



The Spectrum

NOV-DEC 1980

Buffalo Astronomical
Association, Inc.

Darwin Christy, Editor

NOVEMBER - DECEMBER 1980

NOVEMBER meeting; The November 14th meeting will begin at 8:00 PM in the New Science Building Auditorium at Buffalo State on Elmwood Ave. Our guest speaker for the evening will be our own Dr. Gilbert Brink. The topic he selected to present is, 'The Interstellar Medium; the Stuff of the Universe.' Please welcome Dr. Brink.....

??????? QUIZ ???????

- 1) Beside the Large and Small Magellanic Clouds, another satellite is outside our galaxy, 'The Milky Way.' What is it called ?
 - 2) What chances are there, if we were on a flight half way to the Andromeda Galaxy, of seeing any Stars in the sky ?
 - 3) Who is the 'star' of the BAA behind the camera ?
 - 4) What is the true color of the sky above us ?
 - 5) The last 'Spectrum' produced how many typing errors ?
- Answers on the last page.

DECEMBER meeting:- The December 12th meeting will be held in the New Science Building at Buffalo State on Elmwood Ave. starting at 8:00 PM. This is our Christmas meeting. For an added feature, Joe Provato is providing us with a WINE & CHEESE taste. Edith Geiger is to supply us with her 'Lampoons.' Ken Kimble is going to give us a progress report on his 'Solar Telescope.' Finally, Darwin Christy is going to show us some of our members both past and present and some other phenomenon. Whether you like seeing yourself or not, at least come and enjoy a sampling of wine and a taste of cheese.....

---DUES ARE DUE---

Just a reminder that dues are due. Students - \$5.00 - Senior Citizens - \$5.00 - Individual members - \$10.00 - family membership - \$15.00. Edith Geiger, our membership chairperson, will accept dues at the meeting.

* BOARD MEMBER *

A board member was elected to fill the unexpired term of President Al. K. at the last meeting. Nominees were Dr. Fred Price, Dr. Gilbert Brink, and Roland Rupp. Elected to fill the vacancy was Roland Rupp. Congratulations!

...CORRECTION...

In the last 'Spectrum', Dr. Price's article had an error in the last sentence. It should have read as follows:- 'This in itself makes amateur lunar observation worthwhile, and is worth considering these days when there is so much emphasis on the notion that for a scientific pursuit to be profitable it must necessarily always give material results of tangible scientific value'....

Sorry---Ed.

* Ride Needed *

Warren Scherer, 172 St. Felix Ave, Cheektowaga, N. Y. 14227 - phone 895 1378 is an amateur astronomer, 17 years of age, needs a ride to the BAA meetings, from the William - Harlem area. Whoever can help, he thanks you.....

SPY and TELL

Fred Price reports that his Biology textbook is selling well.

Ernst Both is acting as Interim Director of the Buffalo Museum of Science until a successor to former Director, Dr. Robert Chenhall is found. Congratulations!

Gil Brink gave a laser demonstration at U. B.'s Annual Community University Day on October 5th.

Carl Milazzo escorted fifteen members to see the 32" reflector, largest amateur telescope in the world (built 1958-65), which is located on Robin Hill Rd. in Frewsburg, N. Y.

Walt Whyman had a very successful trip in search of covered bridges in Ohio and Pennsylvania.

Speedy Orrin Christy has a new kayak which he has christened, "Dart."

Carl Milazzo missed his first B. A. A. meeting since he became a member in 1971 when he went to the dedication of the Grand Valley Astronomer's 14" telescope in Ayr, Ontario, on Sept. 12th. The speaker was the distinguished astronomer, Helen Hogg.

Irv Goetz has a sure fire way of finding his new Chevy Citation in a parking lot. He has a red Christmas stocking flying aloft on a spindle. This little 'wind sock' is also a reminder that there aren't too many shopping days before Christmas.

Congratulations to Ken and Adrienne Kimble who have a lovely little 9lb. daughter, Kathleen Adrienne, born on October 20th.

Edith Geiger.

STUDY GROUP

This year the study group has decided to spend its time learning about our own Solar System. At the September meeting it was brought to our attention that we had spent the last two years on stellar related material. With the new influx of planetary information from our space probes, this year is a good time to study our closest neighbors.

At our October meeting Al K. talked on the origin of the Solar System, and Jim Russell reported on a paper written by Ray Manners, a former club member, on his theory of planet formation. A very interesting discussion followed.

