dusk
Apr 8	Can you spot Mercury 6° right of very thin moon; 7° above W @ 7:40 PM
Apr 9	Thin moon forms equilateral triangle w/ Hyades & Pleiades; 25° above W @ 8 PM
Apr 10	Moon is within Hyades cluster; 25° above W @ 8 PM
Apr 10	Moon and comet Hale-Bopp close to each other; great view
Apr 15	Open cluster M67 is 2° below gibbous moon; 55° above SSW @ 9 PM
Apr 24-May 13	Good evening viewing of comet Hale-Bopp with little moon interference
Apr 30	Jupiter is 5° below & left of gibbous moon; 20° above SE @ 4:40 AM
May 5	Can you spot Saturn 3° right of thin moon; 10° above E @ 6 AM

## 109 Messiers Bagging them with Binoculars

Devising an observing project gives you a specific target to shoot for. A project I started last year was observing all the Messier objects with large (16 x 80) binoculars. The Astronomical League has a binocular Messier project that requires only viewing 50 of them with small binos. 76 were spotted by the League's Binocular Messier Club coordinator with a \$20 pair of 7x35s from Wal-Mart.

More challenging is trying to spot them all; this is certainly within the range of big binos and not an unusual request for 10x50s although excellent nights at a dark site will be needed for some objects.

### Field of view

My big binos have a 3.5° field of view. Many Messiers are at least 10' of arc in size. Hence they'll appear as a spot 1/20 of the diameter of the binocular's view. This is not a bad size! After all you are using binoculars to view objects halfway across our galaxy to other galaxies out to 70 million light-years distant. In wide view 7x binos with a 10° view a 10' object is seen as a spot 1/60 of the diameter of the view. Small, but not invisible. I have seen 60-odd Messiers in 8x40 binos, although I have not tried for them all.

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## BEAVER MEADOW OBSERVATORY 457-3104

Observatory directors Dave Fliss and Neil Dennis are soliciting comments and your suggestions on improving the observatory and public events.

Note that the public event season starts April 5th! They can use your help.

**Observatory combination changed. Call Dave Fliss at 688-6969 for info and new combination.**

## CCD CAMERA CLASSES

Want to learn more about CCD cameras and computers? Come and join the CCD section of the BAA. You can get trained and checked out on the club's Cook Book Camera and learn how to use an IBM PC. These classes will be held at Beaver Meadow Observatory and are rain or shine events. If the weather is bad we will work on the equipment, and practice with image processing, and if good we will be using the camera to image, or as an autoguider for photography.

The next meeting will be at the observatory on Saturday, March 15 and will start at 5 pm.

Dan Marcus

Here we go again! ... continued from page 1

to get to a dark site in late March to early April when the comet will be at its brightest and in the evening sky. A dark sky will highlight the tail which is superimposed over the band of the Milky Way now through June which should also provide many photographic possibilities.

Anytime you can see the comet is a good time to try – there are preferred times but don't pass by a clear night with the moon in sky, see it now!

#### When, where and why

For practical purposes we'll adhere to the BAA's Celestial Delights visibility standards: the object must be 5° above the horizon and the sun must be at least 15° below the horizon. Best viewing windows are when the moon is less than half full. For a map with the comet's position consult Sky & Telescope or Astronomy magazine. Be aware their maps do not show our local horizon! Use a planisphere or planetarium program for this very necessary detail. See the following tables.

-Bill Smith

**Can you afford to let another once-every 20 to 50 year class comet go unseen?  
Don't wait for a better comet -- it might not come in our lifetime.  
Predictions at peak are for magnitude (-1.8) or brighter with perhaps a 24° tail.  
The best optical aid is a pitch black sky. Go view Hale-Bopp!!**

#### Timeline for March to mid-May:

Elevations listed are for 2 hr before sunrise or 1 hr after sunset so that if you're late the comet is higher in the morning in lightening sky or is lower in the evening in darkening sky. Comet moves about 10° per hour away or toward the horizon.

