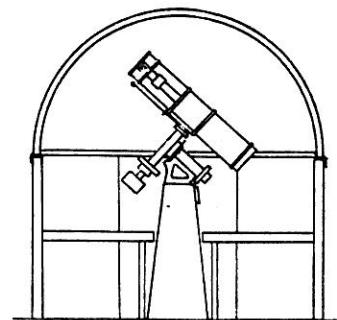


SPECTRUM



Buffalo Astronomical Assoc. Inc.

MARCH - APRIL
***** 1983 *****

NOTICE !

Due to renovation at the Museum of Science, the March and April meetings of the B.A.A. will be held in the auditorium of the New Science Building at Buffalo State at 7:30 P.M.

NOTICE !

Our speaker for the March 11th meeting will be Jesse Eichenlaub, whose topic will be, "The Amateur Space Telescope." Mr. Eichenlaub has been a member of the Syracuse Astronomical Society and is currently studying optics at the University of Rochester. He has been active in the development of the amateur space telescope which is scheduled for launch later this decade.

Dr. Gilbert Brink, one of our own members, will be speaking at the April 8th meeting. His topic, "Lasers and Lunar Ranging", will be augmented by a demonstration showing how lasers work and what they can do. Dr. Brink is Professor of Physics at the State University of New York at Buffalo where he has given courses in astronomy.

DR. FRANK DRAKE TO SPEAK-----

Two lectures will be given by Dr. Frank Drake at the Buffalo Museum of Science:

8:00 P.M., Thursday, April 29th - "Other Worlds in Space and the Future of Terrestrial Civilization."

8:00 P.M., Friday, April 30th - "The Search for Extra-Terrestrial Intelligent Civilizations."

Dr. Drake is professor of astronomy at Cornell University and has long been an enthusiastic supporter of SETI (Search for Extraterrestrial Intelligence). In 1960 he used the Arecibo Radio Telescope, of which he subsequently became director, for one of the first searches for intelligent signals from other stars. The well known Drake equation defining probabilities for extraterrestrial civilizations was formulated the following year.

Plan to arrive early if you want to be sure of hearing these talks.

"SPECTRUM" DEADLINE for the May-June issue is APRIL 28th

OBSERVATORY NOTES

Our new season of Public nights at Beaver Meadow Observatory begins this year on Saturday, April 2nd and will run to October 15th. Once again, the first and third Saturday nights of a month will be reserved for Public Night. During July & August however, Public Night will

Rowland Rupp, President

Ken Biggie, Vice President

Ken Kimble, Secretary

Edith Geiger, Treasurer

Darwin Christy, Editor

+++++

be held every clear Saturday night. This will allow us to take advantage of the high attendance at the regularly scheduled summer evening lectures held in the Visitor's Center. Volunteers will be needed!! Please don't hesitate to help out. Your contribution is vital to the continued success of Public Nights. Call 875-7965 to make arrangements. This is one of the best ways our club has to reach out and expose others to the world of astronomy

Some of our telescope users may have noticed that the rotating ring assembly which holds the telescope tube does not always turn freely. When the rings are stiff they should be lubricated with the can of spray oil (WD-40) kept in the warming room. Insert the long extension tube into the can's nozzle and direct the spray into the bearing surfaces of the rings. A few squirts of oil into each ring should do the trick. Do not let the rings become too dry or the bearing surfaces may become scored.

The mild winter weather has been very favorable to our observers at Beaver Meadow. Several exceptionally clear nights occurred in January and February--most unusual for western New York. If this keeps up we may look forward to plenty of good spring nights ahead! Hope to see you at Beaver Meadow.

John Riggs

??? QUIZ ???

- 1) What is an Angström Unit?
- 2) What is an Astronomical Unit?
- 3) What is a Parsec?
- 4) What is a Light Year?
- 5) What is Angular Measure?

Answers are elsewhere in the 'Spectrum'.

????? PUZZLE ?????

From what point on the Earth can you
Walk 10 miles south -
then walk 10 miles east - then walk 10 miles north
and arrive back at your starting point?

Answer is elsewhere in the 'Spectrum'.

ASTRONOMICAL HAPPENINGS

for MARCH, APRIL, & MAY

SOLAR:- The SUN will cross the Equator on the 20th as it travels northward, marking the beginning of Spring (vernal Equinox). For those who wish to find true east and west on that date, the sun will rise due east and set due west. In March the Sun will pass from Aquarius to Pisces; from Pisces to Aries in April and from Aries to Taurus in May.

LUNAR:- New Moon - March 14th - April 13th - May 12th
First Quarter Moon - March 21st - April 20th
Full Moon (Worm) - March 28th
(Pink) - April 27th
Last Quarter Moon - April 5th - May 4th

OCCULTATIONS:- March 6th - Jupiter/Moon - will be visible in Asia and Northern Europe.

March 7th - Neptune/Moon - will be visible in Antarctica.

March 16th - Vesta/Moon
April 2nd - Jupiter/Moon - will be visible in the Pacific and northern Central America.

April 14th - Vesta/Moon
April 29th - Jupiter/Moon - will be visible in parts of Asia and the East Indies.

These Occultations will appear as conjunctions on their respective dates in the Buffalo area.

