

# the Spectrum



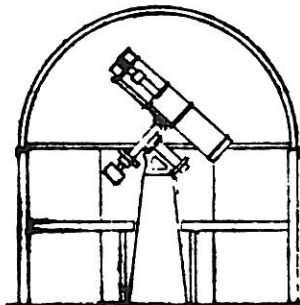
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\*\*\*\*\*  
\*\*NOVEMBER - DECEMBER\*\*  
\*\*1984\*\*  
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Observatory Director - John Riggs  
Membership Chairperson - Claudia Bielinski  
Spectrum Editor - Darwin Christy

Tristo Delapo has been elected to finish the unexpired term on the Board which was held by Doris Koestler, she having been elected as our Vice President automatically is on the Board.

## ASTRONOMER FROM THE PAST

ARATOS (Aratus of Soli) was a Greek Poet & Astronomer, born about 315 B.C. A work of his was "PHAINOMENA" after 295 B.C., in astronomy; probably the most important in that era. About 270 B.C. he gives us our oldest list of 44 constellations. These were copied by him from a work by 'Eudoxus' nearly a century earlier. Aratos enumerated 19 northern constellations, 13 zodiacal and 12 south of the ecliptic. 'Ophiuchus' was among the first which included Serpens; and Centaurus included Lupus.

The three groups include (1) Ursa Major, Ursa Minor, Draco, Cassiopeia, Cepheus, Perseus, Andromeda, Pegasus, Triangulum, Auriga, Boötes, Corona, Cygnus, Hercules, Lyra, Sagitta, Aquila, Delphinus &, of course, Ophiuchus. (2) Aries, Pleiades (which is now counted as merely an asterism in Taurus), Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Aquarius, Capricornus & Pisces. (3) Cetus, Eridanus, Orion, Canis Major, Lepus, Argo, Hydra, Crater, Corvus, Ara, Centaurus & Piscis Australis.

I could find no record of his age at death, but presume him to have been about 45 when he listed the constellations.

Darwin Christy

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## ? How Good is My Telescope ?

This is a question every observer asks of their instrument at one time or another. One of the most common ways to judge quality is to observe close double stars on nights of good seeing. However, if reference is made of the available catalogues, such as the Atlas of the Heaven II or Norton's Star Atlas, the value given for position angle and separation are frequently badly out of date due to the orbital motion of the stars. (Norton's is hopelessly inadequate in this respect.) For those observers interested in checking their instruments with current values this fall and winter, the following list of stars is provided. I have calculated the position angle and separation for these 11 stars from

the orbital elements to epoch 1985.0 and should be very accurate. The values for right ascension and declination have been omitted to save space, but may be found in the Atlas of the Heaven II, Catalogue.

ADS NO.	Mag 1	Mag 2	Position Angle	Separation	Constellation /Star
61	6.5	7.3	298.0°	1.44"	Cas
755	6.2	6.6	277.5	0.67	36 And
1615	4.3	5.2	277.4	1.66	Alpha Psc
1709	6.5	7.1	270.0	1.08	And
2959	7.4	8.9	71.0	0.97	Per
3082	8.1	8.2	272.7	0.75	Per
3264	5.9	7.9	16.0	1.81	80 Tau
5871	7.2	7.2	318.9	1.32	Gem
15270	4.7	6.1	301.7	1.68	Mu Cyg
15971	4.4	4.6	216.3	1.81	Zeta Aqr
16538	4.7	6.7	341.1	1.13	Pi Cep

The separations of all of these stars is under 2.00 seconds, so most telescopes will find them to be a real challenge. Large telescopes won't have an easy time of it either due to the restrictions imposed on them by the usual seeing conditions here in western New York. A good 6-inch should resolve many of these stars. The most difficult star on the list is 36 Andromedae - unless you own a large refractor it's doubtful if you will be able to resolve it!

John Riggs

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## \*\*\* ELEMENTARY SCHOOL ASTRONOMY \*\*\*

One of the benefits of having a hobby like astronomy is an occasional opportunity to play the role of an expert. I had that opportunity a couple of months ago when I was asked to speak at the Windermere Elementary School in Amherst. I was a little chagrined when Mrs. Janet Helfrich, the special classes teacher who organized this program of outside speakers, suggested I concentrate on Earth orbiting vehicles for their third graders. Orbiting space craft isn't exactly my thing, and I wondered how one holds the attention of third graders without losing them or, worse yet, patronizing them. But armed with back issues of SKY & TELESCOPE and a couple of text books I put together a half hour talk complete with photocopied transparencies of space craft.

What a surprise I had in store. Clearly these kids had studied about space as Mrs. Helfrich had promised. When I called for audience participation I received enthusiastic and perceptive responses. There were about 125 students and all of them seemed attentive and interested throughout the talk.

When I asked for questions I was almost overwhelmed. The questions weren't trite as you might expect from a nine year old, but generally showed considerable insight.

One kid wanted to know what we would use for energy in an orbiting space station. When I turned to the rest of the students for suggestions, I heard a chorus advocating solar power.

Another physicist in the making asked how one could keep things anchored down in an orbiting space colony when there was no gravity. I showed him my slide of a wheel shaped space station and explained how it could rotate to produce an outward force that felt like gravity. The young questioner was quite dubious about my answer. He pointed out that it takes mass to make gravity, so how could it be produced by spinning a wheel? I told him that a fellow named Einstein said an observer couldn't tell the difference between force produced by gravity and force produced by acceleration. That seemed to satisfy him for the time being.

The question of the existence of flying saucers controlled by alien intelligence came up, as one might expect. I asked the class to vote on the issue. To my surprise the vote was about four or five to one against little green men. Apparently science has the upper hand on science fiction at Windermere School.

When my hour was up the students were still trying to get in one last question. All in all, the receptiveness of this young audience made me feel the efforts put into preparing this talk was well worth while. I hope some of you will have a similarly satisfying experience thanks to your interest in astronomy.

