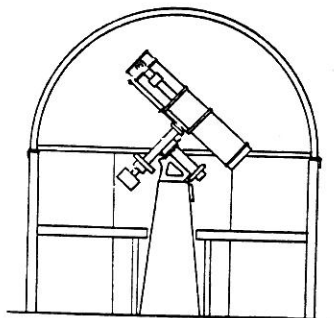


the Spectrum



??? QUIZ ???

- 1) What is a CALORIE ???
- 2) How long is a COSMIC YEAR ???
- 3) What is the difference between the meaning of WEIGHT and MASS as applied to some body ???
- 4) What is the "PURKINJE effect" ???
- 5) Does light weigh anything ???

Answers are elsewhere in the "SPECTRUM"....

ANSWERS

Last "Spectrum's" quizzes are answered as follows:-

- 'Match-up'
- | |
|--------|
| 1 - b |
| 2 - f |
| 3 - h |
| 4 - i |
| 5 - a |
| 6 - j |
| 7 - e |
| 8 - c |
| 9 - g |
| 10 - d |

- 'Elimination quiz'
- | | |
|--------------|---|
| 1) Nebula | - others contain stars |
| 2) "C" | - not a spectral class |
| 3) Andromeda | - not on zodiac |
| 4) Miranda | - not moon of Jupiter |
| 5) Venus | - is an inner planet |
| 6) Sun | - others are not on the main sequence of H-R diagram. |

"SPECTRUM" DEADLINE for the November - December Issue is October 20th.

FOR SALE

6" f:15 - Maksutov - ready to use with tripod, fork mounting, clock drive, it is the first Maksutov made in the Buffalo area. Also a Wollensak Mirrotel 5" f:8

BUFFALO ASTRONOMICAL ASSOCIATION, Inc.

DARWIN CHRISTY, editor

 **
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 ** SEPTEMBER - OCTOBER **
 ** 1982 **
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REMINDER:- The September through December meetings will be in the New Science Building Auditorium at Buffalo State College on Elmwood Avenue.

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SEPTEMBER meeting:- The September 10th meeting will begin at 7:30 P.M. Our speaker will be Larry Hazel. His topic will be, "ASTROPHOTOGRAPHY WITH A SURPLUS LENS."

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OCTOBER meeting:- The October 8th meeting will begin at 7:30 P.M. Our speaker will be Charles Fassel of the Royal Astronomical Society of Canada - Niagara Centre. His topic will be, "SPACE EXPLORATION: EARLY DAYS TO COLONIES IN SPACE."

Officers for 1982 - 1983

Rowland Rupp - President

Ken Biggie - Vice President

Ken Kimble - Secretary

Edith Geiger - Treasurer

For Sale - continued

with a 40" focal length. Air spaced achromat corrector. I is useful for astrophotography.
 Jerry Newhauser - 716 649 8972 for more information....

- - - - -

Lillian Von Gerichten has many of her brothers tools she would like to sell. They include hand as well as power tools. Any one interested contact Lillian at 884 1724. Remember - Lillian is one of members of long standing.

N E R A L

The North East Region of the Astronomical League is being hosted by the Nantucket, Maria Mitchell Observatory on Nantucket Island, Mass. It will be on Friday and Saturday, September 24 and 25, 1982.

Anyone interested contact Ed Lindberg or write to Paul Valleli, 14 Marrett Rd., Burlington, Mass. 01803 or call him at 617 272 8946

ASTRONOMERS DISCOVER NOTHING

Recently the unexpected finding, that an enormous void exists in Bootes, some three hundred million light years away. It is also equal in size to it's distance, and was some how formed during the early days of the formation of the universe. This huge cosmic desert should normally contain over two thousand galaxies, yet only two dozen were detected in that region.

Throughout the years, Senator William Proxmire of Wisconsin has awarded the Golden Fleece Award to those he thinks are foolishly spending taxpayer dollars. Unfortunately Senator Proxmire's research is too often too shallow which ends up doing more damage than good.

This astronomical discovery is just the type that is likely to receive a Golden Fleese Award, because it simply sounds odd. One wonders if the purpose of these awards are to save money, or to seek publicity.

Anonymous--

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DUES ARE DUE ----- DUES ARE DUE ----- DUES ARE DUE

Dues will be accepted by Claudia Bielinski our membership chairperson, newly appointed.

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N F C A A notes

The next NFCAAA meeting will be hosted by the RASC - Kitchner-Waterloo in Canada. Details will be given at a future meeting of the BAA.

* * * * *

INSTRUMENT NOTES

"The Eye as an Instrument"

A good telescope is necessary for meaningful observing. We need a good objective and eyepieces and all in good collimation. But very frequently a weak link in the chain is overlooked. We may have to make compensating allowances for poor eyesight.

In order to understand the possible defects of the eye we need to consider how it is made up. The retina consists of tiny cells that transmit images impressed on them to the brain. Most of the retina consists of cylindrical cells. These so called 'rods' receive images on their ends. A small part of the retina near the center is made up of 'cones'. These receive the images on their pointed ends (about .003 mm in diameter). The end area of the cones is much smaller than that of the rods so their resolving power is much greater. The total area of the cones section is less than a square millimeter. So that part of the retina that sees sharply is very small. We see objects by scanning the area. The eye muscles move the eyeball back and forth and up and down over the area being observed.

