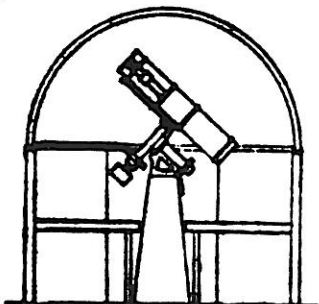




# THE



# SPECTRUM



BUFFALO ASTRONOMICAL ASSOCIATION, INC.

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## ASTRONOMER FROM THE PAST

### HEVELIUS

JOHANNES HEVELIUS -WAS BORN JANUARY 28, 1611 AND DIED JANUARY 28, 1687, IN DANZIG. AFTER VISITING THE PRINCIPAL COUNTRIES OF EUROPE, HE SETTLED DOWN IN HIS NATIVE CITY WHERE HE BUILT A WELL EQUIPPED OBSERVATORY IN 1641. HE DEVOTED HIMSELF TO THE STUDY OF ASTRONOMY UNTIL HIS DEATH. HIS 'SELENOGRAPHIA', A LUNAR TOPOGRAPHY PUBLISHED IN 1647, WAS THE FIRST OF MANY ASTRONOMICAL WORKS OF GREAT VALUE AND AUTHORITY. HE ALSO CATALOGUED 1,564 STARS, DISCOVERED FOUR COMETS AND OBSERVED SUNSPOTS. EDMUND HALLEY, WHO VISITED HIM AT DANZIG IN 1679 AT THE REQUEST OF THE ROYAL SOCIETY OF LONDON, OF WHICH HEVELIUS HAD BEEN ELECTED A MEMBER IN 1664, REPORTED QUITE FAVORABLY ON THE CORRECTNESS OF HIS OBSERVATIONS. IN 1661 HE OBSERVED A TRANSIT OF MERCURY, A TRIUMPH CONFINED TO PIERRE GASSENDI IN 1631, ALONE OF ALL PRECEDING ASTRONOMERS.

ELIZABETH, HIS WIFE, COLLABORATED WITH HIM AND IN 1690, PUBLISHED HIS 'PRODOMUS ASTRONOMIAE' AFTER HIS DEATH.

DARWIN CHRISTY

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elg

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 \* JANUARY - FEBRUARY \*  
 \* 1985 \*  
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## SPY & TELL

On Saturday, October 27, '84, John Riggs attended the American Association of Variable Star Observers' meeting in Salem, Massachusetts, where he met some of the top people in the organization. He regularly sends charts of his observations to the AAVSO. He has the honor of making the chart for the AAVSO of the various star fields through which Halley's Comet will pass. This chart will be utilized by the International Comet Watch.

The following members attended the NFCAAA in Niagara Falls on November 10th: Al Kolodziejczak, Doris Koestler, Marguerite Aiple, Ken Biggie, Ed Lindberg, Carl Milazzo, and Gary Herrnreiter.

Ken Kimble has taken up kayaking. Last fall, in his 16 foot kayak, he would paddle on the river as dawn came up, before leaving for work, spending 1½ hours at a time, three times a week, and 4 to 6 hours on Sunday. Adrienne has also become interested in kayaking. Ken enjoys the early morning hours on the river where he sees turtles, herons, ducks, and all kinds of wildlife as he paddles along.

Claudia has a new Chevy Monte Carlo. She and her hubby, Bob, went to Florida for the holidays.

We have three new members from the Astronomy Club at the University of Buffalo: Brian Gifford, Tom Reid, and Mike Swierski. Our meetings are listed in The Observer, the club's newsletter.

Dan Marcus and Bill Smith are spelunkers, and they spent a weekend exploring a small cave in West Virginia.

Shaun Hardy, who is energy personified, has found time, along with his heavy duties at the Kenan Center, to teach a course in astronomy at Niagara Community College.

The Owens received their 10.1" Odyssey Compact telescope in late September. The weather has prevented them from doing much viewing through their new scope. Clarence is busy being secretary of the Lockport Astronomical Association, while son, Bill, is the editor of the newsletter. Clarence is also the secretary and librarian of the local Osborne Computers Users Group. Judith is going to Niagara University where she has started to work on her Masters in education.

The Ruppas are having a great time training their four month old airedale. As a member of the family he feels he has table privileges. If one person leaves the table for a brief moment, one may come back to an empty plate.

Congratulations and best wishes to John Yerger and Mary Ann Klemenko who will be married in St. Margarets Church in Buffalo on January 12th.

Hope this year will be a happy one for all.

\*\*\*\*\*  
Edith L. Geiger

## ASTRONOMICAL HAPPENINGS

**SOLAR:** The Sun will leave Capricornus in January, entering Aquarius, then enter into Pisces in February. It will be at perihelion on January 3rd.