CONJUNCTIONS:- March 16th - Mars & Moon
March 17th - Venus & Moon
March 30th - Saturn & Moon
April 2nd - Uranus & Moon
April 3rd - Neptune & Moon
April 9th - Mercury & Mars
April 10th - Uranus & Antares
April 14th - Mercury & Moon
April 16th - Venus & Moon
April 22nd - Venus & Aldebaran
April 26th - Saturn & Moon
April 29th - Uranus & Moon
May 1st - Neptune & Moon
May 6th - Jupiter & Antares

METEOR SHOWERS:- Zeta Bootes - March 11th
Corona Australids - March 16th
Virginids - March 26th
Alpha Virginids - April 9th
LYRIDS - April 21st *****
ETA AQUARIDS - May 3rd *****

* * * * *

DEEP-SKY OBSERVING & LIGHT POLLUTION

As I am primarily a deep-sky observer, the effects of light pollution can be particularly troublesome. With this in mind I sought to ascertain just how extensively this type of pollution is hindering the observation of these typically faint objects.

Thus beginning in January of 1980 I began a survey of naked eye limiting magnitudes on every clear or even temporarily clear nights, as seen from my observing site here in the Town of Cheektowaga. Although actually an intended five year study, already after three years some interesting results have been noted. A multiyear survey is necessary in order to minimize the effects of possibly abnormal meteorological conditions prevailing during any single calendar year. (Excessive haze, humidity, volcanic particulates etc.)

My original assumption was that on an averaged yearly basis the near zenith naked eye limiting magnitude would be around 4.5 and by extrapolating upward that such a magnitude limit would allow the observation of roughly only 1250, or so, deep-sky objects. Happily, though, I find this not to be the case. Instead the past three years have demonstrated an averaged near zenith naked

eye limiting magnitude of 5.0. This 0.5 magnitude difference may seem trivial but in fact it has a surprisingly profound effect for it results in a nearly 40% darker average sky background illumination. Of course 5.0 magnitude is only an average for half the nights will be superior and half will be inferior. Thus 1332 deep-sky objects have been observed so far with the total still climbing.

By far the most notable yearly feature detected has been the realization that the night to night magnitude limit varies much more than does the average year to year variance. As an example, at least with my eyesight, my earlier 12.5" reflector working at a magnification of 15 x per inch of aperture will reach magnitude 14.2, if the nights naked eye limit is 4.5, while if the night reaches to 6.0 with the naked eye the telescope will penetrate to 15.2. (based on variable star field comparison stars). In comparison the averaged naked eye limiting magnitude on a year to year basis has varied only 0.3 magnitudes. Thus while in the absolute sense light pollution has increased, somewhat, over the last decade its effects can be largely avoided, in regards to the observation of deep-sky objects, by simply taking advantage of this larger night to night variance by using the best nights on the most difficult objects and relegating the poorer nights to the easier sights. Obviously magnitude determinations, whether naked eye or telescopic, are distorted cyclically by the phase of the moon but this can be cancelled out by use of a simple correction. In my case I find that for stars 60° away from the moon the following simple table will be found to be nearly correct.

Lunar Phase	Naked Eye Magnitude Correction
NEW	0.00 mag. } Add this magnitude
MID-CRESCENT	0.25 mag. } to that found by
QUARTER	0.50 mag. } the naked eye to
MID-GIBBOUS	1.00 mag. } cancel moon sky
FULL	1.50 mag. } flooding effects.

Whether this table is exactly correct is largely immaterial as consistency is what is important.

Also noted, the night is almost a living thing, the limiting magnitude does not remain constant but varies from hour to hour. This further complicates magnitude determinations and thus necessitates numerous checks per night in order to average the results.

Contrary to popular belief, at least at my sight, the winter season does not provide a deeper magnitude limit than does summer but rather offers generally more brilliant constellations. (Orion, Canis Major, Canis Minor, Auriga, Gemini). In fact, so far every year of the survey has shown a prominent fainter magnitude 'spike' from about mid-May to early November, while a clear flattening is noted during the winter months. See graph #1 -

Amazingly a number of 6th magnitude naked eye limit nights have occurred during every year of this survey but these are not qualitatively equal to nights at, say, Beaver Meadow for as ones eye approaches the horizon, here in this suburb, the atmospheric extinction of star light increases much more rapidly than it does out in the country.

For those who cannot believe that the 6th magnitude is occasionally obtainable from the suburbs, try venturing outside some relatively cool, damp, and moonless morning (1:00 A.M. - 5:00 A.M. EDT) on some August or September night. You may be surprised.

Although from every site on earth some amount of atmospheric extinction is present, here, 7 miles northeast of the geographic center of Buffalo, the sky backgrounds surface brightness and conversely the directional magnitude limits are noticeably asymmetric. The sky is decidedly brighter in the direction of Buffalo but is often sur-

The best nights tend to have a few similar traits. For one there tends to be an average hourly temperature drop during the night of 2°F to 2.2°F and a moderate to heavy dew fall or frost. This seems to lead to improved magnitude limits owing, primarily, to the condensing out of some of the light reflecting water vapor and/or airborne ice crystals. In the process of this condensation some thermally suspended particulates also appear to be drawn out of the atmosphere. This effect, though, is less pronounced during winter. Apparently most of this light pollution is due to vaporous and particulate matter reflecting city lights. Only 10% at most can be attributed to photochemical emissions or airglow.