Rowland Rupp

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#### ANNUAL MEMBERSHIP DUES

FAMILY - \$ 15.00

REGULAR MEMBERSHIP - \$ 10.00

STUDENT & SENIOR CITIZENS - \$ 5.00

SUBSCRIPTION ONLY - \$ 2.00

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#### ASTRONOMICAL HAPPENINGS

SOLAR: THE SUN LEAVES SCORPIO AND ENTERS SAGITTARIUS IN NOVEMBER. IN DECEMBER THE SUN LEAVES SAGITTARIUS AND ENTERS CAPRICORNUS. ALSO IN DECEMBER IT REACHES ITS FARTHEST SOUTHERN POINT, BEGINNING ITS JOURNEY BACK NORTH MAKING THE NIGHTS SHORTER.

AN ECLIPSE OF THE SUN WILL OCCUR NOVEMBER 22ND. BUT WILL NOT BE SEEN FROM ANYWHERE IN THE UNITED STATES. IT WILL BE VISIBLE THROUGHOUT AUSTRALIA AND SOUTH AMERICA.

LUNAR: THE MOON'S PHASES FOR NOVEMBER ARE, FIRST QUARTER ON THE 30TH; FULL MOON ON THE 8TH; LAST QUARTER ON THE 16TH; AND NEW MOON ON THE 22ND. FOR DECEMBER; THE PHASES ARE FIRST QUARTER ON THE 30TH; FULL MOON ON THE 8TH; LAST QUARTER ON THE 10TH; AND NEW MOON ON THE 22ND.

FULL MOON IN NOVEMBER IS CALLED THE 'BEAVER' MOON, AND THE FULL MOON FOR DECEMBER IS CALLED THE 'COLD' MOON.

A PENUMBRAL ECLIPSE OF THE MOON WILL OCCUR ON NOVEMBER 8TH AND WILL BE VISIBLE ONLY IN THE EXTREME NORTHERN PARTS OF AMERICA.

LUNAR CONJUNCTIONS: FOR NOVEMBER

24TH - NEPTUNE

24TH - MERCURY

25TH - JUPITER

27TH - MARS

FOR DECEMBER

19TH - SATURN

23RD - JUPITER

25TH & 26TH - MARS

PLANETARY CONJUNCTIONS: FOR NOVEMBER

13TH - VENUS & NEPTUNE

15TH - MERCURY & URANUS

24TH - VENUS & JUPITER

FOR DECEMBER

2ND - MERCURY & NEPTUNE

6TH - MERCURY & NEPTUNE

23RD & 26TH - MERCURY & URANUS

29TH - MERCURY & SATURN AND VENUS & URANUS

METEOR SHOWERS FOR NOVEMBER AND DECEMBER

NOVEMBER 3RD - SOUTHERN TAUTIDS \*\*\*\*\*

9TH - CEPHEIDS

10TH - NORTHERN TAUTIDS \*\*\*\*\*

11TH - MU PEGASIDS

12TH - ARIETIDS

14TH - BIELIDS (ANDROMEDES) \*\*\*\*

16TH - LEONIDS \*\*\*\*\*

28TH - ANDROMEDES

DECEMBER 5TH - PHOENICIDS

10TH - MONOCEROTIDS

10TH - CHI ORIONIDS, NORTHERN

11TH - RHO HYDRIDS

11TH - CHI ORIONIDS, SOUTHERN

13TH - GEMINIDS \*\*\*\*\*

22ND - URSIDS \*\*\*\*\*

8TH - 14TH -- DELTA ARIETIDS

12 - JAN 23RD -- COMA BERENICIDS

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Letters to the editor

Editor, The SPECTRUM:

Over the years, THE SPECTRUM has published a few anonymous articles. These have been light exposes on non-controversial topics--written primarily to entertain and/or provide a modicum of knowledge. Since there is nothing to refute in these articles, it matters little that their authors have remained unidentified.

It is a very different situation with "???What's Wrong With Astrology???", which appeared in the September-October 1984 issue. This anonymous contribution is a diatribe against an ancient discipline associate (albeit of questionable validity) which was once intimately associated with the science of astronomy. Even a non-believer will recognize the almost-hysterical total denunciation as the work of an ill-informed individual.

One of the BAA's most active members, Claudia Bielinski, is a professional astrologer. The club had the opportunity several months ago to hear Claudia's well-prepared and very interesting lecture on her field of expertise. Unfortunately, through no fault of hers, the impact of her presentation was marred by the inexplicable failure of the owner of the birthdate to show up at the meeting, thus leaving the audience wondering how close on target Claudia's horoscope had been. Be that as it may, it is quite apparent that "Anonymous" either did not attend the lecture or did not listen to it.

"Anonymous" is entitled to his opinion that astrology is sheer bunkum, but his statement that it is "... a clever scam used by an obsessed occult guru who wants to dominate the gullible" verges on slander and absolutely calls for the signature of its author.

Irene M. Rupp

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Second Warning -

Following up on the admonishment in the last number of THE SPECTRUM pertaining to the dangers of practicing astrology, I feel obliged to issue a warning concerning another risky activity practiced by our club. Because our general

meetings are held on the second Friday of the month, there is a distinct possibility that the meeting will fall on Friday the 13th. It may surprise you to know that the chance of this happening is no less than One in Seven!

Now we all know, or at least should know, that ominous events are likely to transpire on Friday the 13th, and I believe our club should discontinue convening on that date. We could have meetings on the Friday before, or on the Friday after Friday the 13th, but in no event should we meet on that chilling date itself. I suppose we should make it the first Friday of the month, the 6th, to avoid a conflict with the Study Section which meets on the third Friday. Perhaps we could persuade them to swap with us; but I'm sure, being a Study Group, they must know about Friday the 13th too, and will reject our proposal out of hand.