**LUNAR:** The phases of the Moon in January will be Full (WOLF) Moon on the 6th; Last Quarter on the 13th; New Moon on the 20th; & First Quarter on the 28th. In February it will be Full (SNOW) Moon on the 5th; Last Quarter on the 12th; New Moon on the 19th; & First Quarter on the 27th.

### **LUNAR CONJUNCTIONS:**

For January-

- 16th - Saturn
- 17th - Uranus
- 18th - Neptune
- 19th - Mercury
- 24th - Venus & Mars

For February-

- 12th - Saturn
- 13th - Uranus
- 15th - Neptune
- 17th - Jupiter
- 23rd - Venus & Mars

### **PLANETARY EVENTS:**

- Conjunctions for January-
- 13th - Mercury & Neptune
- 31st - Mercury & Jupiter
- Conjunctions for February-
- 7th - Venus & Mars
- 15th - (again) Venus & Mars

### **Elongations in January:**

- Mercury - west, 23 degrees on the 3rd
- Venus - east, 47 degrees on the 21st

Greatest brilliancy of Venus on February 26th.

### **METEOR SHOWERS:**

for January - Quadrantids on the 3rd \*\*\*\*\*

- Delta Cancriids on the 16th
- Kappa Cygnids (fireballs) on the 17th \*\*\*\*\*
- Coma Bereniceids on the 17th

for February - Aurigids on the 9th \*\*\*\*\*

- Delta Leonids on the 26th.

DPC

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## PLANETARY BRIGHTNESS

Having been fascinated by how the solar system might appear when observed from other planets within the system, I've made some rough calculations of planetary brightnesses for observers on different planets. Most amateur astronomers have seen the prominent planets during several years of observation. They are aware of changes in brightness as the apparition progresses, with a maximum occurring near elongation for inferior planets (those closer to the sun than us) and at opposition for the superior planets (those further from the sun than us). A planet appears slightly brighter at some apparitions than at others because the eccentricity of its orbit brings it closer to Earth at some oppositions. Mars exhibits the greatest difference in its maximum brightness because it follows a relatively eccentric path which is exaggerated by its proximity to us. Even so, the maximum

brightnesses of the individual planets. Mars included, are very similar from one apparition to the next.

The following table is a list of the brightness for inferior planets at elongation and for superior planets at opposition assuming they follow circular orbits. Brightness has been intentionally rounded off to the nearest half magnitude to avoid controversy because different references give different physical parameters, like diameter and albedo, that influence brightness.

PLANET	MAGNITUDE
Mercury	-1 1/2
Venus	-4 1/2
Mars	-1 1/2
Jupiter	-2 1/2
Saturn (ringless)	1
Uranus	5 1/2
Neptune	8
Pluto	15 1/2

TABLE 1

Suppose we visited other planets in our solar system. How bright would the rest of the planets be then? One might expect that the closer the observer approaches a neighbor the brighter it will appear. This is true, but only up to a point. For example, Uranus has essentially the same 5 1/2 magnitude brightness when viewed from any planet inside the asteroid belt. Seen from Jupiter, its magnitude is about 5 while from Saturn it is about 4. Fourth magnitude is pretty dim; Uranus is an unimpressive object even when seen from Saturn its nearest neighbor. The reason Uranus appears so dim is that it is nearly a billion miles from Saturn when it reaches opposition, and its light is correspondingly diminished by this great distance.

One might think the situation improves if Uranus were viewed from Neptune. But that is not the case because Uranus is an inferior planet as seen from Neptune, and is best observed when it appears furthest from the sun. When it is closest to Neptune it is aligned with the sun and can't be seen at all. Uranus is seen only during brief periods when its apparent distance from the sun is greatest, just like Mercury is seen from Earth. It shines very dimly at these times because it is at quarter phase so only half its disk is visible, and because the huge distances characteristic of the outer solar system places it very far from Neptune at elongation. As observed from Neptune, Uranus is a seventh magnitude object, making it much dimmer than when it is viewed from Earth.

This is true for all planets. As long as the observer moves outward toward the planet being observed, its brightness slowly increases. As soon as it becomes an inferior planet it becomes dim because it can be seen most readily only near elongation.

If one observed from an outer planet, like Uranus, the solar system would be a very dim place to our Earthly eyes. To illustrate this point, the brightnesses of the planets as viewed from Uranus are given in Table 2. These magnitudes may be compared to the first table

which depicts our view of the solar system from Earth.

PLANET	MAGNITUDE
Mercury	6
Venus	5
Earth	4
Mars	7 1/2
Jupiter	1 1/2
Saturn	3
Neptune	5 1/2
Pluto	14 1/2

TABLE 2

Actually the four inner planets could never be seen with the naked eye because they are always too close to the sun; even Jupiter would be more challenging to find from Uranus than Mercury is from Earth because its angular separation from the sun is less. If we visited Uranus we could see easily only two planets without optical aid - Saturn and Neptune. At magnitude 3 and 5 1/2 respectively, they are no brighter than very ordinary stars.