What then does this mean in regards to deep-sky observing? For compact galaxies, planetary nebulae, and globular clusters this site is still fairly competitive with a dark country site, at least within 45° of the zenith. In fact with my newer 13.1" reflector and a naked eye limit of 5.5, the telescope can reach sub 0.7 arc minute diameter galaxies of as faint as magnitude 14.7. (estimated from comparison images of out of focus star images of known magnitude with that of the in focus image of the object under study.) All one must do to darken the sky background brightness is to use a moderately

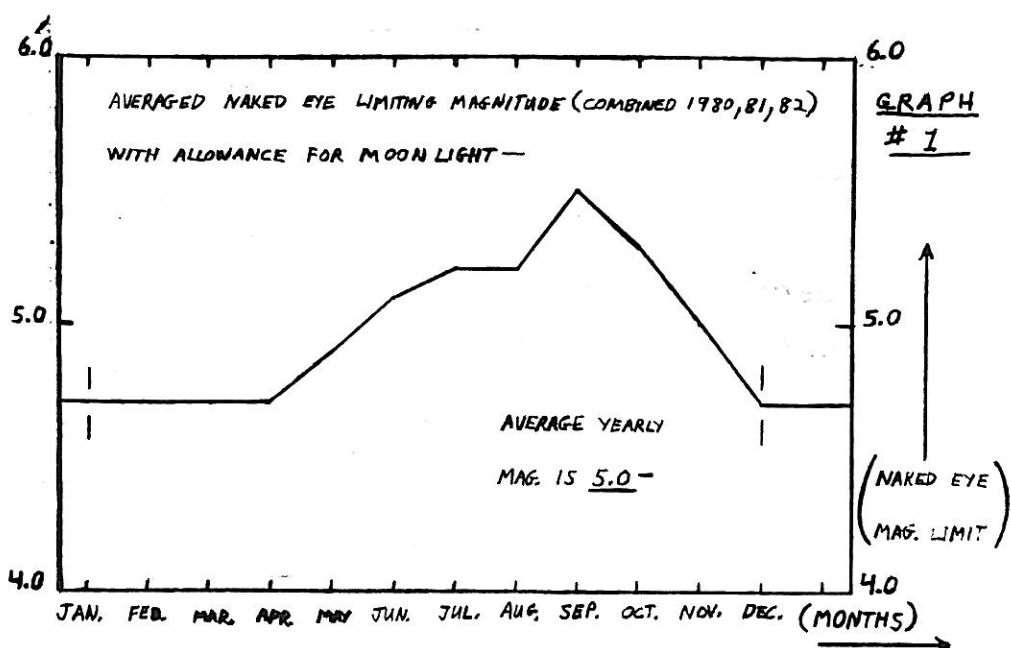


Diagram #3 to this article is on the next page.

Michael Idem

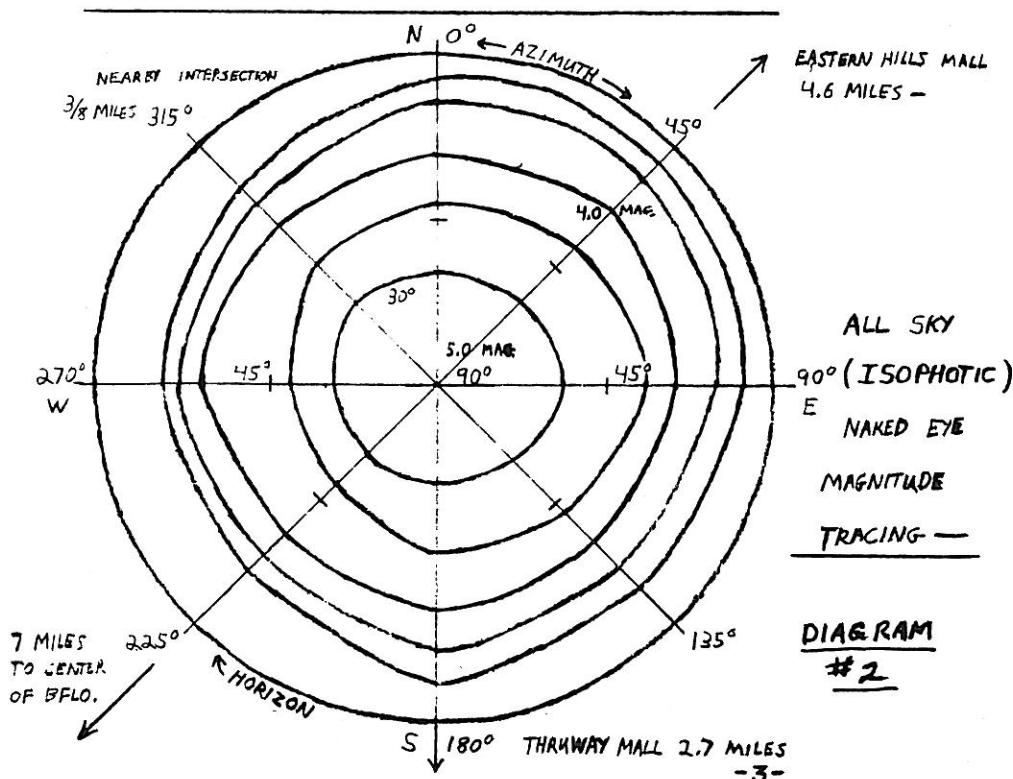
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A TRIP TO DAVID DUNLAP OBSERVATORY