Best	Dates	Visible when & where & notes		
	March 1-5	morning sky (20° up in ENE to NE); last qtr. Moon shrinking to new on the 8th	Morning only	↑
	March 6-15	evening sky (10°-22° in NW); moon grows to 1st quarter	Morning & evening	↕
	March 6-21	morning sky (18° to 11° up in ENE to NE); <b>no moon to interfere</b>		
	March 22-24	near full moon will interfere with good viewing		
	March 23	Partial Lunar Eclipse -- comet low in the NW with its tail in Cassiopeia; full moon		
♦	March 25-Apr 6	evening sky (10°-22° in NW); <b>no moon to interfere</b> ; closest to Earth, 22nd @ 1.3 A.U.		
	March 25-31	morning sky (11° to 5° up in NNE); moon will interfere with good viewing		
	April 1-Apr 6	very low in morning sky (5° to 3° up in NNE); closest to the Sun, 31st @ 0.91 A.U.		
	April 1-7	tail is circumpolar although the head sets for a few hours	Morning & evening	↕
♦	April 1-12	excellent evening viewing (27° up in WNW); moon at 1st qtr on 7th	Evening viewing only	↓
	April 10	thin moon and the comet in the same binocular field		
	April 13-17	good viewing but moon heading toward full and really interfering		
	Apr 18-23	big moon, full moon on 22nd, far away but light will be interfering		
♦	Apr 24-May 11	last good dark sky observing stretch w/ <b>no moon</b> (1st qtr on 14th); comet 21° to only 10° up		
	May 12-15	fair viewing as increasing moon and comet is dimming & low		
	May 15	comet dips below the 5° visibility limit; setting near dusk		

#### Look for objects the comet comes near to or the tail passes through.

Use this list with the moon's phase to determine whether you can see the object with your scope. Some are very tough!

March 2	Mag 7 open cluster NGC 7063 3° down the tail	
March 7	M39 in Cassiopeia is 12° down the tail	
March 15	M52 in Cassiopeia is 15° down the tail	
March 15-23	Good position with the Great Square of Pegasus and Cassiopeia	
March 17	Mag 8.5 planetary nebula NGC 7662 2° opposite the tail (past comet's head)	
March 18	Mag 5.5 open cluster NGC 7686 is 6° down the tail	Morning viewing ↑
March 22-27	Comet's head passes above the Andromeda galaxy; closest on 24th (3°)	Evening viewing ↓
March 24	Mag 9.2 galaxy NGC 147 4° down the tail; mag 9.6 galaxy NGC 185 3° opposite the tail	
March 25	Mag 11 galaxy NGC 278 3° down the tail	
March 27-28	M103 in Cassiopeia is 15° down the tail	
March 27-29	Comet passes between the Andromeda galaxy and double cluster in Perseus	
March 29-30	M76 in Perseus is 8° down the tail	
March 23:	Partial Lunar Eclipse -- comet will be very low in the NW with its tail going through Cassiopeia	
March 30-April 2	End of tail passes by the double cluster in Perseus	
April 4-7	M34 in Perseus is 3° down the tail	
April 5	Mag 11.5 galaxy NGC 891 1° opposite the tail; mag 9 open cluster NGC 956 is 3° down the tail	
April 7	Mag 12 galaxy NGC 1003 is 1° opposite the tail	
April 14	Mag 6.7 open cluster NGC 1342 is 1° down the tail is 1° down the tail	
April 16-18	Tail near the comet's head passes over the California nebula in Perseus	
April 16-21	Comet passes between Pleiades and the California nebula in Perseus	
April 17	Mag 12 planetaries IC 351 and IC 2003 are 1° and 3° down the tail	
April 25-May 2	Comet passes over the Pleiades (8° on 24th); Hyades nearby and Auriga beyond the comet's tail	
May 5	Mag 6 open cluster NGC 1746 is 2° down the tail	
May 9	M1 in Taurus is 7° down the tail; thin Moon to left of comet for good photo op with the moon	

## The "Right" First Scope

How soon we all forget! We forget what it was like to get that first telescope. Exciting...and baffling for most of us. Many of us got our first scopes as gifts from loved ones. Some of us struggled to earn money to buy our own scopes as kids or splurged and bought them when we were older and had some money to spare. Did we start off with right telescope? The answer to that question is usually a resounding "No"! When we remember those telescopes with friends or at a public night, we frequently start off by saying 'If only I had known .....' (you know the rest of the story, you've told it many times).

Sooner or later in this hobby almost all of us have been asked, 'What's the best first telescope to buy?' There are as many opinions on this subject as there are deep sky objects in the Uranometria. If you've not been asked this question lately, maybe it's time you gave it some thought, the spring star party season will be here soon enough.

After a few minutes of conversation, most of us can tell if a novice will become an astronomer, they're usually those who want to buy a "good" scope and they've done their homework, both in books and with binoculars. What qualities should the ideal beginners telescope have?