The view from Pluto is dimmer yet; from here all the planets are inferior. Jupiter would be the brightest at third magnitude assuming it could be seen in the sun's glare, which it almost certainly cannot. Neptune is the closest planet, but would reach only 8 1/2 magnitude at a typical elongation.

The best views are from the planets closest to the sun looking at nearby planets passing through opposition. The brightest planet seen from any planetary vantage point is Venus viewed from Mercury at -7th magnitude. Earth is -6 magnitude when seen from Venus and -4 magnitude when viewed from Mercury.

Suppose our vision were compensated for our distance from the sun. Imagine a race of beings native to Uranus whose eyes (optics?) were compensated for their dimly lit world. The sun, as seen from Uranus, is nearly 6 1/2 magnitudes dimmer than we see it, a factor of 400 to one. Table 3 shows how bright the planets appear from Uranus with this correction factor applied.

PLANET	MAGNITUDE
Mercury	-1/2
Venus	-3 1/2
Earth	-2 1/2
Mars	1
Jupiter	-5
Saturn	-3 1/2
Neptune	-1/2
Pluto	8

TABLE 3

With this compensation the solar system looks a lot brighter than it did before (see Table 2). Six planets shine with negative magnitudes, two more than we see from Earth. Similar correction for residents of Pluto brings the brightness of Jupiter to magnitude -4 1/2. The brightest planet seen in the solar system becomes Earth at magnitude -5 when it is viewed from Venus. Almost as bright is Jupiter for observers on Saturn. The brilliance of Venus as seen by inhabitants of Mercury drops from -7 to -4 1/2 when compensation for the

brightness of the sun at Mercury is taken into account.

In general, observers located on the outer planets have a slight advantage when viewing the solar system if their vision is adjusted to compensate for the intensity of sunlight. Six planets have negative magnitudes if Uranus, Neptune or Pluto are the vantage point. From Mercury only two other planets have negative magnitudes. From Earth four planets achieve negative magnitudes, a fair average as the solar system goes.

Leslie Martin

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\$\$\$ FOR SALE \$\$\$

#### PALIMAR JR. (REFLECTING) TELESCOPE

IT HAS A 4 INCH MIRROR AND AN ALUMINUM SHAFT 64 INCHES LONG. IT COMES WITH A STAND, A DETACHABLE TARGET SCOPE, AND TWO OCULARS. ORIGINAL PRICE WAS \$499.00 - ASKING \$250.00  
WILLING TO BARGAIN A LITTLE  
CALL:- ERIC C. BOEHM, 6149 LAKE AVE., ORCHARD PARK, N. Y. - PHONE 675 1938 BETWEEN 3PM AND 10PM. MONDAY THROUGH FRIDAY, ANY TIME ON WEEKENDS.

#### **Astronomical Bumper Stickers**

A series of good humored bumper stickers on astronomical subjects is being made available by the Astronomical Society of the Pacific.

Slogans include:

- Halley Hol (welcoming the return of Comet Halley in 1985-86)
- Let the Stars Get In Your Eyes
- Black Holes Are Out of Sight
- I Watch Heavenly Bodies  
and the somewhat more esoteric:
- Positrons Are Another Matter
- Supernovae Are a Blast  
and
- Quasars Are Far Out

The requested donation is \$1.00 for each sticker; proceeds go to support the educational programs of the nonprofit Society. Write to: A.S.P. Bumper Stickers Department, 1290 24th Avenue, San Francisco, CA 94122.

From AIN News of Association of Interpretive Naturalists Sep/Oct 1984

#### TELEVISION

Perhaps some of the members of the B.A.A. have seen the Television movie, "Clash of the Titan". It aired on channel 29, WUTV on November 23rd and is to be aired again in the future. I thought it to be an excellent movie depicting the Mythological story about Andromeda, Perseus, Chepheus, Cassiopeia, Pegasus and others. Anyone who knows of the story surely would have recognized the fable. Too, you would have most likely enjoyed it. For those who missed it, watch your television section for its return.

\$\$\$ FOR SALE \$\$\$

"QUESTAR" 3.5 inch - standard model in mint condition. Has a leather case + an outer weather case. Advised to ask \$ 2,100. Call Wadi Sawabini @ 652 9558 -----

#### **? QUIZ ?**

If the Moon filled the whole limit of the sky, would it seem brighter or fainter than the sun when directly overhead????

## CONSTELLATION FOR JANUARY

LYNX sive Tigris, the Lynx or Tiger is one of the constellations of Hevelius. It is bordered on the north by Camelopardalis; on the south by Cancer & Gemini; on the east by Leo Minor & Ursa Major; & on the west by Auriga. Only one star is brighter than fourth magnitude, which is Alpha, at 3.17.