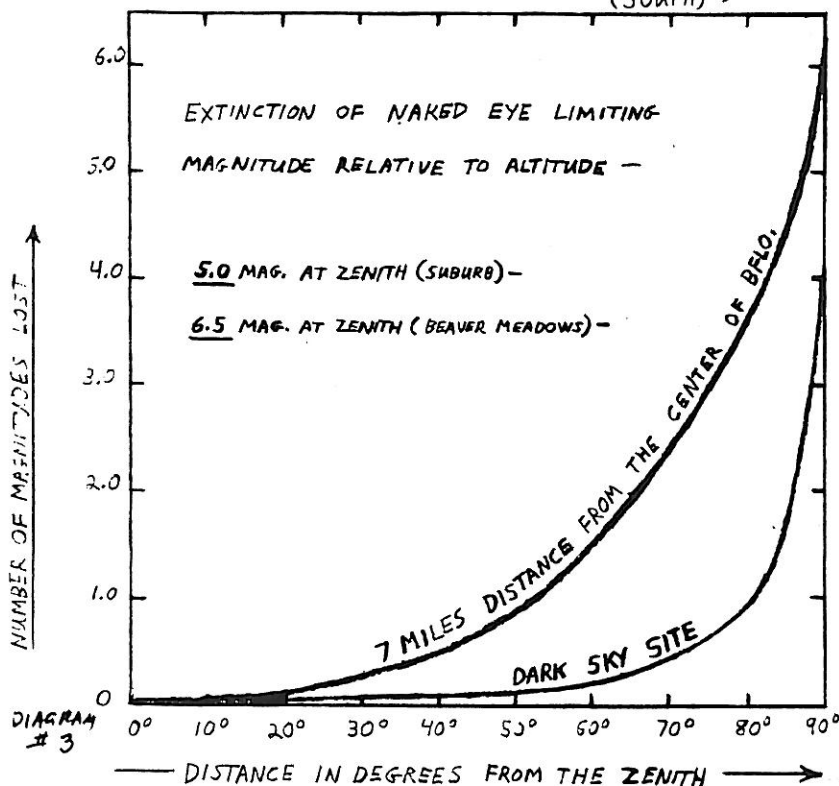
There will be a joint field trip of the Lockport and Buffalo clubs to the David Dunlap Observatory, which is located 16 miles north of downtown Toronto. The tour is scheduled for Saturday, May 14th, which will start promptly at 9:00P.M. rain or shine. The tour will include a slideshow, talk, question and answer period and observing through the 74 inch telescope. The tour is limited to a maximum of 30 people, if you can attend this tour, contact Carl Milazzo about a map and about forming car pools.

The David Dunlap's main telescope is a 74 inch Cassegrain with a 35 foot long tube, housed in a 61 foot diameter dome. When it was built in 1935 it was the second largest telescope in the world, with only the 100 inch Hooker telescope on Mt. Wilson being larger. Today it is still the largest scope in Canada and is the largest within a 1400 mile radius of western New York. In addition it has a 6 inch refractor and 19 and 24 inch reflectors housed on top of the near-by administration building.

Carl Milazzo



(SOUTH)→



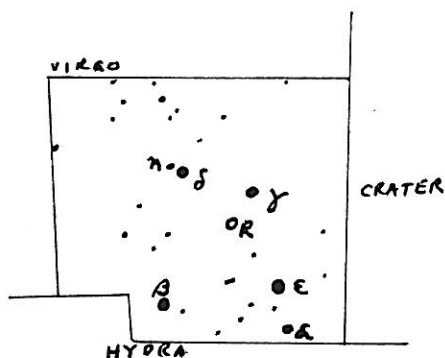
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CONSTELLATION for MARCH

The figure of a Crow seems pecking at him---

"CORVUS" the Crow or Raven is located between Virgo on the north and west; Hydra on the south; Crater on the east. It is sometimes referred to as "Spica's Spanker".

Noteable objects in Corvus follow:- Delta (Al Gorah) which means 'the Raven' is double star with components of 2.7 & 8.26 magnitude separated by 24" of arc. Variable stars are "R" at R.A. 12h 20m - dec. -19° 20" and "SV" at R.A. 12h 50m - dec. -15° 05". A Planetary Nebula, NGC 4361 is located at R.A. 12h 24m - dec. -18° 45". It is near the center of the four main stars. Other NGC's are: 4024, 4027, 4033, 4038, 4050, 4094, 4462, 4756, 4763, 4782, 4783 & 4802.

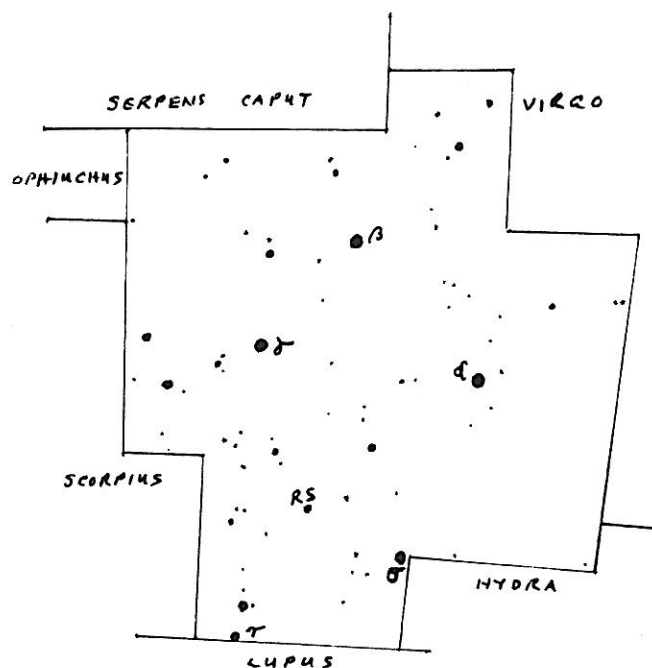


CONSTELLATION for APRIL

the scale of night

Silently with the stars ascended.