I know you are all grateful for this second warning about things you should avoid for your own good. I hope those in authority will act promptly to remedy this dangerous situation before we suffer dire consequences by tempting fate.

Anonymous

TO THE ABOVE----I do not believe that that number "13" is all it is professed to be. If it were, then I, should have met my fate many years ago. It was that I was a member of the "13th" Air Force in the Southwest Pacific during the World War II!!!! and do NOT believe in the fear of 13. Have you ever had any luck from the number "7" (????) which is supposed to be a lucky number???

Darwin Christy

#### IN RESPONSE TO ??? WHAT'S WRONG WITH ASTROLOGY???

1)2)3)

The first three statements have no bearing on astrology today. All subjects had their early beginnings with a lack of facts and research with little or no equipment to gather accurate information such as medicine, astronomy, geography - to name a few.

4) Contrary to statement #4, astrologers are very much aware of the wobble of the earth that has caused the Sun's position to drift back one full sign. To set the record straight, astrological charts are calculated using the tropical zodiac - (i.e., the seasons) and not the constellations nor the moving zodiac associated with the wobble of the earth. This sets the two disciplines apart. In Astrology, the Sun still arrives at 0 degrees Aries at the March equinox March 21st every year; at 0 degrees Taurus on April 20th of each year; at 0 degrees Gemini on May 21st, and so forth, irrespective of its so-called drift. Therefore, the path of the Sun each year is the same in Astrology just as the seasons fall at the same time every year in accordance with our calendar.

5) Anonymous failed to name who the experts were and what were the different answers. All astrologers using the same rules will get the same calculated results (charts). Differences may be found in interpretation of the chart. As in Astronomy, do all astronomers agree on black holes, "the Big Bang" etc., etc., etc.???

6) Astrology has sign and planetary rulers (not stars) for parts of the body - starting with Aries and Mars ruling the head and going down to Pisces and Neptune ruling the feet; not up the back or randomly as Anonymous suggests.

7) Asteroids and Comets are not definitely included and used in Astrology.

8) Astrologers do not ignore how long one is alive before the moment of birth - A natal chart is based on the moment of the first breath.

9) The true functional zodiac is not the physical belt of Constellations which have lent their names to the signs.

10) Many cultures and civilizations have contributed to Astrology but in all the books on its history, I've never read about "Witch-Doctors" being a part of it. As for colors, modern Astrology doesn't classify them as being a good or bad omen.

11) Astrology uses signs not the constellations.

12) Astrologers do not claim that all people born between June 21st and July 22nd are the same - they all have their Sun in the sign Cancer but that does not make them the same. Day, month, year, time and location make for very different people with the same Sun sign. The difference of one minute changes the position of that Sun along with other positions in the chart such as planets, moon, signs houses. Sun sign Astrology is not Astrology any more than gazing at the sky with the naked eye is Astronomy.

13) It is not the "force" of the planets and stars that is calculated and used in a horoscope but the planets and stars and moon's position and their alignment to each other. For example, R.C.A. Communications Inc. uses a form of Keplerian astrology to predict storms in the ionosphere which garble and destroy shortwave radio communications. One of R.C.A.'s chief weathermen, John H. Nelson predicted with 93% accuracy with charts he set up (in effect horoscopes) of the planets positions in relation to the Sun.

In Anonymous's last paragraph he or she quoted a warning of warped judgment. I would like to ask if it is good judgment to criticise a subject without researching it first? Also, is it good judgment to use unrelated or false statements to try and support that criticism??

Claudia Bielinski  
Member of the American  
Federation of Astrologers.

'SPECTRUM' deadline for JAN:FEB issue is DEC 27th

New Members of the B.A.A.

William Owens

Tim Johnson

Lisa Wisnet

George H. Scheck

Thomas G. Reid

Allen David Adam Mielowski



#### ? QUIZ ?

Our amateur astronomer, Higgins Eye-piece, travelling by train, wished to take his scope along on a trip. The telescope was a 3-inch, f/15 refractor with a one-piece tube 4 1/2 feet long. The mounting could be removed from the tube for shipment but the tube could not be shortened.

The conductor would not allow a telescope on the passenger cars. So Higgins went to the baggage man, who advised him that the longest object acceptable as baggage would be three feet in length. Higgins came up with an idea that allowed him to take the telescope along as baggage.

What did he do to make it work???

The following strings of letters have apparently no meaning. But once you figure out the theme, you will see how they go. And then you will, of course, be able to fill in the missing letters.

1) S M V E M \_ J S U N P.

2) J F M A M J \_ A S O N D.

3) O T T F F S S E N \_.



"BEAVER MEADOW COMPARED as"  
an OBSERVING SITE----

As a B.A.A. member I have often wondered how on a qualitative basis my fairly average suburban observing site compares with that of Beaver Meadow. Assuming both sites are representative of typical near-city and/or country sites, respectively, I have, over the past eighteen months attempted to statistically compare both sites on a point to point basis. If done over a year long period the net pluses and minuses of both sites can thus be compared directly. Such a study may point out as to which location can most profitably be employed for any given observing program.

First off, the nightly rate of temperature drop or thermal gradient is decidedly greater out at Beaver Meadows amounting, on average, during the summer months to 2.5° f per hour. In the suburbs this thermal gradient is a less severe 2.0° f for hour. Most of the nightly temperature drop, though, at both sites is greatest during the first few hours of the night, becoming almost constant by day break. With the lower temperatures of winter the thermal gradients of both sites are reduced, 1.7° f per hour at Beaver Meadow and 1.2° f per hour in the suburbs. The effect of these thermal gradients are largely confined to the dewing or frosting over of the telescope optics. Beaver Meadow is inferior in this respect, dewing of the optics being, on average, 1.6x more frequent than was experienced from the suburban site.