You can get an idea of the limitations of your visual acuity by observing printed matter such as in a newspaper. Gaze carefully at a colon or semicolon at normal reading distance. Look at one of the dots. Without allowing the eye to move, judge the sharpness of the other dot. You may be surprised if you cannot see both with equal sharpness.

The cone area of the retina sees much more sharply than does the rod area. However, the rods are more sensitive to light. This fact is taken advantage of by experienced observers who utilize the technique of "averted vision." By staring fixedly at a region to one side or the other of a faint star or other object, the object can often be detected because it is imaged on the more sensitive rods. The, when the brain has detected the object, it can often make a detailed study by careful analysis of the fainter image on the cones.

Besides the limitations of performance of a normal eye there are various defects in its structure. The transparent cornea is often deformed from its ideally spherical shape. In addition the lens is soft and is pulled into shape by muscles that are often not symmetrically spaced. The retina may be an imperfect sphere because of circulatory problems or injuries. And there is usually non-uniformity within the lens and the interior liquid. Eye tests by opticians have shown irregular circles and radial lines. Looking at a bright surface will reveal floating motes of various shapes and sizes. No optician could sell such a lens except perhaps for use on a flashlight.

The eye should show a star as a point of light. But many observers see spikes radiating out from the star. -2-

Many artists have depicted the stars in this way and the representation is very commonly seen and apparently accepted. Horace Dall has suggested a test for the eye which uses a pinhole placed at reading distance in a dark room. Relax the eyes and adjust the distance until an out of focus image can be seen. The image should appear round, evenly illuminated and should show no extraneous spikes. This is a severe test and few eyes can pass it with a perfect score.

There are two factors that save us from disaster. In the first place, our eyes are at the extreme end of the optical train and there is no magnification beyond there. Secondly, the optical impulses are sent to our brain, the world's most versatile computer. The brain compares the images received with other images from known object shapes and makes many necessary adjustments. So all is not lost. Our living lenses are deficient but our talented computer pulls us through. Rejoice that we can derive so much enjoyment from the sights we see through our telescope

Ed Lindberg.

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SPY & TELL

As usual, Fred Price spent his summer at home in England. We're looking forward with special interest to Fred's report on his visit with Patrick Moore.

Astronomer Dr. Clark R. Chapman, who is known to some of our BAA members, and is the son of the late former member, Dr. Seville Chapman, has had another book published entitled, "Planets of Rock and Ice". He writes the "News and Reviews" column in each issue of "The Planetary Report", a publication of The Planetary Society. He is Vice-Chairman of the Division for Planetary Sciences of the American Astronomical Society.

Darwin Christy and his daughter, Ellen, bought a boat with which to go fishing, and who turns out being the fishing expert? None other than Ruth, who has caught more black bass and sheephead than Darwin and Ellen together.

Mike Scroger and his father, Marvin, went to Stellafar where Mike entered his 8" f:8 fork mounted telescope. He started his scope in August 1981 and finished it in April 1982. Mike will be a junior at Lancaster High School, and plans to be a member of the astronomy class this fall. The school has purchased an 8" Meade-Schmidt telescope.

Former member, Phil Cizdziel, vacationed in Egypt from August 7 - 21.

John O'Dee starts college this fall at Buff State, entering in general sciences. During the summer, he worked at Doughnut Land near the Fairgrounds in Hamburg.

Adrienne Kaczmarke and Jerry Morris announced their engagement on July 17th. The wedding will take place on May 28, 1983.

Christopher Stokes keeps busy working at the Erie County Toxicology Laboratory.

John Yerger, who works at Sisters of Charity Hospital as a purchasing agent, is also a well-known area artist. At present he is preparing to do a series on Williamsburg Virginia. He has painted a number of works on commission, and his paintings have been seen in various exhibits.

Carroll Geiger conducted two symphony band concerts in August; one at Beaver Island and another at Cheektowag Town Park. He also played clarinet in other professional groups.

Esther Goetz is looking and feeling great, and is the "life of the party" at the SPA in Orchard Park where the attendants enjoy her jolly witticisms.

Peter Michael Goetz, well-known actor on Broadway, TV and recent movies, managed to get a weekend off from his busy schedule to visit his folks, Irv and Esther.

Gerrold Foster and family spent much of the summer in preparation for moving on August 15th to 58 Haller St., Cheektowaga, N. Y. 14211.

Edith L. Geiger

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OBSERVATORY NOTES

It's been a busy, and at times hectic, spring and summer at the Observatory this year. In addition to the usual schedule of public night activities, many of you have probably heard stories of construction work at the Observatory. It was discovered in April that the exterior horizontal support beams which hold the roof when the roof is rolled off had developed large sections of rot. Evidently the wood used for the beams was not of sufficient quality to withstand the weather. In some places it was possible to push a knife blade completely through the beam. Other spots could break away under simple hand pressure. Obviously the beams had to be replaced! However, the vertical redwood posts supporting the beams were sound. A way had to be found which would allow the rotten horizontal beams to be removed but not disturb the positioning of the redwood posts. Fortunately, Dave Junkin contracted the groundsman for the Beaver Meadow Center, Earl Pfarner, and asked him if he could help. Earl agreed and within a short time made several estimates of the material costs and devised a plan of action. Our own Ken Biggie also became involved and worked with Earl on the solution.