Three properties seem to be very important, what I call the Q.S.P. system.

**Quality** all too often seems to be compromised in first telescopes. If most of us had bought better quality first telescopes we wouldn't be on our fifth (or 25th) telescopes today. We rationalize the acceptance of mediocrity in the typical novice telescope by pointing out the modest price. But is the price really modest or are there hidden costs? One only has to look at the modifications made to the typical budget-priced telescope today to see the obvious answer. We tend to assume (and we're usually right) that the average neophyte wants to spend as little as possible and, therefore, we recommend the most scope for the money available when we should be recommending the best scope available in a given price range. Although this usually means getting a slightly smaller telescope, I believe that the chances of that newcomer remaining active in our hobby in the long run are higher with a better quality scope.

**Simplicity** is always a good idea for the freshman astronomer. There is so much to absorb in our hobby today that many potential amateurs are intimidated out of astronomy just by the massive information gap they think cannot possibly be overcome. The last thing any novice needs is a complex tool for the simple job of learning and enjoying the starry sky. Many of us have known people who have sold almost new SCT's because they thought they wanted to "do it all" (astrophotography, CCD, computer control, etc.), so they spent big bucks to get the scope a glossy advertisement told them could. Instead they couldn't get past the technological and logistic obstacles presented by their complex telescopes and many end up selling the telescopes and leaving the hobby. A quality, simple scope serves neophytes best by giving them confidence that they can master their instruments and, therefore, move up that steep learning curve peculiar to our hobby.

**Portability** should be a self-evident virtue, yet there are many ideas of what constitutes a portable telescope and the novice's view is very different from the more experienced observer. We think a 140-pound, 9 foot long, 20" telescope is very portable. The average beginner thinks a 50-pound 8" Dobsonian or a 65-pound 8" Newtonian is a hulking monster and although the SCT is lighter, its plethora of bits and pieces makes it no better in their eyes. The main idea at this stage of the game is to encourage frequent

observing (and therefore learning) at every opportunity and this is best done with a scope that is very light in weight and easy to move around. *Rather than suggest the largest scope the neophyte can afford, we should encourage them to join their local astronomy club and to make use of the larger club telescopes as a supplement to their own portable scopes.*

There are several sayings I've heard over the years that sum up the common wisdom of the whole buying beginners telescopes idea quite nicely and really do make a lot of sense. 'Quality doesn't cost, it saves!' 'Keep it simple stupid!' 'A small scope under the stars gathers more starlight than a big scope in the closet!' And finally this facetious, funny and wise thought from the editor of Amateur Astronomy himself: 'Always buy the cheapest telescope or accessory first, buying everything twice is good for the economy and ensures a good supply of inexpensive used equipment for others to buy!'

After reading this you're probably chaffing to know what scopes I recommend to beginners. The first is the Edmund Astroscan. At the \$400 outfit level I have seen no other single telescope get more serious astronomers started in this hobby. Even after they move up most keep their Astroscans as second telescopes, high praise indeed. Although a bit weak on planetary performance, its stability, super portability, ease-of-use and wide fields of view make it tough to beat as a fun learning tool. Three of the six most serious observers in our club own Astroscans as second or third scopes. The other is the Starmaster 7" f=5.6 Oak Classic Dobsonian. At the \$750 outfit level, I think this scope represents an outstanding all-around performer of very high quality. Superb optics, mechanicals and design combine in a superior telescope that is the envy of other scopes in this class. Both of these are 25% more than others of their size, but no others seem to do so much, so well, right out of the box, without further modification.

Everybody has their own ideas about what telescopes they would recommend and unfortunately there is no perfect beginners scope. Using the Q.S.P. system can really help newcomers zero in on telescopes that will serve them well and encourage their long-term interest in astronomy. I usually don't recommend that anyone spend more than \$750 on their first telescope. The old saying about paying your dues are right. Neophytes need to start out with the basics and get a good foundation. Then the sky's the limit from a first scope launch pad.

- Tom Bemus



## ANCIENT ASTRONOMERS

### Jermain Gildersleeve Porter

An American astronomer, Jermain G. Porter was born in Buffalo, New York on January 8, 1852 and passed away on April 14, 1933. He graduated from Hamilton College in Clinton, New York in 1873. Upon graduating, he attended the University of Berlin. In 1878 he was appointed to the United States Coast and Geodetic Survey. In 1884 he was made director of the Cincinnati Observatory as well as professor of astronomy at the University of Cincinnati.