Pertaining to this matter, as a rough rule of thumb for reflector telescope: if, with the eyepiece removed, you can look obliquely through the eyepiece holder and still see any portion of the sky then your secondary mirror probably does not lie far enough within the tube to provide complete dew protection. For refractors or catadioptric telescopes a dew cap at least twice the telescope's clear aperture should be the rule. With a Celestron or Meade Schmidt Cassegrainian telescope this unfortunately means a dew cap being of equal length to that of the telescope's tube assembly.

The steadiness of the atmosphere is also related to the thermal gradient. On a yearly basis the suburban site experienced superior seeing conditions, about 25% more nights possessed good planetary and/or double star images. Beaver Meadows has proven to be the windier site of the two but this is of little consequence for visual observers, photography though may be effected.

There appears to be two weather regimes prevalent during the calendar year. The "summer" regime is characterized by generally superior seeing conditions, a proportionally higher number of clear nights, and a typically higher nightly thermal gradient. The "winter" regime, conversely, tends to be possessed of more turbulent seeing conditions, fairly few clear nights, and a small nightly thermal gradient.

Both sites demonstrate these two weather types but in total they are more pronounced in the suburbs. The "summer" regime tends to begin during mid-May and end in-and-around mid-October, the rest of the year being relegated to the "winter" regime.

There seems, however, to be a slightly greater tendency for clear nights at Beaver Meadows during the warmer months but certainly the reverse is true during the winter. This is no doubt do to its location in the snow belt and to certain down-lake cloud patterns. As such the suburbs experience about 10% more clear nights during winter than does Beaver Meadow.

While we cannot bring the city lights of Buffalo to Beaver Meadows we can still ascertain the relative atmospheric particulate or aerosol load present over both locations. We can employ the Moon throughout its phases, seen near the horizon, as an 'artificial' city and thus probe both sites as per their relative light scattering capabilities. From this it was found that the suburbs are not particularly more polluted than is Beaver Meadows. It would seem that Buffalo is a relatively unpolluted city. Thus during full Moon the naked eye limit at Beaver Meadows is then only slightly superior that of the suburbs. Better

than 90% of the suburbs inferiority can be attributed to simple outdoor light pollution.

With a greater number of apparent deficiencies what then is the great attraction of Beaver Meadows? Very simply its the far superior transparency present over the Beaver Meadows site! With the Moon absent and no haze being present the typical naked eye limit experienced at this country site is magnitude 6.6. The average naked eye limit at my suburban site is about 5.0 magnitude on a similar yearly basis. Thus by transporting a given telescopic aperture from the suburbs to the country one can seemingly double its penetration into space.

Of course at any location the judicious use of higher magnification can darken the sky background and thus bring fainter stars into view. Owing to the brighter ambient sky background of the suburbs this magnification effect is more efficiently utilized upon moderately brighter skies. As such telescopically much of this magnitude loss can be regained in part. For extended deep-sky objects, however, excessive magnification should be avoided for after a point a large diffuse object will be dimmed just as rapidly as is the sky background.

My suburban site lies wholly within the outer light pollution envelope of Buffalo but Beaver Meadow, being 27 miles from the city experiences only a trace of light pollution along its WNW horizon, azimuth 260-340°. The country site virtually lacking local lighting sources thus retains a much darker total sky background.

In conclusion if ones observational interests lie mainly with the Moon, Planets, Sun or close double stars the more city bound sites are to be preferred as here the atmosphere is steadier. If your chief interest lies in deep-sky, deep-sky photography, comet hunting, meteoric studies or variable stars then Beaver Meadows is the place to be.

One added advantage of Beaver Meadows, often forgotten, is its well equipped observatory which is available to all B.A.A. members.

See page -8- for corrections of Moonlight.

Michael Idem

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#### ANSWERS TO THE QUIZ !!!!

1) Higgins put the telescope tube diagonally into a cubical box measuring three feet on a side. There was plenty of room for the separate mount.

2) The different themes of strings of letters are:-

1- This gives the first letters of the planets of our solar system in order out from the sun. The missing letter is "A", for "Asteroids".

2- The months of the year. The missing letter is "J" for "July".

3- The initial letters of the names of the numerals from 1 to 10. The missing letter is "T" for "Ten".

Ed Lindberg

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#### Our Satellite Clubs:-

In addition to our regular monthly meetings all members are encouraged to actively participate in our STUDY SECTION (coordinated by Dr. Fred Price) and in our INSTRUMENT SECTION (coordinated by Ed Lindberg). These activity sections are an excellent opportunity for members to continue learning about Astronomy, and to pursue individual interest beyond what is possible at regular meetings and summer star parties....

Ken Biggie

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#### !!! NOTICE !!!

The "Bob Kartyas" 8-inch reflecting telescope housed at the Beaver Meadow Observatory will be available for short term loan to B.A.A. members until public nights begin again next Spring. Our club Treasurer John Raymonda will coordinate this effort and those interested in using the instrument can contact John at 80 A Foxberry Drive, Getzville, N. Y. 14068 - ph 688 1043

## SPY & TELL

From October 4-7, in Oklahoma City, Darwin Christy attended the third reunion of the 70th Fighter Squadron of the 18th and 347th Fighter Group of the 13th Air Force, located in the southwest Pacific during World War II. They had a bang up time and Darwin has pictures to prove it. He is looking forward to the next reunion in Colorado Springs in 1986.

Claudia Bielinski struck it rich in Atlantic City when she won \$500 playing two slot machines, winning \$250 from each machine.

Claudia, who is interested in endless pursuits, is now taking a course at the museum in soapstone carving, something she has never tried before. She continues to enjoy the course in paleontology, in which this year's class will center its attention on trilobites.

She is a great traveler, always on the move. She went to a wedding in Kentucky in late October, and is going to Florida (one of her frequent trips) in November or December.

Pat Loebel moved to New York City on October 20th. She is working with computers at an insurance company. Hope you can come back to see us often. Good luck!

Peter Michael Goetz, son of Irving and Esther, has a role in this TV season's After Mash, as the new director of the hospital.