Work started Friday, May 28. Earl Pfarner purchased the replacement lumber with his own money and transported it out to the Observatory in his truck. Earl and John Riggs together secured the redwood posts and then spent most of the day removing the horizontal beams. It was a long process, but by the end of the day all of the rotten wood had been taken down. On Saturday morning, Ken Biggie and Carl Milazzo also came out to lend a helping hand. Earl and Ken soon made quick work of what would otherwise have been a slow struggle. Later in the morning Jim Mower, one of our new members, arrived on his bicycle from Buffalo to help, and Allan Mohn came out in the afternoon. By the end of the afternoon, all of the new support beams of pressure treated lumber were in place and the Observatory was safely operational once again. Thanks go to all of our members who were willing to give their time and effort to the Observatory. A special thank you must go to our friend, Earl Pfarner. Without his participation and guidance the job would have taken at least twice as long, perhaps longer. The B.A.A. owes Earl a great debt of gratitude for his services.

With the repair work finished, the Observatory was ready for its expected, heavy summer use. The weather finally began to cooperate and a number of quite successful public nights took place. An average of 50 - 60 people came out to the Observatory each clear night in July and August. Four separate groups of Boy Scouts from Camp Sam Wood and a group of campers from Camp Spruce-lands made special arrangements and came out to the Observatory on clear week nights. One of the Boy Scout groups witnessed the aurora on the night of July 13, and was doubly impressed! In addition, several day time tours of the Observatory were conducted by Don Dessert and Dave Junkin from the Beaver Meadow Center. On many of these occasions the new donation box received active use.

Public nights for the fall will continue to be held on the first and third Saturday of the month through October. The Observatory will close to the public in November. If you would like to volunteer for a public night call John Riggs at 875 7965..

John Riggs

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ASTRONOMICAL HAPPENINGS

SOLAR- The Sun will pass from Leo to Virgo in September and from Virgo to Libra in October as it travels south for the winter. On the 23rd of September about 08:46 UT., the Sun will cross the equator, thus the Autumnal Equinox.

LUNAR- Full Moon will be September 3rd and October 2nd, Last Quarter on September 10th and October 9th, New Moon on September 17th and October 16th, and First Quarter on September 24th and October 24th. No eclipses for these two months.

METEOR SHOWERS- Not too well known showers in September are the Beta Lacertids on the 1st, Epsilon Perseids on the 11th and Alpha Aurigids on the 22nd. In October there are two well known showers, the DRACONIDS on the 9th and the ORIONIDS on the 21st. Other not too well known showers are the QUADRANTIDS on the 2nd, Epsilon Aretids on the 17th and Leo Minorids on the 24th. The Quadrantids are the same which can be seen on the 3rd of January each year.

LUNAR & PLANETARY CONJUNCTIONS- For September, Mercury on the 18th; Saturn on the 19th; Jupiter on the 20th; Mars on the 22nd; Uranus on the 22nd. For October, Mercury on the 15th; Jupiter on the 18th; Uranus on the 19th; Pluto on the 20th; Mars on the 21st.

PLANETARY & STELLAR CONJUNCTIONS- For September, Venus & Regulus on the 7th; Saturn & Spica on the 20th. For October, Mars & Antares (The two rivals) on the 2nd; Mercury & Spica on the 28th.

OCCULTATIONS- Neptune by the Moon on the 24th of September and 21st of October.

PLANETARY CONJUNCTIONS- In September, Mars & Uranus on the 22nd and in October, Mars & Neptune on the 25th.

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John I. Riggs

John, whose mastery of the skies is the envy of many a stargazer, was born in Buffalo. He received his early education at the Lindberg Elementary School in Kenmore and at Kenmore Junior High where he won first place in the Science Fair two years in a row with a telescope which he and his father made in 1966. He graduated from Kenmore West Senior High School in 1970.

His college days started with his freshman year at the University of Arizona, after which he returned home to continue his education at the University of Buffalo from which he graduated with a B.A. in Biology. An excellent student, his name appeared several times on the Dean's List. After graduation he went on to Ohio State University where he did graduate work in wildlife biology.

John became employed at the Iroquois National Wildlife Refuge, the U.S. Army Corps of Engineers on Niagara Street, and the Buffalo office of the New York State Department of Environmental Conservation. At present he is broadening his educational experience by training in data processing and computer programming.

His interest in astronomy began at the age of eleven when he became fascinated by the heavens. He received the Golden Field Guide for Christmas in 1963, and saw the lunar eclipse of December 30th of the same year, all of which stimulated his interest even further.

In 1964 he learned the constellations and bought a 2.4" refractor. John's father, who was chief electrical engineer at the Wurlitzer Company, gave his son abundant encouragement, and together they ground a 6-inch mirror in the spring of 1965. It was a long process and they learned it all without any outside help.