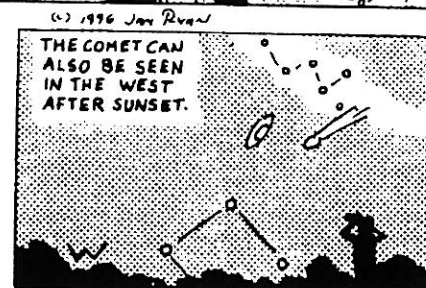
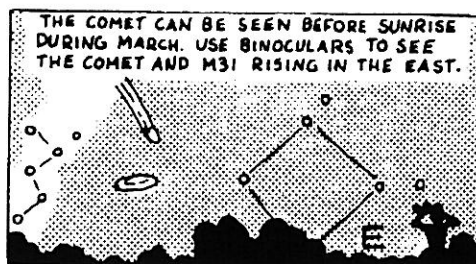
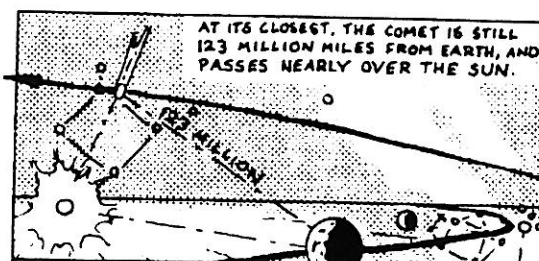
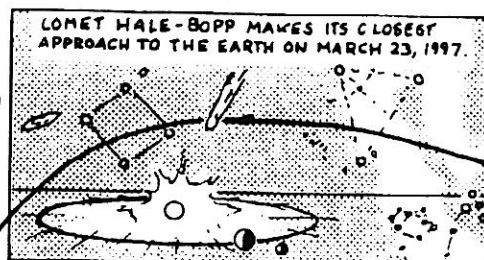
Mr. Porter received the "Astronomical Journal" Comet prize. The principle areas of investigations he worked on were the motions of the stars and the variations of their latitude. His two main publications were - "The Stars in Song and Legend" (1901) and "How to Find the Stars and Planets" (1920).

Darwin P. Christy

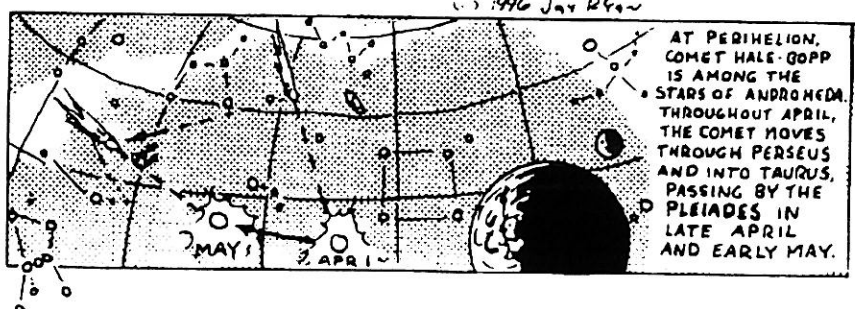
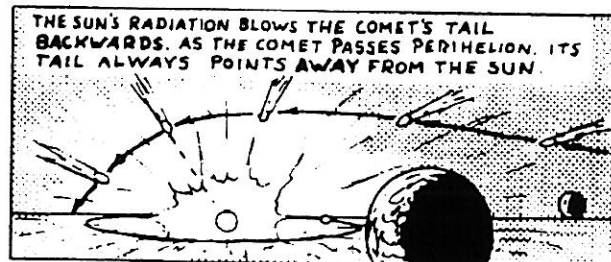
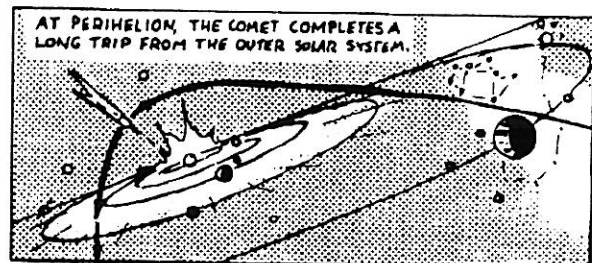
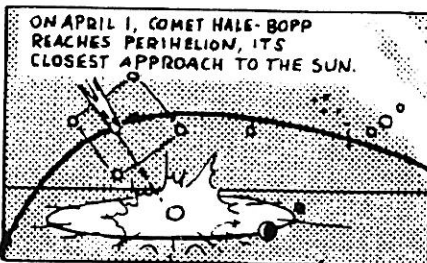


The following 'educomics' are supplied by Jay & Debbie Ryan, two amateur astronomers from Cleveland, Ohio.