Objects of interest include:-

Galaxies, NGC's- 2500, 2537, 2541, 2549, 2552, 2583, 2712, 2776, 2782, 2798, & 2844.

Globular Clusters, NGC 2419.

a Planetary Nebula at R.A. 53 degrees 25 minutes dec. 07 hours 57 minutes.

Variable Stars are:- UV(1), RR, SV, UX.

Double Stars are:- 4, 5, 12, 14, 15, 20, 27, & 38 (Rho) the components being 4.0 mag (white) & 7.5 mag. (lilac) separated by 2.9 seconds of arc. Happy hunting among these stars.

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→ "THE SPECTRUM" DEADLINE FOR THE MARCH-APRIL ISSUE IS FEBRUARY 20TH ←

## MEMBERSHIP DUES

Dues are:- \$ 15.00 for family membership  
\$ 10.00 for regular membership  
\$ 5.00 for students and senior citizens  
\$ 2.00 for subscription only

Dues may be made payable to 'the Buffalo Astronomical Association' and sent to Claudia Bielinski, 5450 Clinton St., Elma, N. Y. 14059 or John Raymonda, 80 A Foxberry Dr., Getzville, N. Y. 14068.....

What is common to the constellations of the skies and a piano?????

## Additional Spy and Tell

The Christys have been extremely busy remodeling their house. Darwin ripped out the wall between the living room and dining room and made one large room, which he paneled in Cameron Cherry. He lowered the ceiling 13", and had to redo the molding on door frames and windows. In the process of ripping out the wall he decided to rewire the room, and went ahead and rewired the whole house from top to bottom. He has some more projects coming up. With the new year, he will start to remodel the kitchen, and after that, the bathroom. He is also planning ahead to make improvements in the cellar, and open up two bedrooms on the second floor to make one master bedroom with a wall to wall closet.

Darwin has made some beautiful articles of wood. He has made several cribbage boards, among other things, using a number of different woods. He donated a magnificent gavel which he had made in a two week period, to the Masonic Order of which he is a member. He made the case for the gavel out of walnut, the inside of which he had hewn out by hand. Darwin has promised to display some of his excellent workmanship at one of our meetings.

Olga Lindberg has a most interesting article in Astronomy magazine, page 24, entitled "King Mongkut's Solar Eclipse."

DiLapos are hoping that the building of their new home on Cole Road in North Boston, will progress with the coming of spring.

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E.L.G.

-4-

## SOUTHERN CONSTELLATION

PYXIS Nautica, the Mariner's Compass

Pyxis - was formed by La Caille from stars in the Mast of Argo, which is associated with the Ship.

The constellation is one in the southern hemisphere. Puppis borders it on the west; Antlia on the east; Hydra on the north; and Vela on the south. There are only two stars brighter than fourth magnitude.

Noteable objects are few as follows:-

Galaxies include NGC's 2613 & 2688

Open Clusters include NGC's 2627, 2658, 2635, and 2818.

A Planetary nebula is at RA 9 hours 16 minutes dec 36 degrees 30 minutes

Variable stars include TY, R, S, T-NEC & U.

Double stars are- Delta, Eta, Zeta, Chi & Epsilon

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## ANCIENT CONSTELLATION

QUADRANS MURALIS, the Mural Quadrant

It was placed some where between the right foot of Hercules, the left hand of Bootes and the into the constellation of Draco by La Lande in 1795. It was to be a souvenir of the instrument which he and his nephew, Michel Le Francois, observed the heavens. The stars which they did observe were incorporated under the title, "Quadrans Muralis" and later published in the latter's "Histoire Celeste Francaise".

In Stieler's 'Planisphere' it is known as 'the Mauer Quadrant' and "Quadrante" by the Italians. Argelander and Heis did not recognize it in their works nor do the 'modern' astronomers of today.

It comes to the meridian with Beta Ursae Minoris on the 19th of June.

The "QUADRANTIDS", a rich meteor shower radiates from the above grouping of stars on January 2nd and/or 3rd.

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## INSTRUMENT NOTES

The Instrument Group is going to be combining instrumentation with observing for the coming season. There is a great deal of interest in the study of Halley's Comet and the photography of this object should provide us with a good application for our work with instruments.

Dan Marcus is coordinating a project to make a series of photos of Halley's Comet as soon as this object gets within range. We will hold photographic sessions at the Beaver Meadow Observatory, weather permitting. The meetings for January through March will be on the fourth Friday evening of the month as these evenings correspond to the most favorable phase of the Moon (near new Moon). In case of unfavorable viewing conditions the meeting will be held at the Museum. The meeting nights for subsequent months will be announced in this column.