For November we are going to discuss the first four planets, Mercury, Venus, Earth and Mars. Our meetings are the 3rd Friday of each month in room 273 of the new Science Building at Buffalo State. All club members are welcome to attend.

Ken Kimble.

WHERE ARE YOU ?????????

Anyone knowing the where-abouts of the following members past, please contact them and let them know they are NOT forgotten. Also it would be nice upon contacting them if you could persuade them to come back into the membership of the BAA...

Ronald Clippinger (Pres. 6 yrs.), Richard Zygmunt (Pres.)(Sec.), Les Stoklosa (Vice Pres.), Marjorie Meyer Sundell (Treas.)(Sec.), Warren Steinberg (Treas.), Marybeth Gauthier (sec.), John Riggs (Sec.), Clinton Baxter (Niagara Falls Planetarium),

Edwin B. Bask, Harold Becker, Frank Fronczak, Gilbert Gagne, Carl Kalweit, Albert Kaupa, John Lawrence, Ernest Okonski, Thomas Peltz, Thad Toporczak, John Sojka, Paul Stumpf, Gerald Rote, Robert Ranney, David Rhoads, John Chilcott, Fred Gordon, Daniel Bartosz, Gretchen Schork, Howard Clarke, Charles Bull, Steven Jaworski, Kermit Schlitzer, Vernon Siegel, Darl Washburn, David Blake, William & Caryl Chambers, James & Joseph Wyrobek, Eugene & Larry Hazel, Ruth Newman, Sylvia Mosure, Ronald Poling, Arlene & Wayne Johnson, Edward Dahlke, Mary & Edward Rahill, Thomas Klonowski, Ron Wadsworth, Alexander Kowal, Thomas Beatty, Fred Fliederbach, Philip Moses, William Parker, Michael Wakshull, Thomas & Susan Broad, Ian Slepian, Eugene Davidson, Donald French, Robert Kirchgessner, Theo Scott, David Hornung, Donald & Jane Donavan, Thomas & James Pasek, James & Betty Schnellinger, Walter & Eileen Rusnak, Karl Lisnerski, David Blackman, Michael Dlugosz, Nicholas & Rose Marie George, Marcus Lawson, James Lehmann, Frank Pirrone, Kenneth Ranchill, David Steinagle, Paul Schenk, Sumner Nunley, David Maul, and Richard E. & Richard M. Wesolowski.....

I thought once, I was wrong - but I was mistaken.....

What you don't know may not hurt you, but it might amuse a lot of people.....

BAA ANNALS

5 YEARS AGO - "Why Not an Armchair Astronomer?" was Ken Brown's topic at the November 1975 meeting. Ken, a member of the Rochester Astronomical Society, has an extensive collection of astronomy books. Some are hard-to-find classics that make entertaining reading today, long after new findings have antiquated their contents.

The 1975 Christmas meeting featured Ed and Olga Lindberg on "Astronomical Clocks and Time Pieces" and Edith Geiger on "Lunacy Unlimited."

Want to know about building telescopes in 1938? If so, read Ernst Both's November December 1975 Spectrum article "The Largest Telescope on This Side of the Atlantic" and learn how it was done in the good old days using speculum metal for the mirror.

Having kept the archives for several years, I'm aware of many interesting and enjoyable articles in the Spectrum which, I'm sure, would be well worth reading today by those who share my interest in "armchair astronomy." Anecdotes about past club activities make good reading too. A series of names of people once prominent in the BAA emerges from these pages and the reader appreciates that the club carries on despite extensive changes in leadership. Perhaps we should explore ways to bring this material to members who would enjoy reading it as much as I have.

10 YEARS AGO - Ernst Both spoke on "The Realm of the Galaxies" in November. Ed & Olga and Edith, our traditional Christmas speakers, were on the job in 1970 too. The BAA was getting ready to put on their second astrophotography exhibit at the Museum of Science.

15 YEARS AGO - In November 1965, several members of the then very active Observing Section reported on their studies: Ernst Both - "Visual Observations of Mars", Edith Geiger on her lunar observations and sketches, Fred Price - "Some Aspects of Well Known and Lesser Known Lunar Formations", and Dick Zygaunt - "Measurements of Lunar Features". Other sections meeting in those days were the Advanced Study Section and the Instrument Section.