## For March



## For April



## POETRY CORNER:

The solar fire dies slowly in the west,  
A somber curtain circumscribes the earth.  
I contemplate the world's diurnal jest:  
The death of light engenders next day's birth.

Alone against the milky stellar glow,  
Galactic center wheels its icy dust.  
The eagle's claw and ancient archer's bow,  
A moment fixed in life's sublimest thrust.

From rosy clouds the nascent stars emerge,  
To die and spread their ashes though the void,  
A phoenix resurrected from the dirge,  
The seeds of life renewed and not destroyed.

Of star dust made to tread the halls of time,  
The gift of love in God's eternal rhyme.

— Larry  
Carlino

## Catch Hale- Bopp!

Related article  
on page 1 & 5.

## Comet Direction & Elevation Summary

Location 2 hours before sunrise

or only 1 hour after sunset

Date	Morning	Evening	Moon
Feb 23	20° ESE	not visible	full
Mar 1	20° ENE	not visible	last qtr
Mar 8	18° NE	10° NW	new
Mar 15	16° NE	15° NW	1st qtr
Mar 23	11° NE	22° NW	full
Mar 30	5° NNE	26° NW	last qtr
Apr 6	3° NNE	27° WNW	new
Apr 13	not visible	27° WNW	1st qtr
Apr 20	not visible	25° WNW	full
Apr 27	not visible	20° WNW	last qtr
May 4	not visible	15° WNW	new
May 11	not visible	10° WNW	near 1st qtr

## BARNARD'S STAR

In 1916 Yerkes Observatory announced the discovery in the constellation Ophiuchus of a dim star that had the highest motion across the vault of the sky then known. It remains today the star with the highest proper motion—10.3 seconds of arc per year. It traverses one degree of the heavens in something less than 360 years, high speed indeed for a stellar object.

The star was named after the discoverer of its motion, E.E. Barnard, an already highly acclaimed observer at the observatory famous for having the world's largest refracting telescope, the great 40-inch. Barnard made his discovery by comparing photographic plates taken in 1894 and 1916. Later, Pickering, at Harvard Observatory, found an 1888 plate of the region showing the star's position prior to Barnard's photographs.

Barnard's star has been extensively studied since. It is known to be a red dwarf of spectral class M5. A star of this class has a surface temperature of only (!) 3200 degrees Kelvin (5300° F) compared to the sun's 5800° K. With a diameter of around 140 to 150 thousand miles, compared to 865,000 for the sun, it shines with an absolute magnitude of only 13.4, making it only 0.04% as bright intrinsically as the sun. If the sun and Barnard's star exchanged places, we would see a first magnitude object in Ophiuchus. Its mass is believed to be about 15% to 16% of the sun's but, because of its small diameter, its density exceeds the sun's by 40 times.

After Alpha Centauri, a triple star system, Barnard's star is the next closest to us. Its proximity accounts in part for its high apparent speed, but also it is physically moving rapidly through space with respect to the sun—over 100 miles per second. A large component of this speed is directed toward us. In some 8000 years it will come closer to the sun than 4 light-years and will attain a rocket-like proper motion of over 25 arc seconds per annum! It will then be the closest star, the Alpha Centauri system remaining at about 4.3 light-years distant.

Even so, Barnard's star will still be too dim to be seen with the unaided eye. After all, the closest star to us today is the dim third component of the Alpha Centauri system, Proxima, and it is several magnitudes dimmer than Barnard's star. Proxima is also a red dwarf, the most common class of stars in our Milky Way galaxy, none of which can be seen without optical aid. Perhaps to compensate for their obscurity, red dwarfs frugally burn their nuclear fuels and, consequently, should live for hundreds of billions of years. Our sun virtually squanders its fuel and has a life expectancy of only about ten billion years.