Dan reports that there are three faint comets now in sight that we can practice on at the next observing meeting. If the weather is unsuited for observing we will meet at the Museum of Science and discuss instruments and observing strategy. Dan urges everyone having an instrument in astrophotography in general, and in Halley's Comet in particular, to attend our meetings. Call Dan at 773-5015 for last minute decisions on the place of meeting.

Ed Lindberg



Interested in catching a Comet ?

Here are some suggestions from International Halley Watch;

Films: B & W - Hypered Technical Pan 2415 developed in D-19  
- Tri-X - ASA 400  
- 2475 Recording Film, ASA 1000+  
Color - Hypered Ektachrome 200 Professional  
- Hypered Fujichrome 400  
- Kodacolor 100

Filters: Blue - Kodak 47A for ion tail  
Orange - Kodak 21 for dust trail

Lenses: Since Halley's tail may be as long as 30°, a standard 35mm camera with a 50mm lens will work just fine when recording the comet along with the field of background stars. Note with modern fast lens and film exposures of 10-20 seconds will give surprisingly good results. Modern fast lenses will give better optical results if they are closed down one or two stops, but this will increase exposure time. Naturally when the comet is farther away, or if you want close-ups of the head or tails segments, a longer focal length will be required.

Si = Size of image on film (or size of negative) (mm)  
So = Size of object to be photographed in degrees of arc  
fl = Focal length (mm)

$$Si = \frac{So \times fl}{57.3} \quad \text{OR} \quad So = \frac{57.3 \times Si}{fl}$$

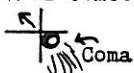
ie 50mm lens has a field of =  $\frac{57.3 \times 25}{50} = 29^\circ$  of arc.

Guiding: Correcting for the comet's apparent motion is vital, especially so when the comet is close to Earth. If you know the distance in degrees of arc that the comet will move during the exposure time, you can see if a correction is really necessary for your lens/camera combination. Rule of thumb is if the comet moves over .004" - use the formula

$$Si = \frac{\text{apparent motion in degrees of arc} \times \text{focal length}}{57.3}$$

If any correction is necessary, then any off-axis guiding system is useless. A co-aligned guide scope is recommended in this case. Try centering cross-hairs on the nucleus if it is already visible. If the coma is too bright to use the nucleus as a guide try the following cross hair alignment:

Motion of Comet



Further Information: You will find the International Halley Watch Amateur Observer's Manual for Scientific Comet Studies to be a very informative guide to comet watching. Its main thrust is towards Comet Halley, but the observing methods will apply to any comet. It is available from the Sky Publishing Corp. for \$9.95.

Come, join the B.A.A. Instrument Section, and catch one for yourself!!!

Daniel Marcus

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On January 10th 1985, +18 magnitude Halley's comet crosses the orbit of Jupiter and is located 6 degrees northeast of Betelgeuse in Orion.

C.M.

N. E. C. A. A. A.

## MEETING

The semiannual meeting of the Niagara Frontier Council of Amateur Astronomical Associations was held at Niagara Falls, Ontario on November 10, 1984. The meeting was combined with the annual November dinner meeting of the Niagara Falls Centre of the R.A.S.C. There were about 75 people attending. There were about ten attendees from each of the Buffalo, Rochester and Syracuse societies. There were mem-

bers from Hamilton and London and a larger group from the local Niagara Falls club.

There was no regular business meeting at this fall's meeting. Instead there was a good slide presentation of Indian petroglyphs by Jim Vail of Syracuse. Jim had come across a group of these stone pictures while exploring the American Southwest. This collection of stone pictures was amazing to an astronomer because there was a recognizable picture of a bright nova of the 11th century with drawings of the surrounding stars and constellations. This pinpointed some of the drawings to the nearest day in time.

After a sumptuous buffet dinner in the Skylon Tower the group adjourned to a basement room where we heard a most interesting lecture on the origin of chemical elements in the cosmos.

Since there was no regular business meeting and because no society offered to host next April's meeting, I decided (and the BAA board approved) to hold the meeting at Buffalo. This also seems like a good time to return to the format and purpose of the first meeting which was held in April 1968. The first meeting was called to see if area clubs would be interested in exchanging the expertise of their speakers with other area clubs. The idea caught on and most of the clubs have benefitted by the exchange of ideas and experiences.

The meeting is tentatively scheduled for Saturday, April 27, 1985. Anyone interested in the aims of the Council is invited to attend. We would like to see some member from each club present a fifteen minute condensed version of a paper that he would be willing to put on for other member clubs. We do not plan a banquet but will have a little buffet of snacks after the meeting. We hope to get invitations in the mail in time so that they can be mentioned in the various club newsletters.

Ed Lindberg

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## \* OBSERVATION REPORTS \*

1) November 2-3 I observed variable star S Cepheus. With its saturated N type spectrum, here truly is a "red" star. Tonight it looks to be of magnitude 11.0. As this variable is circumpolar its brightenings and fadings can be followed throughout the year.