"LIBRA" the Balance or Scales is one of the constellations on the ecliptic and a member of the zodiac. It is situated within the boundaries of Serpens on the north; Virgo on the west; Hydra and Lupus on the south; Scorpius and Ophiuchus on the east. Two of it's stars were once belonging to Scorpio. They being Alpha and Beta (Zuben el Genubi and Zubeneshamali, a corruption of Zuben el Gemal), the Southern Claw and Northern Claw



respectively.

Noteable objects in Libra are:- Alpha (Zuben el Genubi) is a double star of 2.76 & 5.15 magnitude separated by 230" of arc. Beta (Zuben el Gemal) is said to be the only visible green star, of magnitude 2.61.

A Planetary Nebula ME 2-1 is at R.A. 15h 22m - dec. -24° 00'. A Globular Cluster NGC 5897 at R.A. 15h 17m - dec. -21° 00'. Variable stars include:-
 "S" - R.A. 15h 22m - dec. -20° 20"
 "Y" - R.A. 15h 12m - dec. -06° 00"
 Delta - R.A. 14h 59m - dec. -08° 20"
 "19" - R.A. 15h 01m - dec. -08° 30"
 "RS" - R.A. 15h 24m - dec. -22° 50"
 "RW" - R.A. 15h 23m - dec. -24° 10"
 "FY" - R.A. 14h 58m - dec. -12° 30"
 "RR" - R.A. 15h 57m - dec. -19° 20"
 "RU" - R.A. 15h 33m - dec. -15° 20"
 "ES" - R.A. 15h 17m - dec. -13° 00"
 "FZ" - R.A. 15h 19m - dec. -09° 10"
 "RT" - R.A. 15h 06m - dec. -18° 40"
 "YY" - R.A. 15h 08m - dec. -21° 10"

Other Double Stars include 'Mu', 'Iota', P 212, H 47 4783, and Struve 1962.

Galaxies which can be found are 'F 703' at R.A. 15h 14m - dec. -15° 30" and NGC's 5595, 5597, 5605, 5728, 5756, 5757, 5768, 5791, 5792, 5796, 5812, 5861, 5878, 5885, 5915, 5898 and 5903.

For reference to the above, enjoy looking through the new Atlas 2000. GOOD OBSERVING!!!!

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Doris M. Koestler

Doris Koestler, our very outgoing, personable refreshment hostess and Board of Directors member, is a highly active individual who manages to find time for many interests. Born on Buffalo's east side, she went to School 62 where in eighth grade she became secretary of her class. She played piano in the orchestra and a piano solo on graduation day.

While a student at East High School in the business secretarial course, she worked part-time in her senior year for Travelers Insurance Company as a claim representative. After graduation in 1957, she continued to be employed by the company, working four years in all.

In 1955, while still in high school, she met her future husband, Bill, who was on leave from service in the Navy, where he was on a repair ship stationed mainly in Africa and the Caribbean. In 1959, wedding bells rang out for Doris Zimmerman and Bill Koestler, and in 1961 son, Kevin, was born, followed by Lori in 1964. Before Lori was born, Doris, Bill and Kevin moved to Cheektowaga where they have continued to reside.

Doris and Bill became involved in their children's activities. Kevin played for four years on the Little League Baseball Team and Bill became the coach. Each year, at the end of the season, the Koestlers hosted a pool and cookout party for the members of the team and their parents. From 1971 to 1973, Lori became a Girl Scout, and Doris became a Girl Scout leader for Lori and fifteen energetic girls.

One of the great recreational activities of the Koestlers is traveling with their small tent camper to various parts of the country. In 1973 they went west to see the Grand Canyon in Arizona, the Cliff Dwellers Monuments and Santa Fe Trail in New Mexico, and parts of Texas and Oklahoma. A second trip took them to Mt. Rushmore in South Dakota, and Devil's Tower in Wyoming. While camping in Wyoming, one of their most eventful outings took them dashing down rocky sluiceways through mighty canyons on the Whitewater Trip down the treacherous rapids of the Snake River.

They were thrilled with glorious Grand Teton National Park, and the springs, geysers, and wildlife in Yellowstone National Park. In Colorado, the high altitude Trail Ridge Road in Rocky Mountain National Park, Denver, and the spectacular Air Force Academy in Colorado Springs made for a wonderful trip. Chuck wagon dinners on tin plates were delicious and fun events when they stopped at Durango, Colorado, and Jackson, Wyoming. Salt Lake City and the great Mormon Tabernacle were very impressive and inspiring.

In the eastern end of the country, Bar Harbor and Acadia Park in Maine were favorite spots. One of Doris's delights was to sit on the rocks by the ocean and watch the tide come rolling in to "a stern and rock-bound coast." A memorable day on the ocean in a rented sailboat was very stimulating. Bill, who is quite an angler, reeled in some good sized fish.

Two trips to Florida have taken the Koestlers to Busch Gardens, Cypress Gardens and the Magic Kingdom of Disney World. Vacations at Gettysburg, Pennsylvania, and Harpers Ferry at the lower end of the Shenandoah Valley in West Virginia were moving. A visit to the Old Country Busch Gardens in Williamsburg, Virginia, was relaxing and entertaining.