All this interest in the star with the highest proper motion encouraged observatories to carry out astrometric observations. One of these was Sproul Observatory at Swarthmore College, where Peter van de Kamp had systematically trained a 24-inch refractor on the fleeting object since the late 1930s. By 1963 he had announced that he deduced Barnard's star had an unseen companion in a 24-year orbit—a planet, the first extrasolar planet discovered! While his early observations were thought to be somewhat flawed (for reasons we shall see), those made since 1950 were considered reliable. By 1968 de Kamp had obtained more photographic plates, 3036 in all, that led him to conclude that Barnard's star had either one planetary companion in a highly eccentric 25-year orbit, or two companions in circular orbits of 12 years and 26 years.

But Sproul wasn't the only observatory making long-term observations of this nearby object. Allegheny Observatory was also busily recording the star's position with its 30-inch refractor from 1916 onward. By 1971, using the semi-automatic measuring engine at the US Naval Observatory to reduce the data, Allegheny astronomers confirmed de Kamp's findings pertaining to parallax (distance) and proper motion, but failed to show any evidence of the wobble in position that indicated the presence of a planet. Van Vleck Observatory using a 20-inch refractor since 1923 chimed in with the same conclusion.

In announcing their results, they pointed out that telescopes can develop metric changes over the years that can flaw positional data. In fact, Allegheny had similar troubles at their own observatory and knew about these problems first hand. Moreover, the objective cell at Sproul had been replaced in 1949, producing a noticeable change in imaging which,

no doubt, is why de Kamp claimed observations before 1950 were less reliable than subsequent ones. In addition, Allegheny claimed they had used 19 reference stars in reducing their data, while Sproul had used only three. Anyone hoping for nearby extrasolar planets that might potentially harbor life must have been sorely tried by this news.

Undaunted, Sproul fought back. Director Sarah Lee Lippincott claimed that 2700 plates taken from 1950 to 1978 (after the replacement of the objective cell) showed two perturbations, one of 11.7 years and another of 20 years. The orbits of the two bodies were coplanar at 2.7 AU and 3.8 AU, and their masses were calculated at 0.8 and 0.4 Jupiter masses, respectively. Clearly these were objects in the planetary class. Lippincott noted that four reference stars instead of three were used to obtain these new results.

Just how this controversy was resolved is unclear; it appears to have just faded away, like an old soldier. Suffice to say that in this era of extrasolar planetary discovery, Barnard's star is no longer listed as a candidate.

Who was E.E. Barnard? He was Edward Emerson Barnard, born in Nashville, Tennessee in 1857. Not much is known of his youth; it is reported he declined talking about it because his family was extremely impoverished, his father having died two months before Barnard was born. He took to astronomy early, using a 1-inch homemade telescope. He never had formal education in astronomy (or anything else, for that matter) until he attended classes at Vanderbilt University following his appointment there as an astronomer and instructor in astronomy. (Barnard had spent only a couple of months in public school during his youth.) Nonetheless, he was an intrepid, keen-eyed observer with many discoveries named after him. In a sense he may be the role model for any aspiring amateur astronomer today.

He made his first discovery of a comet in 1881, but failed to report it. He made up for it subsequently; some dozen comets bear his name. Actually, his comet discoveries paid off. In his day a comet discovery earned a \$200 award. It is said he paid off the mortgage on his house with these awards.

His work became so well known that at the age of thirty he was appointed to the staff of Lick Observatory. During his turbulent eight year tenure there, he discovered the fifth moon of Jupiter, Amalthea—the last moon to be discovered at the eyepiece. But Barnard was also at the forefront of the new field of astrophotography. That shouldn't come as a surprise because from boyhood until he was 26 years old he worked in a photography studio to support his family.

He extensively photographed the Milky Way, with particular emphasis on the dark regions, many of which now are now identified with his name. At first he thought, as did most of his colleagues, that these were holes in the star field through which one saw the blackness of space. Much later, he recognized that these were regions where dark dust clouds obscured the stars behind them.

There's an anecdote about how a commonplace event helped confirm his growing conviction in this interpretation. One night, while photographing the Milky Way, some small terrestrial clouds drifted into the field looking exactly like the dark patches in the sky he was studying. The similarity in appearance between this obscuring matter a few thousand feet above his head, and the dark areas in the Milky Way thousands of light-years away, helped pave the way for his identification of the dark nebulae as gas clouds.

Barnard shares with others the discovery of the gegenschein, the faint glow in the night sky in opposition to the sun. He carefully studied globular clusters, finally concluding that they were very distant objects. He was a keen planetary observer, and some of his sketches of Mars dating from the middle 1890s show dark circular markings that have subsequently been correlated with the volcanos along the Tharsis Ridge. To his credit, he never managed to see the canals of Mars claimed by Percival Lowell and others. Barnard died at Yerkes Observatory in 1922, leaving a legacy of discovery for those who follow.