2) November 3-4 I observed M-1, the Crab Nebula at 87x magnification. The nebula is large and bright but largely amorphous in structure, however, at 310x much of the filamentary structure the 'crab' is famous for is quite evident. As this nebula shines by synchrotron radiation a nebular filter helps but little here.

Also observed the newly brightened variable star, "Canal's Variable", in the Orion nebula. Previously this star had been of only magnitude 16 but it had brightened to about magnitude 13 by late last year. Since then it has faded once again looking tonight to be of only magnitude 14.6.

3) November 16-17 caught the cataclysmic variable star SS Aurigae at maximum light, magnitude 11.0. Three nights before it had been fainter than magnitude 14.5.

4) November 24-25 I observed two faint anonymous galaxies located upon the field of variable star RW Andromeda. At 264x two 15th magnitude stellar cores were noted, only faint traces of each galaxy's outer envelope was detected. Estimated integrated magnitudes of the two galaxies are 14.5 and 14.6 respectively.

Michael Idem

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Near the open cluster NGC 752 in Andromeda is the galaxy cluster Abell 262. It was seen with an 18 inch Dobsonian telescope on November 13th, packed tightly was 6 galaxies with cores ranging from amorphous to starlike. They all had a size of 1 minute, except one that was 2 x 3 and their magnitudes were from 13th to 14th, and are 330 million lightyears away.

Also that night a complex HII emission nebula was seen one degree east of Gamma Cygnus catalogued as IC 1318. It is about one degree in size and is of low surface brightness and has a dark rift splitting it across the center, and is 1/2 degree in size. The background is extremely rich with a resolved milkyway of faint stars, and a random sprinkling of brighter colorful ones.

Comet 1984-t Levy-Rudenko was seen on December 17th and 20th in the evening in the constellation of Lyra. It was of magnitude 8.3 with a low surface brightness with a slightly brighter center. No tail was detectable but it's coma appeared to be about 1/4th degree in size with a soft edge, as seen with 10 x 50 binoculars and a 5 inch f/4.2 refractor at 21 power.

Carl Milazzo

## LETTER TO THE EDITOR

Dear Darwin,

Ed tells me the dead line for the bulletin is Thursday and he has already sent you some notices for it.

Perhaps by now you have already read my article in the January 1985 issue of Astronomy magazine on the Eclipse of the Sun in Thailand - 1898. I have already had a number of calls from people who have read it, and they all say they didn't know I was an astronomer. I really am not, but I am married to an astronomer and after many years of attending conventions, lectures and meeting so many other astronomers, I have become interested too. Am sorry I missed so many meetings lately, but I wish all in the Buffalo Astronomy Club a very Merry Christmas and a Happy New Year.

Sincerely,

Olga Lindberg.

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IF ALL THE ZODIACAL DUST WERE PACKED TOGETHER AS A SPHERE, IT WOULD BE 20 MILES IN DIAMETER.

THE LAST SUPERNOVA SEEN IN OUR GALAXY WAS CASS -A IN 1677. IT WAS FOURTH MAGNITUDE AS SEEN FROM TURKEY. THE FIRST NOTED WAS 4000 B.C. FROM EGYPT AND MESOPOTAMIA. IT WAS AS BRIGHT AS A FULL MOON AND IS IN THE CONSTELLATION OF VELA.

CARL MILAZZO

## - MEETING NOTICES -

JANUARY MEETING: The January meeting of the B. A. A. will be held at the Museum of Science on Humboldt Parkway. It will take place on January 11, 1985 starting at 7:30 PM!!

The evening speaker will be Dr. Carl Seyfert from the Dep't of Geosciences at the Buffalo State College. His topic will be, "Impact of Meteorite at Cretaceous-Tertiary Boundary, Bearing the Continental Drift." Let's welcome Dr. Seyfert.

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FEBRUARY MEETING: The February meeting will also be held at the Museum of Science on Humboldt Parkway. It will be held on February 8, 1985 starting at 7:30 PM Sharp!!!

Three of our own members will have short talks. First; Dr. Fred Price will give us a report on the "Lunar Mysteries". Second; Larry Carlino will tell us about the "Purchasing of a Telescope." & third; Rowland Rupp will address us with the "Hertzsprung-Russell Chart." This should be of interest as there are subjects to fit all of our needs. Let us welcome our own members, Fred - Larry - & Rowland.....

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## THE EXTREME RANGE OF APPARENT AND ABSOLUTE MAGNITUDE

The apparent magnitude of a celestial object is simply how distinct it seems to be. An object can look brighter if it were closer or dimmer if it is more distant. Depending on how dusty or clear the light path is can greatly affect the original brightness of an object. Just as light bulbs come in different brightness, so do celestial objects. Some celestial objects can look dim or bright depending how well or poorly they reflect light.