John won four Stellafane awards: two in 1966 for the 6-inch telescope on a pipe mount, one in 1967, with the same telescope on a motor driven mounting, and one in 1980 for his now famous observing chair. In 1979 he designed and made the chair which he took to Stellafane, repres-

enting the final design of four observing chairs started in 1968. This chair has to be styled to the individual observer. The articulation point has to be just right, and the chair has to be designed around the telescope. The torso height also must be correct. Laying out this personalized observing chair is the most difficult part of the construction, as it takes bio-engineering to accomplish the feat. An article on this chair appeared in the February 1981 issue of Sky & Telescope. Omni magazine also carried a brief description of the observing chair in the May 1982 issue.

In 1966, John joined the B.A.A. John's father also joined to give full support to his son's all absorbing interest in the stars. It was at a B.A.A. meeting in 1967 that John met Dale Hankin, and over the next three years they shared many astronomical experiences. John observed many deep sky objects with his 6" reflector, and when Dale became publisher of Modern Astronomy, John had an excellent column on "Deep Sky Observing" in each issue. In the last issue of The Review of Popular Astronomy in 1969, John had published a photo of a Perseid meteor he had taken.

In the summer of 1968, John completed his 10" f:7 reflector. During the period from 1965 to 1975, he observed, wrote descriptions and recorded 1100 deep sky objects. He has seen all globular star clusters north of -52° south declination, and over 100 planetary nebulae. In 1971, John began observing and describing deep sky objects with a new method which he says is, "an attempt to eliminate ambiguity inherent in verbal descriptions of deep sky objects by the use of numeric description scales based on a specific list of deep sky reference objects." In 1977 he finally copyrighted a paper describing this method. It is available for a nominal fee.

John had a rare and extraordinary opportunity in his freshman year at the University of Arizona. He had taken his 10" telescope with him and had it mounted in an open tubed mounting with which he observed the sky every moonless weekend for nine months from the foot of Kitt Peak.

When John returned to Buffalo in 1971, he became the first person to use the Beaver Meadow parking lot as an observing site, and was the first one to realize its potential for serious observing. To this day, he still makes use of the Beaver Meadow parking lot for much of his observing.

In 1971, at a B.A.A. Star Party, John met Tom Dessert of whom he remarked, "I never met anyone before who wanted to learn as much as possible about observational astronomy in so short a period of time." He also met Bob Mayer, the one person who helped him more than anyone else with the mechanics of telescopes and telescope mountings. Bob built several mountings for John and aided in numerous telescope projects.

At that time our observatory at Newstead was deteriorating and we definitely needed a new site. The Beaver Meadow Environmental Education Center was under construction so Ernst Both approached the Audubon Society concerning the possibility of building an observatory on the Beaver Meadow grounds to house the Newstead telescope. The Audubon Society and the B.A.A. agreed to proceed with the project. However, in the process of running the fund drive for the center, there were times when doubts were expressed as to the economic feasibility of building an observatory at Beaver Meadow.

John had a tremendous interest from the start in having an observatory at the center. A fund raising drive was established and John became the liaison between the B.A.A. and the Audubon Society. He wrote numerous letters to local foundations and businesses for funds; placed articles in the 'Spectrum', and made presentations to both the B.A.A. and the Audubon. Ultimately, enough money was raised for the observatory. The funds came from B.A.A. members, the Audubon Board of

Directors, The Buffalo Foundation, Mrs. Black's Horse Show at Camp Sprucelands, the Buffalo Philharmonic concerts, one sponsored jointly by the B.A.A. and Audubon, and two others by B.A.A. alone. John received considerable help in an advisory capacity from Ray Regone, then Treasurer of the Audubon Society, and Dave Bigelow, Director of the center. Ray Regone also persuaded the Society to make a substantial contribution to the observatory fund. Once the funds had been raised through the untiring efforts of John Riggs, Tom Dessert took over and got the construction under way with the help of Ken Biggie. The B.A.A. owes John a tremendous debt of gratitude, for it was through him that sufficient funds were raised to make the observatory a reality.

When Jim Russell stepped down as observatory co-director last fall, John volunteered to take his place. Since then he has initiated a number of new additions and improvements at the observatory. The most recent project involved the replacement of the outside roof rail supports which had deteriorated to an alarming extent. Earl Pfarnes and Dave Junkin of Beaver Meadow were very helpful in supporting John's efforts. Earl Pfarnes received a discount on the lumber necessary for the repairs, and gave of his time, without cost, to do the work with the help of B.A.A. members. John's goal for the observatory is that it become a more active part of the B.A.A., and that it be used as an important educational facility at Beaver Meadow.

John was always mildly interested in variable stars, but as long as he could observe deep sky objects, he never took up the study of variable stars seriously. As time went on he had observed so many deep sky objects that he literally began to run out of new objects for which to look, other than little inconsequential fuzzy specks. One night in May 1980, he was finally pushed "over the edge", when he looked up at the eruptive star U Geminorum, for the first time and found this rare type of variable undergoing outburst. He joined the American Association of Variable Star Observers (AAVSO) in June 1980, and has been observing these fluxuating stars ever since. He has found his variable star work to be "far more rewarding and interesting than deep sky objects". His biggest regret is that he didn't start earlier. Over a two year period he has made over 1000 variable star estimates. Sometimes this skillful observer studies as many as 100 stars in a single month.