Leslie Martin



109 Messiers bagged ... continued from page 4

### What you'll need

Besides you and your binos, you'll need a star chart, red light, and an observing notebook. Handy to have are a tripod to hold the binoculars steady, a towel to toss over the binos, checklist of the objects, a lawn chair and table. A star chart is probably needed for some Messiers (Realm of the galaxies, for example) but a Messier location chart or familiar Astronomy magazine "blue card" will suffice for 2/3rds of them. A notebook to keep notes is handy to avoid the "checklist" syndrome which prevents you from seeing details. I use a pre-printed log sheet which has a variety of object characteristics. I circle the level of characteristic I see and can add notes. I feel without this list one tires of trying to come up with different words to describe objects or one settles into the rut of describing them as "small, round and faint". No doubt about it -- note taking helps you see more but it is (for me) a chore. [This log sheet is available at the meetings.]

With handheld binos many objects can be found, but the constant wiggle and waver eliminates seeing details. Besides you get tired of holding any bino; small ones just take longer to tire you out! Mounted on a tripod a bino can be left pointing on an area or star while you consult a star chart. Using this method I found and took notes on all 17 galaxies in the Realm of the Galaxies area in about an hour and a half (while sitting in a lawn chair).

I find a towel thrown over the binos keep them warmer and delays the onset of fogging or frosting over. Dew shields would help even more on the objectives. Use the checklist of the objects so that you can cross out the ones you've found. They will not be found in nice 1,2,3 numerical order so it's easy to miss one or more if you don't keep track on a list. Don't forget to take notes too! For a table I sometimes use a lightweight 3-step folding aluminum platform utility ladder. The paint bucket shelf is handy for holding chart and notebook when standing and the platform shelf serves the same purpose when sitting. Hey, you might as well be comfortable!

### Finding the objects

A good portion of the Messiers are big and bright enough to spot directly by either knowing where they are or just knowing the general direction. The bino's big field of view makes sweeping the sky for objects relatively easy. Here is where the tradeoff between angle of view, magnification and light grasp of 7x35s vs. 16x80 binos comes into play. Naked-eye objects as the Orion nebula, Pleiades and the Andromeda galaxy are quicker to find (by a second or two) in 7x35s due to the larger view. Smaller but bright prey near bright stars as M78, M35 and M22 may also be easier and quicker in the 7x35s for the same reason.

Dimmer or smaller objects that on the map look like "easy find" such as M97, M57 and M70 start requiring more of the magnification and light grasp attributes of the bigger bino.

Star-hopping and triangulation are a joy in binos. You can start at a bright star say epsilon Sagittarius and from your star chart see the two close mag 5 stars to the left. That entire area is visible in 7x35s! Visualize where M69 and M70 are relative to these stars and 'Bingo' you got them. A binocular is its own finderscope. If you ever had trouble finding M69 and M70 in a scope, try them in binos first. They'll be small but definitely non-stellar.

Some objects will probably require a star chart. These are the less visited Messiers whose general sky location you don't know; the fainter Messiers that don't 'sweep' up; those in a blanker section of sky with few guide stars; and the Realm galaxies which are confusing to identify which one you're looking at.

### Get out and observe

Binoculars are powerful viewing aids. Not only are they extremely easy and fun to use, they are easy to grab when you only have a few minutes to observe or when that "sucker hole" opens up. No acclimating to outside conditions is needed and they are capable of picking up the bulk, if not all, of the Messier objects and a couple hundred more open clusters and other deep-sky objects. Tantalizing views of the Milky Way and just poking around are binocular treats. How about sharing some of your bino observations by sending them in to the newsletter

-Bill Smith

***Watch this column:  
special events, items to note,  
volunteer opportunities!***

## WANTED: SPEAKERS

The BAA's Speakers Committee is looking for lecturers, orators and just plain speakers to help fill our 1997-1998 schedule. If you have an area of interest that you would like to share with other club members please consider giving a talk at one of our monthly meetings. Your topic does not have to be on the cutting edge of astronomical research and it doesn't have to be long. A short presentation (10 to 15 minutes) about one or more observations you've made, an observing technique you've found to be useful, or a project you've completed or are currently working on would all make great talks. We are also willing to help out if you need presentation materials, e.g., slides or handouts. If you can help us out this year or if you have any questions, please call Bob Hughes at 833-2407, Carl Milazzo at 688-4869, Bev or Joe Orzechowski at 839-9109, or Bob Titran at 774-2742.