Absolute magnitude is the true brightness of an object as if seen at a standard distance of 10 parsecs which equals 32.6 light-years. At that distance our sun would equal the dimness of a star +4.8 in magnitude

## APPARENT MAGNITUDE

- 27 THE SUN.
- 12 FULL MOON.
- 9 FIRST QUARTER MOON.
- 4 VENUS.
- 2 JUPITER.
- 1.5 SIRIUS THE VERY BRIGHTEST STAR.
- 0 WITH EXCEPTION OF SIRIUS, THE BRIGHTEST STARS, EXAMPLES, ARCTURUS, VEGA, CAPELLA, RIGEL, PROCYON.
- +1 EXAMPLES, ALTAIR, ALDEBARAN, SPICA, REGULUS, ANTARES.
- +2 THE NORTH STAR POLARIS.
- +3 THE FAINTEST STAR IN THE BIG DIPPER.
- +4 STARS OF THE LITTLE DIPPER'S HANDLE.
- +5 THE FAINTEST STAR IN THE LITTLE DIPPER.
- +6 THE NAKED EYE LIMIT SEEN IN THE COUNTRY SKIES.
- +9 THE FAINTEST STARS SEEN WITH ORDINARY BINOCULARS.
- +13 THE VISUAL LIMIT OF A 6 INCH TELESCOPE.
- +14 " " 12 " "
- +15 " " 18 " "
- +16 " " 30 " "
- +17 " " 40 " "
- +20 " " 200 " "
- +22 " " 400 " "
- +23 " " 600" AND PHOTOGRAPHICALLY 200."
- +26 C.C.D. IMAGER ON THE 200 INCH TELESCOPE.
- +30 " " " 94 INCH SPACE TELESCOPE.
- +100 THE VISUAL LIMIT OF A 4 LIGHT YEAR DIAMETER MIRROR.

## ABSOLUTE MAGNITUDE

- 108 THE BIG BANG.
- 37 - -20 QUASARS.
- 26 - -21 BL-LACERTAE GALAXIES.
- 24 - -22 N-GALAXIES.
- 23 - -21 SEYFERT GALAXIES.
- 23 GIANT ELLIPTICAL GALAXIES.
- 20 NORMAL GALAXIES (OUR MILKY WAY).
- 20 - -13 SUPERNOVA } EXPLOSIVE STARS
- 12 - -5 NOVA }
- 12 - -8 HYPERSTARS (ETA CARINAE TYPE).
- SPECTRAL CLASS OF MAIN SEQUENCE STARS WITH AN EXAMPLE.
- 8 - -4 O ZETA PUPPIS
- 4 - 0 B REGULUS
- 0 - +3 A SIRIUS
- +3 - +4.5 F PROCYON
- +4.5 - +6 G THE SUN
- +6 - +10 K 61 CYGNI
- +10 - +21 M PROXIMA CENTAURI
- BELOW THIS LEVEL THE MASS OF AN OBJECT IS TOO LOW FOR FUSION. THOSE OBJECTS ARE KNOWN AS "BROWN DWARFS" OR "SUBSTELLAR MASSES" OR AS "GAS GIANT PLANETS" LIKE JUPITER, SATURN, URANUS AND NEPTUNE.

Carl Milazzo

## FROM PAST SPECTRUMS

Marie T. Cain is a member of the Finger Lakes Astronomy Society and in October of 1968 wrote the following article for the "SPECTRUM" about William R. Brooks - Comet Seeker.

William Brooks was born in Maidstone, England on June 11, 1844. As a child he traveled with his family to Australia and thence to this country in 1857. His interest in astronomy may have been aroused by meeting the famous Sir John Herschel while still in England, or during the voyage to Australia, watching the ship's captain making celestial observations for navigation. At any rate, the Brooks family settled in Darien, N. Y., where young William began to pursue the study of astronomy through reading books and through observations of the night sky. He also became interested in photography fairly early in his life. As a young man he worked at the Shepard Iron Works here in Buffalo, later on also at the Corliss Steam Engine Company in Syracuse and Boston, helping in the construction of steam engines and other heavy machinery, an experience which later on proved to be quite useful in his work with telescopes and the building of other astronomical instruments.

In 1868 William Brooks married Mary E. Smith at Edwardsburgh, Michigan and two years later they moved to Phelps, N. Y., where he set up a photography shop. Two children were born, a son who died at an early age, and a daughter, Anna Caroline, who later was to help her father with his observations and in the calculations of comet orbits and who also accompanied him on some of his lecture tours. For many years Miss Brooks was a teacher of mathematics at Geneva High School.