One of Doris's choice spots to which she likes to travel is The Pottery in Williamsburg which is comprised of two buildings, Solar I and Solar II, which claims to sell "Everything under the Sun." Doris goes on a mad shopping spree at every visit to this emporium, collecting mounds of merchandise. Amish country in Pennsylvania is another place which she finds irresistible, so trips are frequent to this

world apart, where she revels in the aromatic, savory foods of the "plain people."

On weekends in the summer, these seasoned campers take their trailer to Alexander near Attica where Doris enjoys the woods and wildlife, and especially the wildflowers. And where do the Koestlers plan to locate a future campsite? In none other than Alaska. It will be a long journey, but plans are in the making and the sojourn is not far off.

Doris worked at Hens & Kellys Transitown for four years as department manager, and has been employed at Sears, Eastern Hills, for six and a half years in the children's department.

There are numerous things which Doris enjoys doing. She sews many of her own clothes and some for her children. She has some unfinished dining room furniture which she is staining and preparing for the finish coat. Doris enters craft shows with dolls which she makes by purchasing the heads and torsos and fitting them over plastic bottles over which she designs and fashions attractive clothing. Her dolls are sold at Joyce's Dolls in Batavia. Doris likes to bake all sorts of goodies, including bread and apple-strudel. She picks fruit in season which she either cans, freezes, or makes into jams and jellies. Another specialty of her cuisine is a pickled vegetable mixture of Amish origin. When she has a moment to relax she likes to read Civil War history and novels by Irving Wallace, Sidney Sheldon, and Frank Yerby.

Doris became interested in astronomy about four years ago when she took an adult education course at Maryvale High School where they have a small planetarium. She also attended the astronomy class at Beaver Meadow. She joined the B.A.A. in 1980, and purchased a 6" reflector from Meade in 1981, and also became a 1981-82 member of the Lockport Astronomical Society. Doris enjoys naked-eye viewing, and observing through binoculars. Double stars have a special appeal because of the beautiful colors. One of her favorite objects in the heavens is the double cluster in Perseus.

Doris has been very active at Beaver Meadow where she was invited by John Riggs to assist with the remodeling of the telescope. She was also in charge of one of the public nights, and in addition aided John with solar projection at the Beaver Meadow Nature Festival. She had her telescope on display on Astronomy Day at Buff State, and also at the L-5 Space Fair at the museum.

A very amiable and gracious human being, Doris is endowed with abilities in many areas. Along with her task as a homemaker, mother, and wage earner, she finds time to enjoy many outside activities, and to serve others wherever she is needed. We are grateful for all she continues to do for the B.A.A.

Edith L. Geiger

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"SPECTRUM" DEADLINE IS
APRIL 28th
FOR THE MAY-JUNE ISSUE
"ARTICLES ARE NEEDED"

While observing the total eclipse of the moon at 5:44 A.M. on December 30th, a meteor passed 2 degrees from the moon. That first magnitude, yellow meteor traveled 15 degrees to the east-south-east and lasted $\frac{1}{2}$ second. The lunar eclipse was about as dark as the one in July but was easier to see because the skies were crystal clear.

January 4th an open cluster in Canis Major was seen with a blue 4th magnitude star in the center of this triangular group of 7 minutes of arc in size. Most of its 40 stars are of 9th magnitude and this 6th magnitude cluster is one of the youngest known, which is catalogued as NGC-2362. Later that night the most distant globular cluster in our galaxy was seen in Lynx, at the distance of 182,000 LY from Earth and 210,000 LY from our galaxy's center. It is 11.5 magnitude and 2 minutes of arc in size with two 8th magnitude stars pointing to it is known as NGC-2419.

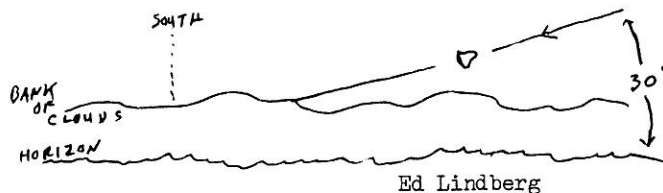
One of the brightest aurorae of all time lit up the sky as far south as Orion on January 9th with a peak around 11:00 P.M.. It formed a corona in Gemini and some of its green and yellow curtains, rays and patches became zero magnitude at times. They waved, pulsated and arced, yet at 9:00 P.M. it was a featureless faint glow to the north that was mistaken as light pollution from the City of Lockport.

Carl Milazzo

On Sunday, February 13, 1983 at 6:23 P.M. EST. I was looking due south just in time to see a bright Fireball. It was travelling from west to east at the high rate of about 30 degrees per second. It appeared and was gone in 2 or 3 seconds.

It had a disc of about 2 minutes of arc in diameter shaped like a shield. It was brighter than first magnitude and was yellowish-white in color. It disappeared behind a cloud bank about 20 degrees above the horizon. (clouds possibly 3 to 5 miles away)

It was headed for a landing perhaps 3 miles east of the Village of Lancaster, perhaps 5 to 7 miles south of the observing position (1 mile NE of the intersection of routes 33 and 78).



On December 30th 1982 at about 04:40 EST. I made my first light measure of the moon to be eclipsed. It was at that time -14.8 magnitude overall. At 05:58, the beginning of totality it was measured at +0.4 M; at 06:29 it was +7.2 M, which was approximately mid-eclipse and at 06:59 totality ending it measured +0.9 M. With this, the show of dawn came about as well as a weird sight of a crescent moon being in reverse. The crescent was on the upper portion as against it being on the lower portion as it would set after the sun in the evening sky.