The December 1965 Spectrum was printed in Red and Green in keeping with the season. Olga Lindberg, our feature speaker for December, talked on "Women in Astronomy".

25 YEARS AGO - Kurt Stehling discussed "Telescopes and Their Accessories" in November, while "Technical Problems of the Amateur Observer" was the December topic given by Alan Gee. Telescopes and observing received greater emphasis at meetings in the past. In fact, the fall schedule for 1955 opened with the following sentence that summarized our philosophy a quarter of a century ago: "The Buffalo Astronomical Association is going to devote a season to our favorite hobby - telescopes and associated gadgets, observers and observing."

Roland Rupp

As seen in Time magazine:- Question - Why did the Soviet trained Cuban Cosmonaut, Arnaldo Mendez return from his recent trip into space with red hands?

Answer - The Soviets aboard the ship were so worried about being hijacked to Cuba that they slapped his hands every time he reached for the controls.....

-----FOR SALE-----

An 89" Sona Tube 12" diameter - \$15.00

F 5.5 10" Newtonian Reflector telescope with 2" finder - 2" Eye piece holder - and balance weights. \$ 285.00

Thrown in one 10" cell holder, one 10" back plate, one 56" fiberglass tube 12" in diameter. Ronald Coyle 773 Beach Rd. Cheektowaga, N. Y. 14225.....

For sale(to make room for my 17½"):- Cave 12½" transportable Newtonian reflector f/5.5 - portable pier, clock drive, 8" setting circles, electric declination slow-motion with hand-held control box. Fully rotating tube, two inch focuser, 8 x 50 finder, two eyepieces and Barlow. This instrument has superb optics for both planetary and deep-sky viewing. I'm asking \$1400.00 and can deliver the 'scope to anywhere in Western New York. Contact Larry Carlino, 453 Niagara Falls Blvd., Buffalo, N. Y. 14226 - phone 832 0491.....

* OBSERVATORY UPDATE *

As was mentioned in the last newsletter Tom Dessert has resigned from his duties as director of the observatory. We all commend and thank Tom for doing a superb job.

Two members have accepted the position of running the observatory. Allen Mohn and James Russell will be working as co-directors.

We are going to try a new method of conducting public nights. A number of members have offered their assistance for public nights, so what we will do is spread the chore among these people by assigning each a one month shift.

There have also been some members who have offered their help towards maintenance of the observatory. We would like to thank those people and ask that anyone who would like to offer help to get in touch with us. Your help will be gratefully accepted.

Any member, especially new members, wishing to get checked out at the observatory please get in touch with either Jim or Al. We want to encourage members to use the observatory, it has a fine instrument that has, and can give many fine hours of enjoyment.

Allan Mohn 683-0403 James Russell 826-0377

(Get in touch with us).....

LAWRENCE M. CARLINO

Larry, who was born in Buffalo, has remained in the Buffalo area for most of his life, with his first two years of school being spent at school #77. After the family moved to Eggertsville, he was enrolled in Windemere Elementary School from which he proceeded to Amherst High School.

Astronomy has been of consuming interest to Larry from the time a neighbor, who had a small refractor, showed Saturn to this wide-eyed boy of eleven or twelve. This inspired Larry to purchase his first telescope, a 1.2" refractor, which he bought for \$17.95. His next step was a 2.4" Unitron which, with a great deal of careful saving, he purchased when a sophomore in high school.

Between his junior and senior year he was a participant at the University of Buffalo in the National Science Foundation program for gifted scientists. He is grateful to Ernst Both who arranged for him to use the museum telescope, in connection with this program, for his study of Venus. Larry was president of the Science Club in high school, and was awarded a Regents Scholarship on graduation.

During the summer between high school and college, Larry bought some lenses and designed a 6" refractor. With the help of his father, he put the telescope together and used it throughout his college years. This was an excellent scope for planetary observing, but he finally sold it to someone in Ohio. While at U. B. he was president of the Astronomy Club, and was fortunate to have the opportunity of using the university's 10" Cassegrain. Larry joined ALPO and did a number of sketches of Mars, Jupiter and Venus which appeared in six or seven issues of the Ströling Astronomer.

At U. B. he started out as a physics major, but decided to change to one of his other interests, that of English. In his sophomore year, Larry joined the Air Force R. O. T. C. and, as a fitness test was coming up, he started running to get in shape. He has been a running enthusiast ever since and continues to engage in this activity year around.