Doris Koestler and her son's fiancée took a one week trip to Gettysburg, Williamsburg, Virginia Beach where they had a thrilling time watching the Blue Angels perform, and to Big Meadows campground for a night in the Shenandoah National Park.

Orrin Christy is a crackerjack soccer goalie on Ray's Soccer Tees team.

When some Frenchmen came over to visit Moore Business Forms, the company in which Orrin is employed, Orrin acted as translator.

From September 24 to October 4, the Geigers traveled on Skyline Drive in Shenandoah National Park, and continued through the Blue Ridge Mountains into the Great Smokies, running into amazing weather changes from hot to bitter cold and snow. Interesting trip.

Edith L. Geiger

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### REAPPOINTMENTS

For your information the Board of Directors have re-appointed Darwin Christy as "SPECTRUM" editor, John Riggs as "Observatory Director", and Claudia Bielinski as "Member ship Chairperson" for another year. We should all appreciate the efforts of these persons and express our individual thanks for the fine job they do for our club.

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NOTICE: A note of thanks to Tom Dessert for another cash contribution to the BAA resulting from the publication of another of his many astro-photographs.

### PROFILE

Michael J. Idem

Buffalo born Michael was destined to be an astronomer with his interest in the subject increasing dramatically year after year. On the cold night of December 7, 1959, Michael, then four years old, was invited to a neighbor's yard to look at Jupiter through a Skilcraft telescope. The image of Jupiter was poor, but Michael's awe at seeing the planet had a tremendous effect on him. In 1965, when he was ten years old, he made his first telescope, employing single element lens, utilizing a turpentine can. It was strictly a Galileo type instrument with which he could see 7th magnitude stars.

His early education was obtained from Cleveland Hill Elementary School. Science was an important area of learning for Michael even in grade school, especially in the fields of rocketry, space and astronomy.

In 1966 Michael purchased a 60mm refractor telescope with which he could view Saturn, the moon, and planets. The sight of Saturn in his small scope whet his appetite for astronomy even further. In 1968, when he was thirteen, he decided that he needed a more powerful telescope, especially with the opposition of Mars coming in the next year. He set to work grinding an 8" mirror which he finished on July 4, 1969. The mirror was housed in a 6 foot tube, 10 inches in diameter. In 1971 he was ready for another opposition. Michael had learned telescope making from books, with no outside help whatsoever. He found that more and more he was becoming interested in deep-sky objects, and in 1971 he observed 192. He kept delving into astronomy books constantly, absorbing all the information he could find.

In Cleveland Hill High School he joined the Rocketry Club. Its members tested nose cone shapes, worked with engine design and aerodynamics. This energetic group made 4-stage rockets which broke the sound barrier. In 1973 he was involved in a Science Fair group project in which they finished a pulsed laser which utilized carbon dioxide gas, producing an infrared beam.

From 1973 to 1977 Michael was a student at the University of Buffalo where he received his degree with a major in chemistry and a minor in physics. He took the introductory astronomy course, 101 and 102, in which he never received a grade less than 100, and was getting A++s. He found that he knew more than the course offered. He used the 10" Cassegrain telescope at the university, but decided that his own 8" was a much better instrument.

In 1977 he visited the Beaver Meadow Observatory where former member, Tom Dessert, showed him many objects in the 12½" telescope and, as a result, Michael knew that he had to build another scope. So in 1979-80 he made a 12½" f/4 telescope, again without any outside help. So far he has built 18 scopes and a slew of what he terms "reincarnated" ones, that is, new scopes made from other telescope parts. He now uses his 6", 12½" and 13.1" for observing.

His favorite construction material is wood, as it is light and structurally strong. It has a good vibration dampening quality, and reduces any thermal problems. Michael's trademark is a pitch black telescope, so take care not to stumble over him in the dark at any of his observing sites.

In 46½ months he has observed 2527 deep-sky objects. Not only has he observed these objects, he has recorded details in several volumes which he has catalogued. He includes the position angle of the major axis, the nucleus brightness of galaxies, basic sizes, the object's magnitude compared against stars of known magnitude, and much, much more.

In the late '60s he started to observe variable stars. In 1983 John Riggs interested him further in these stars. In thirteen months Michael observed 1600+, and in September of this year alone, he observed 327. In September of '83, he joined the AAVSO (American Association of Variable Star Observers).

Michael has been developing a project involving a survey on the effect of light pollution on observing deep-sky objects. He has worked on this in Cheektowaga, 7 miles from the geographical center of Buffalo. He has accomplished this tremendous undertaking by systematically stripping the sky of everything, and then recording everything as he again observes the objects. He now has an 8 inch thick notebook on his survey which is more extensive than the New General Catalogue.

He has also done an experiment on telescope apertures and magnification limits. He has found through serious and careful study that larger magnification won't improve the image, because of increased turbulence. For greatest efficiency, his experiment shows that a 14" is about the largest practical telescope for this area's prevalent seeing conditions.

Neither Michael or John Riggs, our Beaver Meadow Observatory Director, need setting circles or any other devices to find objects in the sky. Their amazing knowledge



of the heavens enables them to pick out anything in a flash and provide information on the many objects seen. How fortunate we are that two such extremely capable and dedicated members are willing to give of their time to interest others in astronomy. The large attendance at Beaver Meadow Public Nights attests to the fine presentation they provide for a very appreciative following, which often numbers around 70 people. We owe them a debt of gratitude for their fine teamwork at the observatory, bringing credit to the B.A.A. by their high standards as they give their best to enthused listeners.

After Michael graduated from college, he worked for a short time at Hooker Chemical in Niagara Falls, followed by employment as a mechanic in the warehouse at Niagara Frontier Service. He then went on to work in the parts department of F & W Olds on Walden and Harlem, which was purchased by Basil Olds. He has been there four years.