On January 9th 1983 I did observe the Aurora which Carl described above. When I first saw it, it seemed to be just a glow of city lights but later, around 9:00 PM I did see it blossom into a beautiful display of yellows, greens, blues and reds. One particular glow of red showed in the west which impressed me the most.

Darwin Christy

The big telescope news is that Larry Carlino is building a 29" reflector which he hopes to have finished by June. Wow!

Bob Mayer is making a remarkable measuring engine as shown on page 279 in the September 1982 issue of *Sky & Telescope*. Bob has finished most of the parts. He plans to have the parts assembled sometime this year. He also has almost finished installing a LED light in a filar micrometer so the cross hairs will become visible.

Orrin Christy will be leaving soon for Paris and Brussels to do some more research for Moore Business Forms.

Richard Janas was teaching micro and macro economics at Medaille College part-time, but with staff cuts he has been unemployed this semester. He is now spending his time observing, sky permitting, and doing a great deal of reading.

Kenneth Burke is an accountant at Hooker Chemical, and is very busy these days. He finds time, however, to continue as a member of the YMCA Indian Guides, a father-son organization, in which Ken is a chief.

Former Buffalonian, Cliff Stoll, who at times assisted Ernst Both at the museum, was a visitor at our January meeting. He is now in Baltimore at John Hopkins University where he is helping develop computer software for the space telescope. The university will be the headquarters from which the space telescope will be controlled when it goes into space.

Ernst Both is speaking at the Lockport Astronomical Society meeting at Lockport High School on April 19. His subject will be, "Sungrazing Comets."

Former member, Phil Cizdziel, has joined the Honolulu Astronomy Club.

Edith L. Geiger

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!!! ANSWERS !!!

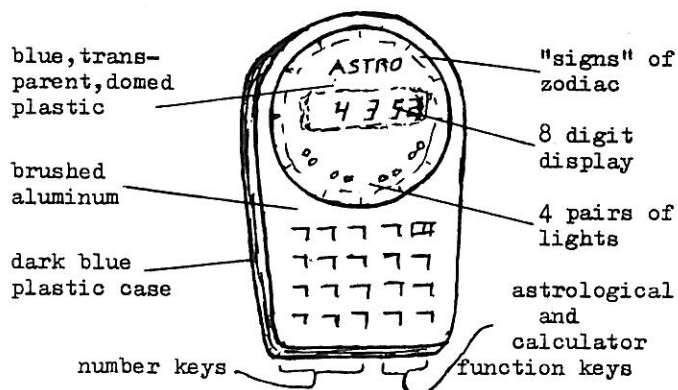
- 1) The Ångström Unit is used for the measurement of wavelengths in astronomical spectroscopy. One ångström unit equals one ten-millionth of a millimeter, or 1×10^{-10} meter.
- 2) The Astronomical Unit (A.U.) is a unit of distance, 93,000,000 miles, the mean distance between the Earth and Sun.
- 3) The Light Year is a unit measure of distance, the line it takes light to travel in one year. Light travels at the rate of 300,000 meter per second or 186,000 miles per second. The unit therefore travels $94,607 \times 10^9$ kilometers or $5,879 \times 10^9$ miles in one year.
- 4) Parsec is made up from two words, 'parallax & second'. It is the distance from the Earth to a star whose parallax is one second of arc. One parsec is equal to 3.26 light years (ly).
- 5) Angular Measure is the distances used in positional astronomy of the celestial sphere. These measures are made in degrees, minutes and seconds of arc.

* * * * *

ASTROLOGICAL COMPUTER

Recently I bought one of those Astrological Computer/Calculators sold by Radio Shack, which have been reduced to \$16 for some time. Its description and appearance are intriguing - what celestial mechanic could resist? How accurately does it show the planets? What does its program do? Can it be manipulated?

This is what it looks like: (4 ½ inch. tall)



This is what it does.

To begin, the display consists only of an eight digit number plus "E" and four pairs of small green and orange lights. There are no other numbers, lights, indicators, moveable dials, etc. The circular "zodiac" around the display area has no relation to it.

Astronomically, the computer only shows the position of four bodies: Sun, Mercury, Venus, and Mars. You have to consult the Almanac for the Moon, Jupiter, Saturn, etc. I expected the program to be fairly simple and that it would only show the near regular sun-center (heliocentric) position of the planets. I was surprised to discover, however, that it shows their much more complex earth-center (geocentric) position accurately. This is the way we view them from earth and includes the infamous backward or "retrograde" motion.

And, unfortunately, it shows only the "sign" number of 1 to 12. You cannot retrieve the ecliptic, or "zodiac" longitude in degrees. Thus, "1" is 0° - 29°, "2" is 30° - 59°, ... "12" is 330° - 359°. In fact, you cannot manipulate or address the program at all. Once you enter a date and press one of the two start buttons nothing - except switching it OFF - will stop it for the next 20 seconds while it busily flickers away.

These are the sun and planet positions it shows through June, which check out accurately to the day as best as I can convert celestial coordinates in the Astronomical Almanac to ecliptic coordinates on my celestial globe.