John is an excellent astrophotographer, doing high resolution lunar photography and color printing. He has photographed aurorae, meteors, and the Zodiacal light from western New York. His outstanding photographs have appeared in several of our B.A.A. exhibits. He is also a daytime photographer, and won an award in the Allentown Art Show in '74 for his landscape photography.

He is a naturalist and has been involved in ornithology since he was eight years old. In addition, he studies endless numbers of wildflowers, and photographs all the wonders of nature.

Another very special interest is that of music. John has a collection of some 400 to 500 recordings. His favorite composers and their works include: Beethoven's piano sonatas, and chamber music for string quartets and trios; Bruckner's symphonies; Bach's suites for cello and the partitas and sonatas for violin; Sibelius' symphonies; Bartok's piano concerti; Schonberg's works for solo piano numerous Schubert lieder, Schumann's piano works, Vaughan William's orchestral music, and the works of Delius. During his third and fourth years at the University of Buffalo, he was an announcer and commentator for a classical music program aired over radio station WBFO.

John is a remarkable young man, endowed with amazing skills, talent, and intellectual prowess. He is soft spoken, suffused with a tranquility of spirit, sincere, and of unquestionable integrity. He is held in high esteem by our B.A.A., and we value his membership and his sign-

ificant contribution to our organization.

Edith L. Geiger

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On Summer STAR Parties----

Summer Star Parties
can be lots of fun,
and I quote, "there is
something for everyone".
They bring out their 'scopes,
refreshments and cars,
mosquitoes, and rain,
but too seldom the stars.
Now my question is this,
if the BAA is so wise
why can't it bring out
unclouded skies?

Sorry about that

Esther L. Goetz

* * * * *

Form our President

Welcome to the 1982-1983 season of the Buffalo Astronomical Association. I hope the coming year will be a rewarding one for our club and each of its members.

Assuming the presidency of the BAA is not an easy task. Not because the office itself is so difficult to fill, but because it is so hard to improve upon success. I base my conclusion on the stability and quality of its membership, the high attendance at its meetings, the affability at its social hour, the longevity of its observatory and special sections and the active and enthusiastic support given to special functions. How many clubs can boast of such an enviable record, all achieved in a spirit of cooperation devoid of internal conflict?

Having served on the Board of Directors during Al Kolodziejczak's and Fred Price's terms as President, I know their effort and leadership has played an important part in our success. But, clearly, many others have made significant contributions as well. Three very capable officers have been returned to their positions: Ken Biggie - Vice-President, Ken Kimble - Secretary and Edith Geiger - Treasurer. I will be happy to serve with them and the other members of the Board, all of whom have provided guidance to the BAA in the past.

Our club has several important chairmanships that are filled by people who deserve our recognition and thanks. I am pleased to announce that Claudia Bielinski has accepted the position of Membership Chairman. We thank Adrienne Kimble for serving in that capacity last year. Doris Koestler will continue her essential function as Chairman of the Refreshment Committee. I know she will appreciate any help you can offer during the social hour and the clean-up afterwards.

John Riggs will continue in the challenging role of Director of Beaver Meadow Observatory. After serving as Co-Director for two years, Allan Mohn has resigned. He has done an excellent job there and we greatly appreciate his efforts. Ed Lindberg and Ken Kimble head the Instrument Section and Study Section respectively. I hope more members will make use of our observatory and attend our special sections in the future. They are open to all.

The Spectrum will again be edited by Darwin Christy. We can point to our publication with great pride and we should sincerely thank Darwin for his accomplishment. From Darwin's viewpoint, the best way to show your appreciation is to send him an article for publication.

Our summer observing program has again been great. Star parties were hosted by Miro Catipovic, Adrienne Kaczmarke, Steve Desmond, Tristan DiLapo and Darwin Christy. All have been well attended and enjoyed and we extend sincere thanks to our hosts for adding so much

to the pleasure of membership in the BAA. One more star party remains - at the Museum's Kellogg Observatory. Thanks in advance to our host, Ernst Both. We should also thank Carl Milazzo who, each year, organizes the summer star party schedule and arranges our field trips to observatories.

Beaver Meadow Observatory has held public observation nights during this summer. The public has been out in force---as many as 53 on a recent Saturday night. Our observatory, teaching programs and exhibitions are important media whereby we bring astronomy to the public and make our club known to potential new members.

We have a vacancy on the Board of Directors for a member-at-large for a one year term as a result of my election to the presidency. Our bylaws call for an election, which we will hold at the October meeting. Nominations will be accepted from the floor in September.

I look forward to seeing you at our opening meeting and hope you will enjoy the year to come as members of the B.A.A.

Rowland A. Rupp

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The BRIGHTNESS of the TOTALLY ECLIPSED MOON: 1939 - 1978

Since 1939 I have observed almost all total lunar eclipses, as far as they were observable from Japan, and as far as the weather permitted. During this interval, the brightness of the eclipsed moon largely varied from eclipse to eclipse in an unpredictable manner.