Not only is Michael interested in astronomy, he is also involved in nature, enjoying time spent observing and photographing wildlife. He processes his own films. He also does some work with astrophotography, using black and white film. In his study of wildlife, he spends many hours hiking, in which he finds great satisfaction. He has an urge to get up as high as he can, so his hike up Mt. Marcy in the Adirondacks was a very gratifying experience.

Michael is an avid reader, not only of books on astronomy, but also of books on space; genetics, another strong interest; and magazines like Scientific American. Occasionally he reads basic science fiction stories. Other hobbies include sports cars, listening to country music and the "old" rock and roll.

Michael is a fine, happy, friendly, clean-cut young man with a sense of humor. He is very accomplished and is one of our most serious and knowledgeable observers, with an excellent memory for retaining the facts he has gathered. I'm sure we will hear more about Michael's astronomical prowess in the future.

\* \* \* \* \*

Edith L. Geiger

#### ))) INSTRUMENT NOTES (((

In conjunction with the Instrument Section, Dan Marcus will be co-ordinating a program to produce a series of photographs of Halley's Comet as it passes by. The comet is still a long way from perihelion, being at magnitude 19. But there will be a lot of preparation before we are set up to make a good series. So there is no time to lose.

Since the comet is now in Orion, Dan's schedule is to begin by photographing that constellation. This will serve to calibrate our lenses and fix the exposures for deep-sky objects. The operation will be a team effort. One member will specialize in locating the best guide star for the evening's effort. Another will be good at guiding and someone will be on the alert to close the shutter for the passage of a meteor, plane or satellite (at least for the planes!).

The group will meet at Beaver Meadows for our next two meetings. We will be observing and/or familiarizing ourselves with the program. The meetings are set up for Friday evening nearest the new moon. In November this will be on the 25th, which is also the fourth Friday. But in December the date is the 21st (the third Friday). For January and February the meetings occur on the fourth Friday and whether we meet at the Museum or out at the Observatory will depend on the weather. Call Dan at 773 5015 to check the final plans for a particular meeting.

Ed Lindberg

\* \* \* \* \*

#### \*\*\*\*\* NOTICE OF MEETINGS \*\*\*\*\*

Our monthly meetings from January 1985 til June 1985 will be held at the Buffalo Museum of Science again starting this coming January 11th. Remember that the Museum itself will NOT be open for the public attendance on Fridays but a room will be made available for B.A.A. meetings.

\* \* \* \* \*

## MEETING NOTICES

**NOVEMBER MEETING** - The November 9th 1984 meeting will be held in the Auditorium at Buffalo State College beginning at 7:30 PM. Our speaker is to be John Murtaugh, Associate Professor of Geoscience at Buffalo State. He will speak "Imoact Craters on Earth", focusing on field research has done at the Lake Manicougnin Crater near Quebec,

& & & &

**DECEMBER MEETING** - The December 14th 1984 meeting will be held at Buffalo State, starting time is 7:30 PM share Our traditional Christmas Meeting featuring Edith Geiger's annual "Candid Camera" and a slide presentation on Saturn by Carl Milazzo. Also---don't forget the highlight of the evening - a wine & cheese and other assorted good party following the meeting.....

\* \* \* \* \*

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

17.6-inch f/4.4 Dobsonian Reflector - Coulter Optics smooth, no backlash home-built alt-azimuth mount - transportable. 2", 1 1/4" Meade Focuser - 8 x 50 mm f/10 20 mm Erfle Eyepiece (100x) - aperture stops for high planetary work - carrying case for mirror.

Under dark sky conditions this telescope has shown all 5 galaxies in Stephan's Quintet.

the Horsehead Nebula.

Intricate detail in the Veil Nebula.

Globular Clusters + Diffuse Nebulae equal to better than most photographs.

Price - \$ 900.00 - can deliver - contact Larry Ca 832 0491

\$ \$ \$ \$ \$

#### CONSTELLATION OF THE MONTH

**CASSIOPEIA** (The Lady in the Chair) is one of the most notable objects in the northern skies. Mythology has her dating back as far as 3500 B.C. The most famous of her ends is from the Greeks which relates that Cassiopeia Cepheus' beautiful wife and Andromeda's mother. She is to have been a vain and conceited person as well as in fact, having boasted that she was more beautiful than the sea nymphs.

The sea nymphs were incensed at her attitude and informed the god Neptune of the insult to them. Neptune there upon sent the sea monster to ravage the coast of Ethiopia, and decreed that Andromeda, Cassiopeia's daughter, be chained to a rock by the seashore as a prey and sacrifice to the monster. This is where Andromeda got her name "Lady in Chains".

Cassiopeia lies south of Cepheus; east of Camelopardalis north of Perseus and Andromeda; and west of Lacerta and Cepheus. The constellation's principal stars form either a "W" or an "M" however you may happen to look at it.

Objects of interest as found in the "W. Tirion Sky 2000.0" are as follows:

Open Clusters - H1, H21, Mel 15, and NGC's 103, 133, 146, 179, 225, 358, 381, 436, 457, 559, 581 (M-103), 637, 654, 659, 663, 7654 (M-52), 7788, 7789 & 7790.  
Diffuse Nebulae - I, 59 - I, 63 - I, 1795 - I, 1805 - I, 1, 1851 - I, 1871 and NGC's 281 & 1027.  
Planetary Nebulae - I, 289 - I, 1747 & NGC 7635.  
Variable Stars - CC, SU, RZ, S, V391, RU, YZ(21), WZ(57), AA, Gamma(27), T, TV, V377, Rho(7), R, AR, SV, V4 V373.  
Double Stars - Gamma, Rho, R, AR, 50, 48-A, 49, Iota Eta(24), Lambda(14), 6, Sigma(8).  
Nova - B-N1572 (variable)

#### SOUTHERN CONSTELLATION

**PHOENIX** (The Eagle) is a southern constellation lying low -40° latitude. It is one of Bayer's newer figures in the sky and is bordered by Fornax and Sculptor on the north; Grus on the west; Tucana on the south; and

on the east. The brightest star, Alpha, is but 2.2 magnitude. It has a 14th magnitude companion which is purple in tint.