1983	Sun	Mercury	Venus	Mars
March 1 - 6	12	11	1	1
7 - 18	12	12	1	1
19 - 20	12	12	2	1
21 - 23	1	12	2	1
24 - 5	1	1	2	1
April 6 - 7	1	1	2	2
8 - 12	1	2	2	2
13 - 20	1	2	3	2
21 - 8	2	2	3	2

May 9 - 16	2	2	4	2
17 - 21	2	2	4	3
22 - 5	3	2	4	3
June 6 - 13	3	2	5	3
14 - 21	3	3	5	3
22 - 28	4	3	5	3
29 - 1	4	3	5	4

Is the Force with you?

You enter a date (your birthday or some date) as two digit pairs: for example, May 6, 1983 = -50683. Note that it only accepts years of "1900;" the "19--" is a permanent part of the program. Then press start button one. Watch for about 20 seconds. The four numbers appear one by one. You can now use the astrological scheme outlined on a label on the back, and described in more detail in the booklet, for interpretation.

Enter another date (today, your mother-in-law's birthday). Press start button two. The computer will process and hold two dates for comparison; you can even switch to the mathematical calculator mode and return. When the second set of four numbers have appeared, you can press various combinations of the astrological buttons to observe favorable (green light) or unfavorable (orange light) aspect angles on the small pairs of lights. This is a one step function and involves no program. Ample information for interpretation is given in the booklet for the parlor astrologer.

The mathematical calculator.

This mode is a basic four function (+ - x ÷) only. There is no constant, memory, %, √, etc.

One in your life?

If you ever find your-self with any of the needs below, you may also want to be the proud owner of one these marvels of modern technology:

You want to know where the four inner planets are on an overcast night;

You need a conversation starter at social gatherings;

You want a single calculator to advise your stock purchases and then do your bank balance.

Steve Kramer

* * * * *

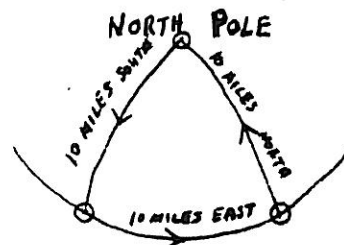
Answer to PUZZLE --

Start at the North Pole - got 10 miles south on any circle of longitude - then 10 miles east on the circle of latitude - then 10 miles north and you're back at the North Pole where you started from. See diagram below.

Easy, wasn't it? BUT here's the tough one:- Name another point on the earth's surface where the same three-way trip and in the same sequence of directions will also bring you back to your starting position....

Answer in the next issue...

Ed Lindberg



STUDY GROUP

Attendance at the last 2 Study Group meetings has improved greatly. At the January meeting there were 11 members present. The topic was Quasars, a very broad subject. Carl Milazzo led off the discussion with a brief history of quasar discovery and study. The following discussion was lively and ended deep in cosmology.

The February meeting was attended by 13 people. We were treated to a detailed explanation of the Antikythera, an ancient Greek mechanism, by Steve Kramer. He has been studying and constructing a model of this device, which he believes to be an eclipse predictor, for several years. Bob Mayer, Steve's partner in the reconstruction project, assisted by describing some of the machining problems. The session was both interesting and informative.

The topic for the March Study Group discussion will be variable stars. Members are asked to study up on some aspect of variable stars they feel is interesting. Anyone can attend Study Group meetings. Preparation for the topic is not a prerequisite for attendance. You can come and just listen. The Friday night following the regular club meeting at 8:00 P.M. is the time in room 271A of the New Science Building at Buffalo State is the place.

Ken Kimble

BAA ANNALS

5 Years ago - The March 1978 meeting featured a presentation on Stonehenge by Richard Karlson from Pittsford, N. Y. At the April meeting Dr. Gunter Wessel spoke on Stellar Evolution. Browsing through the 'Spectrum' for March, April 1978 I found several items I had forgotten about, one was the profile on Walt Whyman. Look it up and re-read it...interesting fellow! The other was the group of astrophotos by club members.

10 Years ago - The March and April meetings of 1973 were two I wish I had been able to attend. The first was Ernst Both's talk entitled, "Astrophotos Most People Don't Bother With." The next was a lecture by John Riggs on the elements of "Deep Sky Observing". The 'Spectrum' featured 2 news releases from NASA on current space probes and an article by Fred Price on the then recently deceased William Morley Baxter, author of the Sun and the Amateur Astronomer.

"The SPECTRUM"

Darwin Christy, Editor
216 Kohler St.
Tonawanda, N. Y. 14150

* FIRST CLASS *

-8- 15 Years ago - Orrin Christy and Walt Whyman spoke at the March and April 1968 meetings, probably great presentations as those by our own B.A.A. members are. The big news then was the conception of the NFCAAA. An article by Kurt Erland described the (then) recently discovered Quasars.

Ken Kimble

Do you recognize this? →

Contributors to the "Spectrum"

Rowland Rupp

John Riggs

Ed Lindberg

Michael Idem

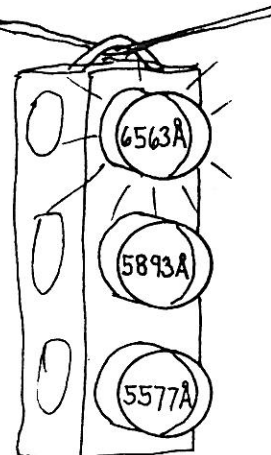
Carl Milazzo

Darwin Christy

Edith Geiger

Steve Kramer

Ken Kimble



The next issue will feature an article by Larry Carlino entitled, "Observing with Nebula Filters" - Observations by Shaun Hardy and Michael Idem - BAA ANNALS by Ken Kimble - A profile by Edith Geiger - and others!!!

Hope you like the publication as prepared by your editor.