I now classify the brightness of the eclipsed moon at midtotality as defined in Table 1, and report my observations in Table 2 according to this classification. Then, using this data, I try to correlate the brightness of the eclipsed moon with the degree of obscuration, or the 'depth' of eclipse, and show the result in figure 1.

This shows, as can be expected, that an inverse correlation between the brightness and the degree of obscuration exists; namely it means that the inner part of the umbral shadow of the Earth is darker than the outer part. More important here is the fact that the correlation is by no means satisfactory, even if the subjective nature of the visual observations are taken into consideration. In other words, Figure 1 shows that the brightness of the moon itself actually varies from eclipse to eclipse. This change may be caused by the change in the condition of the Earth's atmosphere, where the solar rays pass through into the umbral shadow, and by the amount of phosphorescence of the surface of the moon itself, if such a mechanism is actually operating on the lunar surface. In either case, a correlation between the brightness of the eclipsed moon and the solar activity, may be suspected.

To investigate this point, I try to correlate the brightness of the eclipsed moon with Wolf's Relative Numbers (sunspot counts) and show the results in Figure 2 and 3. As you can see, although a very weak correlation of direct sense may be suspectable, this correlation is at best very weak, both in relation to the sunspot Relative Number, and to the phase in sunspot cycle.

Now the late Dr. A. Danjon of France reported, based on the historical records of many eclipses, that he found a prominent correlation between the brightness of the eclipsed moon, and the phase in sunspot activity. His results are that during the 2 years following a solar minimum the eclipses are quite dark, during the next 4 years the brightness increases, after which it remains nearly constant until the following minimum, when a marked drop in brightness sets in. This result has not been confirmed by my own observations; though naturally greater weight cannot be placed on my results because my observations only cover a shorter interval, hence a smaller number of eclipses.

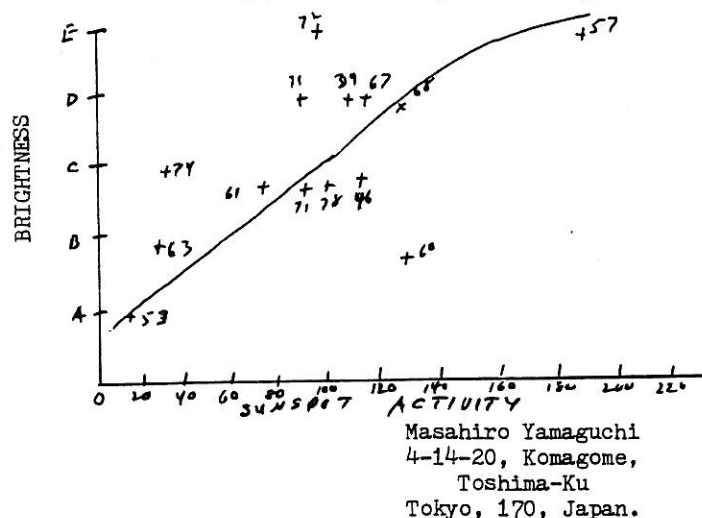
At any event, it is true that the brightness of the eclipsed moon changes from eclipse to eclipse in a more

or less unpredictable manner, hence we can know the brightness of the eclipsed moon only by observation. Because it is impossible to observe all lunar eclipses from a given point, or country, here exists a need of an international cooperation between amateur astronomers.

Table 1 (for 7x50 binoculars)

DARK	'A' The surface of the moon is very dark, and is discernable from the background sky only with difficulty.
	'B' The surface of the moon is very dark, but is discernable from the background sky more easily.
	'C' The surface of the moon shows a dark reddish brown color, but surface markings are difficult to discern.
	'D' The surface of the moon shows a bright reddish copper color, and the surface markings are easily visible.
BRIGHT	'E' The surface of the moon shows a brilliant reddish orange color, and even the principle craters are visible without any difficulty.

Figure 3 - Correlation Between the Brightness of the Moon at Mid-Totality, and the Sunspot Activity.



EXHIBIT

Beverly Botto, a member of the B.A.A. will have her 'Astro Art Work' on display at Strassenberg Planetarium in Rochester, N. Y. from November 1st to January 3rd. This would present a good time for those who have never seen her works as well as seeing one of the best planetariums in the country. It is located on East Ave near Goodman Ave in Rochester.

N F C A A A
up-date

The NFCAAA (Niagara Frontier Council of Amateur Astronomical Associations) will be held on November 6, 1982 at the University of Waterloo, Canada. The principal speaker will be Dr. Gordon Sheppard from the York University in Toronto. His topic will be, "Earth's Ionosphere." More details can be obtained from Ed Lindberg or Carl Milazzo.

BAA ANNALS

5 Years ago - The September 1977 meeting featured Fred Price and Jarry Carlino doing a joint presentation entitled, 'recent visual observations of Jupiter.' This was a very good and informative talk. I remember it because it was the first BAA meeting I attended as a member. The October 1977 meeting was addressed by Dr. Thomsa Noonan from Brockport State College. His topic was, 'The Expanding Univers.'