Objects of interest are as follows:-

Galaxies - I, 2325 - I, 5328 and NGC's 625, 7689, 7690, 7702, 7744, 7764, & 7796.

Variable Stars - Rho, R, SX, S, Zeta, W, AE.

Double Stars - Eta, Xi, Theta, Iota & Beta.

## OBSERVATIONS

1) September 4-5 A moderately weak Aurora occurred this night. Quite variable in intensity, most of the time it consisted of a formless glow 10-15° above the northern horizon but at intervals bright luminous spines could be seen fanning upwards to 45° of altitude. Only slight strobing was detected within these occasional projecting rays. What makes this Aurora notable was its color, most Aurorae appear either colorless or, perhaps, a rather weak pastel green but this display possessed a most intense fluorescent green hue. This great color burst occurred at 12:30 AM but the Auroral activity was evident from between 12:00 & 12:30 AM (EDT). Through-out the most active region lay at azimuth 150°

2) September 5-6 A number of meteors from the weak Gamma Andromeda shower I observed. One particularly fine example occurred at 2:33 AM (EDT) and traveled 20° through Cetus into Fornax. Shining at -1 magnitude during its flight it ended in a -3 magnitude terminal burst.

3) September 6-7 Very active night for telescopic meteors. Most appeared to be sporadic but after 1:00 AM they were seen at the rate of ten per hour, within a 1° field diameter. One curious example passed through a 310x eyepiece field and looked to shine at only magnitude 14.0.

4) September 8-9 Nova Vulpecula 1984 continues to fluctuate erratically in brightness. At maximum it shown at magnitude 6.2 but over the past few months it has varied between 7.5 & 8.8 magnitude.

The same night I observed the cataclysmic variable star "U" Geminae at maximum light, magnitude 9.5. Two nights before it was estimated at magnitude 13.2 and two weeks ago it was at minimum light, magnitude 14.2

5) September 26-27 After a rapid brightening on the night of Sept. 19-20 Nova Vulpecula 1984 now seems to be fading from sight. This night it looks to be magnitude 9.3. Its slightly orange color, though, still persists.

6) October 6-7 I observed a moderately bright Aurora of unusual form. When first noted at 8:30 PM EDT it consisted of two amorphous arcs, the first and most intense lay 10-15° above the northern horizon. The second less intense arc but also more variable lay 20-30° above the horizon. By 9:30 PM the Aurora had become more extensive, large detached patches now were evident extending up to 60° of altitude. Rapid variations were apparent within these patches as well as considerable fluctuation of the lower arcs. The Aurora had altered greatly by 10:15 PM. the lower most arc was now transformed into an intense array of fanning rays and spikes. These rays tended to form along the lower arcs western margin and then slowly march eastward broadening and diffusing as they progressed. Often these shifting rays would double back on themselves and in so doing form some amazingly bright needle-like spikes. At greatest brilliance at 10:30 PM, the Aurora was largely pale green in color but a trace of pale pink could also be detected. Most of the time the Aurora was visible extended from azimuth 300° to azimuth 50°, after 11:00 PM the display faded greatly being non-existent by 12:00 AM.

As this was also a Public Night at the Beaver Meadow Observatory some three dozen people were treated to this Auroral display, in some cases for the first time in their lives!

Michael Idem

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## VISUALLY SEEING the ARMS of GALAXIES

through MATEUR'S SCOPES

The threshold of visually seeing the luminous spiral arms of a galaxy is with a 10-inch telescope and M-51 in Canes Venatici is the most obvious. To see the maximum of detail use a low to medium power eyepiece, rock the telescope back and forth and look off to the side of the field of view slightly. Also helpful, is a black shield around the eyepiece area of the telescope to block out stray light from entering the unused eye, but also to stop interfering with the peripheral vision while viewing through the eyepiece. Near by face-on Sc galaxies (loosely wound spirals) are the easiest to see spiral structure, but still it is of low surface brightness. The spiral arms usually contain some bright knots which are occasionally as bright as the galaxy's hub or even its star like nucleus. They are H II emission nebulae and OB super associations of young bright stars. The threshold of visually seeing the silhouetted dark arms of dust is with a 4-inch telescope and M-104 in Virgo is the most prominent. The easiest to see are nearby near edge-on spirals of any type and the dust lanes look slightly curved or straight. They are found only on one side of the galaxy and are near its minor dimension and parallel to its major dimension.

It is now becoming more common for amateurs to see the arms of galaxies because of many factors. One is the invention of the Dobsonian telescope in 1969 in California by John Dobson which became popular on the west coast in the early 70's. On the east coast it began to catch on in the early 80's very rapidly. In 1979 there was only one Dobsonian at Stollefane in Vermont out of 500 telescopes. Today about half are Dobsonians. They cost about one quarter as much as a conventional telescope. They weigh about 1/10th as much, they are 4 times more compact and are quick and easy to assemble and disassemble. Dobsonians have large diameter azimuth bearings of aluminum tubing riding on two teflon pads which produces a controlled amount of friction, yet move smoothly without any backlash. The azimuth mounts are made of lightweight materials like wood, aluminum, fiberglass, formica and styrofoam which need no machining and the telescope is fastened with wingnuts. Some have collapsible open truss tube which makes it easy to transport and light weight. The mirror is of short focal length and thin which allows a simple light mirror cell and a compact telescope. Dobsonians with mirrors less than 15-inches needs no ladder when pointed at the zenith and with its wide field of view, large objects can be enjoyed and easily located. Those who want a Dobsonian to track equatorially are using a Poncet platform or by means of a computer. Because of these many advantages, a Dobsonian offers an amateur to have a large telescope. Also it is so easy to set-up and it is used quite often. Because of its portability, one can take it to the dark country skies and head for the hills to escape from light pollution and ground fog in the low flat lands and valleys. Our club members over the past 3 years have built or purchased 11 Dobsonians so far which range from 5 to 22.5 inches. Other things that have helped in the viewing the arms of galaxies are the new eyepiece designs and nebula filters (narrow band interference) which increase contrast by reducing airglow and light pollution.