## ASTRONOMY DAY 1997

The BAA's celebration of Astronomy Day 1997 will be held at the Beaver Meadow Observatory in early May. Daytime activities and nighttime observing for members and the public are planned.

Activities will include slide shows, demonstrations and discussions of binocular and telescope observing, CCD observing, astrophotography, Jack Mack's dynamite Walk of the Planets and more!

If you would like to give a talk, assist the public in observing, or volunteer to help out on Astronomy Day, please give Astronomy Day Chairman Gene Witkowski a call at 716-876-4301.

## ASTRONOMICAL STAINED GLASS

Artist Jim Sawyer presented his beautiful 27" stained glass Milky Way Galaxy at the BAA's February meeting. The piece is composed of a multi-plate Tiffany glass background with embedded Austrian crystal constellations and is one of four in existence.

At the meeting, Jim described his first commission for the Milky Way Galaxy, which required three months to research and compose.

The Milky Way Galaxy is for sale!!! This piece and others may be ordered by contacting Jim at (716)-882-5251.

## BAA MEMBER HITS THE NEWS

Darwin Christy's handsome visage was in the Sunday edition of The Buffalo News a couple of weeks back in a picture accompanying an article honoring WWII veterans. Of course the picture did not look like Darwin, but it was Darwin!



## ANCIENT CONSTELLATIONS: LYRA

Lyra, the Lyre or Harp, anciently represented the instrument which was invented by Hermes. He gave it to his half-brother, Apollo, who in turn transferred it to his son, Orpheus. Orpheus was the musician of the Argonauts, of whom Shakespeare wrote:-

Everything that heard him play,  
Even the billows of the sea,  
Hung their heads, and then lay by.

Manilius describes Lyra's service in its owner's hands, during the release of Eurydice from Hades:-

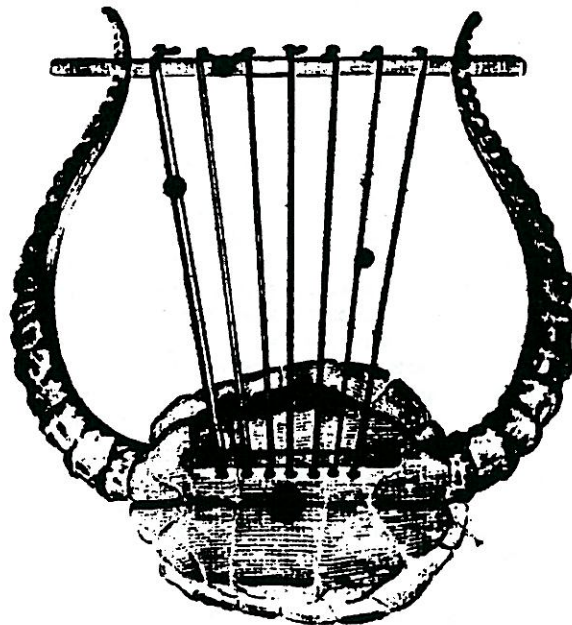
Gain'd it Heaven, and still its force appears,  
As then the Rocks it now draws on the Stars.

Manilius supposedly made two separate constellations of this figure, Lyra and Fides, although we do not know the boundary between them. The subject is somewhat confusing in his allusions. (I have not been able to find anywhere the likes of Fides as an ancient constellation, but am hoping to find something about it! <dpc>)

In Aratos' time, the constellation was called the Little Tortoise or Shell—going back to the legendary origin of the instrument which was made from the empty covering of a creature cast upon the shore. The dried tendons which stretched over it resulted in a musical instrument, similar to that of a mandolin. This figure was not the ancient constellation, Testudo, but did resemble it.

In the constellation Lyra can be found many objects of interest. M-57, the Ring Nebula, the famous Double-Double and others, too many to mention in this article. On its border can be found Cygnus and Hercules.

Darwin P. Christy



### Inside:

- 1 Annual Dinner Meeting  
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- 2 Membership corner  
BAA Annals
- 3 Spy and Tell  
Comments on 'The Universe'

- 4 Astronomical Happenings  
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- 8 Barnard's Star
- 9 Check out these notices
- 10 Lyra: ancient constellation

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