10 Year ago - The September 1972 meeting was a potpourri of solar eclipse chasers from the BAA. The Spectrum advertised it as short reports by members who has either successfully or unsuccessfully observed the recent eclipse on July 10th. The October meeting of that year also featured the sun as its topic this time a report by Walt Semerau on recent solar activity. The sun was extremely active that summer so Walter's report was most interesting.

15 Years ago - The sun again was in the "spotlight" as Walter Semerau was the September 1976 speaker. His topic was the sun in action. This, I presume was the unveiling of Walter's motion pictures of solar activity. From the sun to the moon, the October '67 meeting had George Keene from Rochester here to speak about close-up photography of the moon. A great talk by a well informed man on photography.

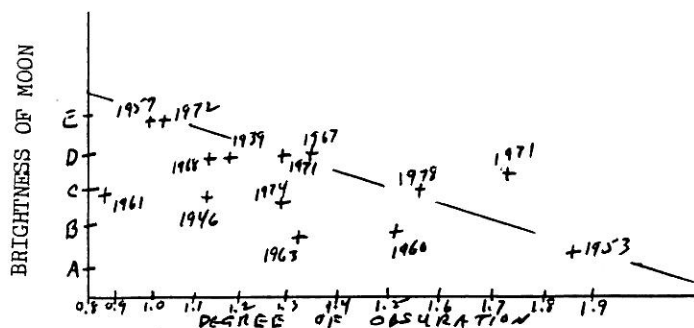
Kan Kimble

Table 2; OBSERVATIONS

DATE OF ECLIPSE	DEGREE OF OBSCURATION	BRIGHTNESS OF ECLIPSE	WEATHER CONDITION	SUNSPOT NUMBER *
5/3-4/39	1.182	'D'	clear	88.8
12/9/46	1.171	'C'	clear	92.6
7/26/53	1.869	'A'	cloudy	13.9
11/7-8/57	1.030	'E'	clear	190.2
3/13/60	1.520	'B'	cloudy	112.3
3/2-3/61	0.805	'C'	cloudy	53.9
12/30/63	1.341	'B'	cloudy	20.9
4/24/67	1.342	'D'	cloudy	93.8
10/6/68	1.174	'D'	cloudy	105.9
2/10/71	1.313	'D'	clear	66.6
8/7/71	1.734	'C'	clear	66.6
1/30/72	1.054	'E'	clear	68.9
11/29-30/74	1.295	'C'	clear	34.5
3/24-25/78	1.457	'C'	clear	73.5

* Sunspot Relative No. is Zurich Provisional Monthly

Figure 1 - Correlation of the Brightness of the moon at Mid-Totality and the Depth of the Eclipse.



OBSERVATIONS

On July 6, 1982 I was able to get a few photographs of the Lunar Eclipse. I was lucky from the area where I was getting my pictures. It was sort of hazy at times and sometimes clear. I managed to get a sequence run as it went into totality, showing the difference in the atmosphere as the night progressed. At one time I did take a color photo as it appeared crescent at 06:20.0 U.T. and one more as it just passed third contact at 06:32.5 U.T. which placed it at first part of totality. Some of our members saw this at my star party.

On the evening of July 13th, I received a call from Edith Geiger informing me of the Auroral display. I had planned to get a few more photos but due to a human error I was not able to have good results. My camera lens was jammed on one meter focus of which I was not aware at that time. Oh well----Grin and bear it!!

August 12th I was able to, in a four hour period, count 44 meteors from the Perseids. This is a small count and I believe the show was very poor. The next AM I was able to see 17 in a two hour period. Anyone having seen more had a good observing night of meteors.

Darwin Christy

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A rich group of sunspots were seen on June 19 that resembled a globular cluster. Towards the other limb was a giant spot that could be seen with no magnification through a number 15 welder's filter.

The deep red star 'S' Scutum was quite vivid when viewed on June 15, and was of magnitude 7.1 with a spectra type N3.

The northern three quarters of the total eclipse of the moon on July 6 became dark gray. While at the same time the southern region was a coppery orange.

On July 17 the North American nebula (NGC-7000) was faintly detected in Cygnus, which was also nearly saturated with faint stars. In addition the Veil nebula (NGC-6960/95) was seen in Cygnus, which looked somewhat like a cirrus cloud.

On that historical date 'July 20', a multiple in Cepheus was seen which is named Struve 2816. It's three stars formed an elongated triangle of 12 by 20 seconds of arc. It consisted of one blue, 6th mag. star along with two white stars of 8 mag.

A star in Cygnus catalogued as HDE-226868 was found on July 22 and was of mag 8.9. What is so special about it, is that the Cygnus X-1 black hole is orbiting it. Later that night the variable star Mira in Cetus was to be magnitude 2.5, which is the brightest it has been since 1972. Last year Mira became no brighter than 5th mag., where normally it is 3.4. 200 days later it will be as faint as magnitude 9.3.

An aurora was seen glowing dimly green on July 24 no higher than 15 degrees above the horizon in the north. At times it was consisting of rays and shimmering curtains.

Comet Austin was sighted as a +4.7 mag object on July 17 on the borders of Ursa Major and Leo Minor. Bright twilight prevented its tail from being visible, but the intense core of the coma was perceivable with binoculars.