In the past century the true nature of galaxies was a mystery, some thought that they were solar systems in the formation. The first step towards revealing their true nature was the discovery of the spiral shape of some nebulae. This was done by the Earl of Rosse with his 72-inch mirror. From 1845-51 he saw the spiral shape in 9 nebulae. The spectroscope in 1864 indicated that the spiral nebulae are made up of unresolved stars rather than just a cloud of pure gas as some thought. In 1880 photography began to show clearly the spiral shape of these nebulae and revealed numerous examples. In 1885 a supernova was seen to appear in M-31, the Andromeda Galaxy. It was the first time such an event was noticed in these spiral shaped objects. In 1908

'SPECTRUM' DEADLINE FOR THE JAN-FEB ISSUE IS DECEMBER 27TH

for the first time such an object was resolved into stars, it was done with the newly competed 60-inch telescope at Mt. Wilson photographically. In 1913 the first fairly large red shift was detected which was too high of a velocity to be in our galaxy. In 1917 uncalibrated Cepheid variable stars in the near by Magellanic galaxies had their relationship of periods and luminosity determined and the discovery of novae in nearby spiral objects. Finally in 1924 the true nature of spiral shaped nebulae was confirmed by calibrating the radial velocity and proper motion of Cepheid variables in our galaxy. In addition to other types of objects in our galaxy, such as RR Lyrae variable stars in globular clusters, novae and M II emission nebulae.

The following is a list that I have compiled of galaxies that an amateur can see its arms. Those with the most prominent arms are marked with an asterisk (\*).

#### Galaxies with Luminous Arms:-

\*M-33 Tri, \*M-74 Psc, M-77 Cet, \*IC-342 Cam, NGC-309 Cet, \*NGC-1232 Eri, \*NGC-1300 Eri, NGC-1365 For, NGC-1637 Eri, NGC-2537 Lyn, \*NGC-2903 Leo, M-66 Leo, M-65 Leo, NGC-2403 Cam, \*NGC-3184 UMa, \*NGC-3187 Leo, NGC-3190 Leo, \*M-81 UMa, \*M-88 Com, \*M-99 Com, M-58 Vir, \*M-51 CVn, \*M-101 UMa, NGC-3810 Leo, NGC-3726 UMa, NGC-3893 UMa, NGC-3953 UMa, \*NGC-4051 UMa, M-106 CVn, NGC-4618 CVn, NGC-4631 CVn, \*M-61 Vir, \*M-100 Com, NGC-5248 Boo, NGC-5371 CVn, NGC-5364 Vir, \*M-83 Hya, \*MGC-6946 Cyg, NGC-7479 Peg.

#### Galaxies with Silhouetted Arms:-

\*M-31 And, NGC-520 Psc, NGC-672 Psc, \*NGC-891 And, NGC-1421 Eri, NGC-925 Tri, \*NGC-681 Cet, NGC-2523 UMa, NGC-2976 UMa, \*NGC-3190 Leo, \*NGC-3628 Leo, NGC-4111 UMa, M-108 UMa, \*NGC-4216 Vir, \*M-64 Vir, \*NGC-4546 Com, \*M-104 Vir, \*NGC-4710 CrB, M-102 Boo, \*NGC-5866 Dra, NGC-5128 Cen, NGC-7331 Peg, NGC-7814 Peg.

Carl Milazzo

\*\*\*\*\*

#### EDITORIAL

As editor of the "SPECTRUM", I have decided that any articles received by me for publication in the newsletter signed 'Anonymous' must be from a member of the B.A.A. Also, it must be signed by that member but will remain in strictest confidence. I believe that the use of anonymous writings could damage the quality of the newsletter as well as the good relationship the club now possesses.

Darwin Christy

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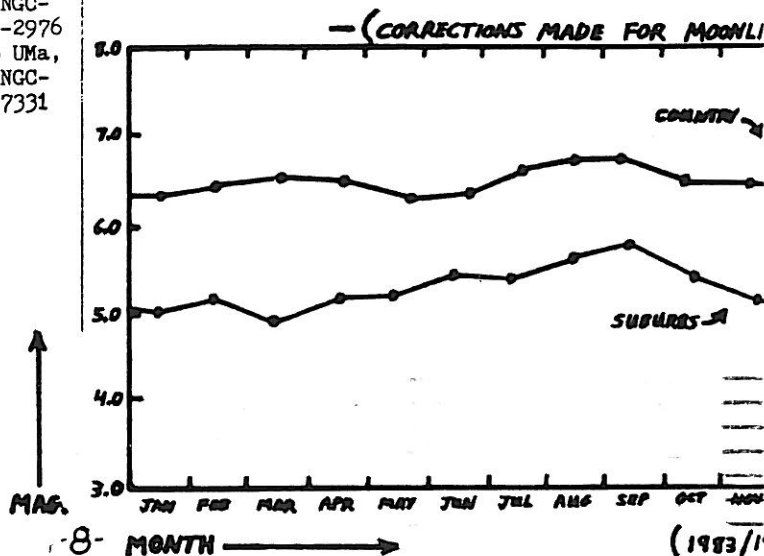
Ken Biggie

Edith Geiger

Carl Milazzo

The Heavens and the Cosmos  
Understand quietness  
Night fire ---

Wispy Pleiades --  
A nebulousy adrift  
On the cold sea of stars.

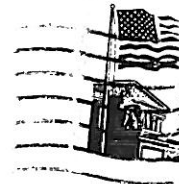


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