Just south of Phelps Village, Brooks built Red House Observatory (on the present Harold Harlan Farm) and there from about 1888 he discovered ten comets - discoveries which achieved world-wide fame for William Brooks. Some-

time later, a wealthy nurseryman of Geneva, William Smith, invited Brooks to Geneva to build, or rather supervise the building of an observatory. Brooks served as the director of this "Geneva Observatory" until his death in 1921. In this capacity he discovered an additional 17 comets, and from 1900 until 1921 he also was professor of astronomy at Hobart College.

In recognition of his cometary discoveries, William Brooks received many awards, among them several gold medals and thousands of dollars in prize money. He was also awarded two honorary degrees of Doctor of Sciences. He was a keen observer with an inquiring mind, and his pleasing personality easily appealed to his audiences and his students. Overcoming many obstacles, he did much to "popularize" astronomy and his many comet discoveries should be an inspiration to all of us.

\* \* \* \* \*

From the December 1969 issue of the "Spectrum".

### \* MARE CRISIUM - SPOTS & STREAKS, 1964 \*

The chart on page -8- of the Mare Crisium is based on observations made on the evenings of February 20th, 22nd, and 24th, 1964, with the 8-inch refractor of the Kellogg Observatory, Buffalo Museum of Science. The Mare was under a high angle of illumination and special attention was paid to the light spots and streaks which are only visible under these conditions of illumination, or at least are difficult to see under low lighting. The observation of these diffuse markings is extremely trying and demands excellent seeing. Many of them are visible on the best photographs. Note the configuration of the well known "Trapezium" in the South part of the Mare. I hope that members of the B.A.A. will attempt to confirm my observation. I have blank outlines available if anyone would like to have them on which to record their observations.

Fred Price

\* \* \* \* \*

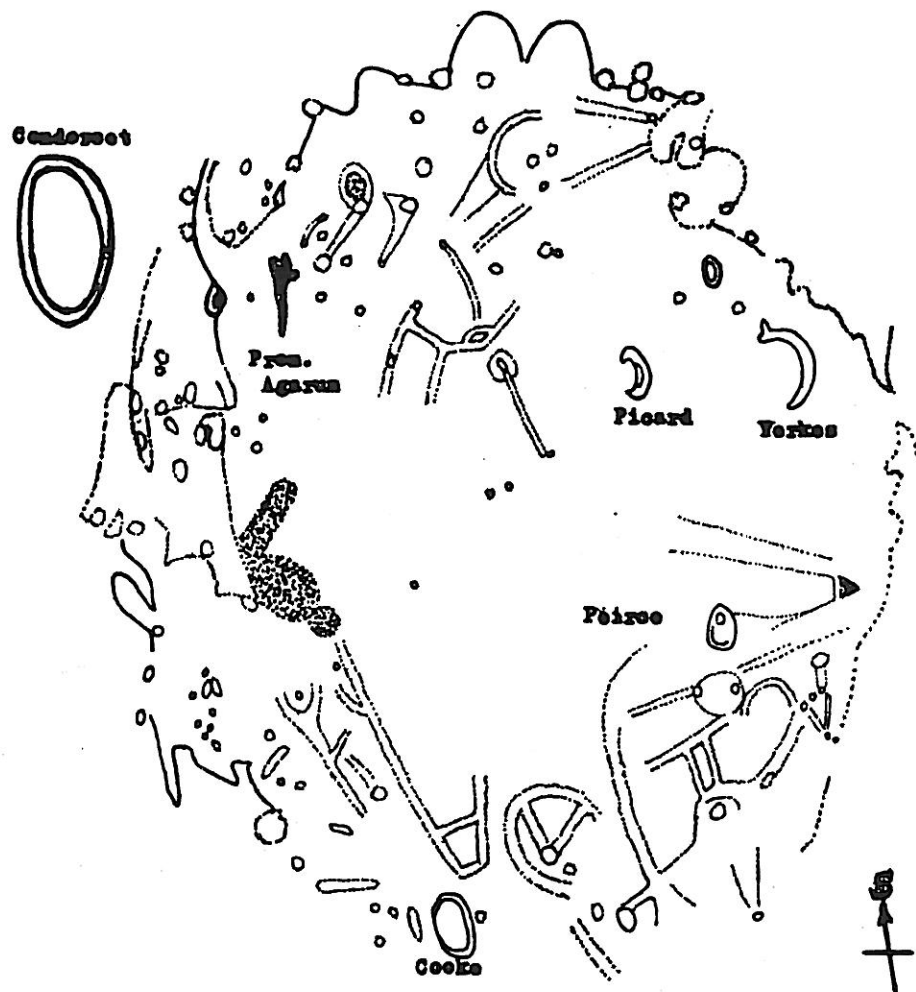
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Thank you all for the articles in the 'Spectrum'. I only hope that there will be more the next publication.

DFC

\* \* \* \* \*



-8-

JACK Empson

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\* THE SPECTRUM \*

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