At graduation he received his B. A. in English and became a Second Lieutenant in the Air Force. He couldn't fly aircraft, however, as he was prevented from so doing by an eye problem involving depth perception, so he went to Chanute Air Force Base from November 1967 to June 1968 to study aircraft maintenance. He graduated from Chanute in May, and volunteered for service in Vietnam but was ordered to Thailand instead. On route he went through a three day M16 rifle training course and qualified as an expert.

This group of servicemen were flown by Continental Airlines to Thailand rather than by Air Force planes, and Larry, upon arriving, supervised the unloading of cargo. At Saigon, a couple of uniformed fellows came running up to the plane and were assumed to be part of their military establishment dashing to welcome them. They turned out, however, to be baggage carriers. Larry spent one year in Thailand on standard tour of duty.

With the low latitude of Thailand, he had the thrill of seeing the Southern Cross. To be without a telescope with such opportunities for viewing was too much for Larry, so he built a 4 $\frac{1}{4}$ " Cassegrain using a flare container for a tube and various unusual pieces of equipment at hand to complete the telescope. It was a fine little scope and he brought it back to the U. S., disassembling it to use parts for a 5" refractor he was building.

Larry became a First Lieutenant and was stationed at Rickenbacker Air Force Base near Columbus, Ohio, in aircraft maintenance of the Strategic Air Command. He remained there for two years, finishing his military career as Captain Carlino.

At one time he had planned to make the Air Force his life's work, but changed his mind in favor of teaching. He re-enrolled at U. B. in 1971 and received the necessary credit to obtain his teaching certification. He taught at Iroquois Central High School for one year and went on to Williamsville South where he has remained as a teacher of English, with an added course in astronomy. His astronomy class is very enthusiastic over projects they have tackled. Three students have built telescopes, and many have chosen independent study projects.

In 1978 Larry received his M. A. degree in English education from U. B. His special areas of interest in the field of English are Shakespeare, modern poetry, and science fiction. He also writes poetry and is busily engaged in writing a science-fiction novel. Beside his academic teaching, Larry coaches soccer, and indoor and outdoor track as extra curricular activities. A rumor that tickled his fancy was disseminated by students who spread it about that he was a famous professional soccer player from Europe. He must play a great game of soccer! His ability in sports also extends to ice-skating.

Once again we find that astronomy and music (perhaps it is the "music of the spheres") seem to go together, for Larry is extremely interested in classical music, enjoying the tremendous record library of his parents. He finds orchestral music, concerti and opera to be especially pleasing. His favorite composers are: Rachmaninoff, Brahms, Bruch, Verdi, Puccini, Shostakovich, Bartok and Prokofieff. He enjoys singing and sang in the glee club in junior high.

Larry's main area of concentration in astronomy is planetary. He has had drawings, photos, and a book review published in Astronomy, and the French Astronomical Society has asked him to submit drawings to their journal, l'Astronomie. He is also actively working on a long term project sketching all the bright planetary nebulae. To obtain clear skies he takes his scope to Colden and Franklinville. Larry has had an array of telescopes and currently has an Edmund Astroscan, Quantum 100, Celestron 8 and a Cave 12". He is just about ready to unveil a new 17 $\frac{1}{2}$ " Newtonian Dobsonian type telescope which he is building. He has purchased a van to transport his newest scope to the clear skies of the country.

Larry has served the B. A. A. as editor of the Spectrum (September 1977 to August 1979) and as a member of the Board of Directors. He is a person of great stamina and vitality of expression. He has a variety of interests and is an inspiration to his students. Here is a fine young man with a bright future.

Edith Geiger.....

* NOVEMBER CONSTELLATION *

Hic vertex nobis semper sublimis; at illum

Sub pedibus Styx atra videt, Manesque profundi

Vergil's 1st Georgic

OCTANS HADLEYANUS, now known simply as 'OCTANS', was formed and published by La Caille in 1752 in recognition of the 'octant' invented in 1730 by John Hadley. It is the French 'Octant', the German 'Oktant', and the Italian 'Ottante'. The French edition of Flamsteed's 'Atlas' has it as l'Octans Réflexion.

Octans is the southern constellation marking the south polar region. The 5.5 magnitude star, Sigma, is 1° from the south pole and is inconspicuous. Lambda is a double star, easily seen in a 2" telescope, with contrasting colors of orange and green, each being 5.5 and 7.7 magnitude respectively. This area of the sky is virtually void of stars although Gould assigns to it 88 naked eye stars down to 7th magnitude. The brightest is Nu, being only 3.8 magnitude.