Carl Milazzo

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One advantage of a lunar eclipse is that it can be seen wherever the moon is visible. My location for the July 6th eclipse was Cocoa Beach, Florida. I have the impression that the moon may have appeared a bit brighter there during totality than in Buffalo, if qualitative reports can be relied upon.

I first noticed the eclipse was underway when I saw a slight darkening of the eastern limb around 1:30 a.m. Within ten minutes, a definite notch was taken out of the moon. I estimated second contact at 2:37 and third contact at 4:23. Shortly after 5:00 a.m., clouds obscured the still half-eclipsed moon and I called it a night.

Early during totality, the southern half of the moon was clearly visible, shining with an orange-red hue. Later not long before the moon was due to emerge from the umbra, this illumination seemed to slide up to the eastern limb where the first rays of the sun would fall, while the southern hemisphere appeared to grow dimmer than before. I was surprised at how bright the totally eclipsed moon appeared, since the moon passed almost through the center of the earth's shadow, making this eclipse unusually deep and long.

This was my second trip to these parts this year. Both times I was disappointed with the quality of the skies. It wasn't really clear - there was always a haze, most dense near the horizon and gradually clearing toward the zenith. Even during the day, the sky isn't really a deep blue; it's more of a very light haze through which the sun glares intensely. Perhaps we've been a bit too critical of Buffalo skies. At least once in a while, when the clouds part, we are treated to a deep blue sky followed by a sharply clear night and, if we escape the city's lights, a good view of the stars.

Rowland Rupp

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From your EDITOR

I am very pleased with the results you have given to me in the past as for articles, observations, and general astronomical items for print. I wish to thank each and every one who donated to the cause of the "SPECTRUM". Without those morsels of words, your newsletter would not be what it is. I do need articles now and in the very near future for up and coming 'Spectrums', soooooo--- I am asking now for any contribution you may have. You can give it to me at any meeting or send it to me by mail. My address is in the directory of members of the B.A.A.

Darwin Christy, ed.

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??? DID YOU KNOW ???

Today the universe is expanding at the rate of 1000 trillion cubic light years every second ?????

When the universe was 10^{-99} of a second old, it had the temperature of 5×10^{31} K, and a density of 3×10^{939} cm³.

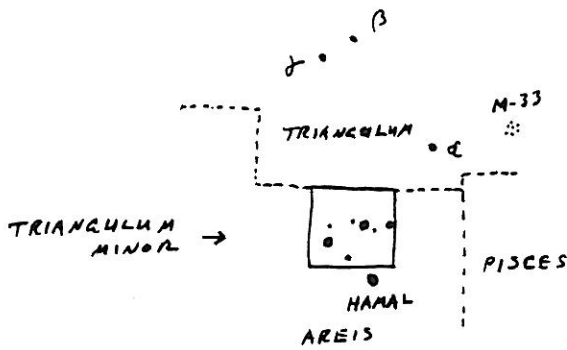
One supernova explosion occurs every 10 seconds in the observable universe, yet on the average only once in a hundred years does one go off in any one galaxy ????

The faintest constellation is 'Mensa' which has a 5.1 magnitude star as its brightest ????

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SEPTEMBER CONSTELLATION

From the ancient constellation, there is a very small one near the constellation Triangulum called, 'Triangulum Minor.' It was formed, and thus named, by Hevelius, from three small stars immediately to the south of the major constellation towards Hamal in Aries. It was short lived, as it was discontinued by astronomers following the days of Flamsteed. Still Gore has recently revived it in the title 'Triangula' on the planisphere in his translation of 'l'Astronomic Populaire', as did proctor in his reformed list.



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ANSWERS

- 1) A CALORIE is the amount of heat required to raise the temperature of one gram of water from 15° Centigrade to 16° Centigrade.
- 2) A COSMIC YEAR is the period of time required for the Sun to be carried completely around the center of the Milky Way Galaxy by the rotation of the Galaxy. It has been calculated that the cosmic year is about 200 million Earth years. Apparently, from the general conception of the age of the Milky Way Galaxy, our Sun is just entering manhood, for its cosmic age is estimated to be between 20 and 21 cosmic years.
- 3) MASS is the amount of material in a body, and is usually expressed in terms of comparison, as having so many times the mass of the Earth or the Sun. WEIGHT is the effect of the Earth's gravity upon a body, or the effect of the gravity of any body upon another. Upon the surface of the Earth, a mass of one pound would have a weight of one pound; upon the moon, the same mass would have a weight of 1/6 of a pound.

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4) The human eye does not see light of all colors with equal intensity. Blue is much easier to see, for example, than red. For that reason, if two points of light, one blue and one red, from two different sources, and both diminished by the same amount, the red object will appear fainter than the blue. This is known as the "PURKINJE EFFECT". It was first explained by Johannes Evangelista Purkinje, a Czech physiologist of the nineteenth century.

5) YES!!! If a delicate scale balance is so arranged that one of the weighing pans is kept dark, and light is allowed to fall upon the other one, the lighted pan will sink slowly.

Ed's note:- I have experienced the weight of light on a balance scale which could detect one milligram.

DC

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"The BUFFALO ASTRONOMICAL ASSOCIATION, Inc."

"The SPECTRUM"

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-: FIRST CLASS :-