Ancient references to a south pole are infrequent; Ovid, however, makes 'Phoebus' allude to it in his instructions to Phaëthon; Vergil mentions it as in our motto; Greech thus renders from Manlius:- the lower pole resembles bears.

To this above, and shines with equal Stars;

and Pliny tells us that the Hindus had given it a name, 'Dramasa'.

Thus is the constellation that we must travel to the southern lands to observe what may be a disappointment when we arrive.....

* DECEMBER CONSTELLATION *

To Cerberus too a place is given -

His home of old was far from heaven.

Quoted in Smyth's 'Bedford Catalogue.

CERBERUS is the Italian 'Cerbero', Secchi associating it with 'Ramo', the Branch, and the French combining both in the title 'Rameau et Cerbere'.

This sub-constellation, a former adjunct of Hercules, but now entirely disregarded by astronomers, is supposed to have originated with Hevelius in his 'Firmamentum Sobiescianum', although Flammarion asserts that it was on the sphere of Eudoxos with the Branch. The 4th and 5th magnitude stars that Hevelius assigned to it are Flamsteed's 93, 95, 96 & 109, lying half-way between the head of Hercules and the head of the Swan.

The royal poet James I designated the infernal Cerberus as "the thrice headed porter of hell," and the heavenly one has been so figured, although with serpent's darting tongues; but the abode and task of the creature would seem to render very inappropriate his transfer to the sky, so that it probably was only made for the purpose of mythological completeness, as the death of this watch-dog of Hades fitly rounded out the circle of Hercules' twelve labors.

Others have said that the figure typified the serpent destroyed by the Hero while it was infesting the country around Taenarum, the 'Metopon' of Greece, the modern Cape Matapan.

Some of the stars of Cerberus were known in China as Too Sze, the Butcher's Shop and others as Heen Too, a Cloth Measure.....

BAA LIBRARY

The B. A. A. Lending Library consists of three separate divisions:

1) BOOKS OWNED BY MEMBERS

These books remain in the members possession. They can be borrowed by contacting me and I will either give you the members name or make arrangements myself. Please honor all agreements as to return dates. Some publications, such as a valuable book or star atlas are available for reference only and are marked as such. See book listing which will be updated periodically.

2) MATERIAL FROM THE ARCHIVES OF THE B. A. A.

These are mostly papers donated by club members, but also includes some commercial information. They are all worthwhile, and in some cases reflect much research and/or observation by individuals.

3) CLUB OWNED SLIDES

These are the Dow Funded slides. They can be loaned on a weekly basis for showing to groups for educational purposes, a family gathering (acquaint them with your hobby), or just plain personal enjoyment. As before they will be loaned on a weekly basis and you will be pestered to return them.

Ken Kimble - 692 5068

The slides consist of Galaxies, Nebulae, & Constellations grouped according to their location in the sky. Pick a subject and ask me - KK

BOOK TITLES CURRENTLY AVAILABLE - GENERAL ASTRONOMY

Cambridge Encyclopedia of Astronomy

Black Holes, Quasars & The Universe (Shipman)

The Milky Way

The Universe (General Text)
The Collapsing Universe
Stars & Clusters
The Origin of the Solar System

COSMOLOGY

The Red Limit
The First 3 Minutes
The Search for Gravity Waves

SCIENCE

Introduction to University Physics
Elements of Chemistry
Key to the Universe

OBSERVING

Atlas of the Heavens II (Becvar) (Ref. no lend)
The Messier Album
The Telescope Handbook and Star Atlas
Whitney's Star Finder
American Ephemeris and Nautical Almanac (1979)
F Field Guide to the Stars and Planets (Menzel)
Mag 5 Star Atlas

EQUIPMENT

Telescope Atlas and Star Atlas

MISC.

The New Sun (The Solar Results from Skylab) NASA)
Meteor Science and Engineering
The Historical Supernovae
Sun Weather and Climate (NASA)

MAGAZINES

SKY & TELESCOPE - ASTRONOMY - SCIENTIFIC AMERICAN
Check availability, many back to the '60s

CLUB OWNED PAPERS AND MISC.

The Search for the Missing Mass, or a modest review of the eventual fate of everything, by Dr. Jack Mack

Amateur Astronomy and Variable Star Observing, by Larry Hazel

(2) very informative papers on eyepieces, no authors - claim them if they are yours.

Solar Influence on the Lower Ionospheric Transmission of High Frequency Radio Waves, by Orrin Christy

Resonant Perturbations and the Rings of Uranus, by Phil Cizdziel

Wolf-Rayet Stars: Contemporary observation and theory, by Phil Cizdziel

(56 pages and a photographic supplement)

A New Theory of the Origin of the Solar System, by Raymond D. Manners

Plans and specs for a 10 foot observatory dome

The mirror of Mount Palomar, a report (Circa 1953) by Corning Glass Works.

Anyone wishing to contribute their books or papers to the library, please contact Ken Kimble. There is the possibility that you have something some one else does not and someone could have something you would like to read or browse through.

) LUNAR PHASES (

New Moon - November 7th & December 7th

First Quarter Moon - November 15th & December 14th

Full Moon - November 22nd & December 21st

Last Quarter Moon - November 29th & December 29th

* SOLAR PHENOMENA *

Winter Solstice will arrive on December 21st

When the clouds disappear - The Moon will be at its fullest.
Murphy.....

METEORICS

On October 2nd I received from Japan a count of meteorics which were captured from near Raichur, India last February where the Solar Eclipse was seen. Shigeru Morikubo collected eight micrometeorites ranging in size from 2.5 to 15 microns.

I have just been able to see Electron Microscope scans of meteorics which I have collected in the past. Not only can I see them in photographs but also an analysis of their chemical make-up by X-ray; thanks to a neighbor who has access to an electron-microscope.

Darwin Christy

The deadline for the next "SPECTRUM" is December 18th.

Major articles are still needed.....

I am still looking for a typist to type out these stencils. I will not ask but will accept any offers from volunteers. Thank you.....DC.

PLEASE FILL OUT THE QUESTIONNAIRE ON THE LAST TWO PAGES AND EITHER HAND THEM TO ME AT THE NEXT TWO MEETINGS OR MAIL IT TO ME, THANK YOU!

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

----BAA SURVEY SHEET----

"SPECTRUM" SURVEY

In order to maintain and improve the quality of your newsletter, The SPECTRUM, we would appreciate your feedback to our efforts. Please answer the questions on what you as a member of the B. A. A. like/dislike about this newsletter. Please re-
turn your answers to Darwin Christy, editor, or any other officer of the club.

| | strongly like | like | dislike | comments |
|--------------------------------|---------------|------|---------|----------|
| FEATURE ARTICLES | | | | |
| ARTICLES from PAST "SPECTRUMS" | | | | |
| SPY & TELL | | | | |
| B. A. A. ANNALS | | | | |
| IDIOMS | | | | |
| MONTHLY CONSTELLATIONS | | | | |
| METEOR SHOWERS | | | | |
| LUNAR PHASES | | | | |
| SOLAR PHENOMENA | | | | |
| BIOGRAPHIES | | | | |
| WANT ADS | | | | |
| QUIZZES | | | | |
| NOTICES | | | | |
| OBSERVATION REPORTS | | | | |

What else would you like to see added to the content of your 'SPECTRUM'?????????????

SPACE
 FOR
 COMMENTARY

-----*MEMBERSHIP SURVEY*-----

| | YES | NO | |
|----------------------------|-----|----|-----------------------|
| Do you own a telescope? | | | size & type |
| | | | telescope accessories |
| Do you own an observatory? | | | details |
| Astronomical interests | | | |
| Observing | | | what? |
| Photography | | | |

Misc. comments:-----

Answers:-

- 1) It's name is "SNICKER".
- 2) None. You might see some distant galaxies though.
- 3) Edith Geiger - who else?
- 4_ Black. The blue we see is formed by the light reflecting off of the free floating dust airborne in our atmosphere.
- 5) 70 * or -

METEORS

November:- 3rd. Southern Taurids
 9th. Cepheids
 10th. Northern Taurids
 11th. Mu Pegasids
 12th. Arcitids
 14th. Beilids
 16th. Leonids
 28th. Andromedes
 December:- 5th. Phoenicids
 13th. Geminids
 22nd. Ursids

The Buffalo Astronomical Ass'n. Inc.
 % Darwin Christy, Editor - The SPECTRUM
 216 Kohler St.
 Tonawanda, N. Y. 14150

FIRST CLASS

