

# THE SPECTRUM



"The BUFFALO ASTRONOMICAL ASSOCIATION, Inc."

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\* SEPTEMBER - OCTOBER \*  
\* 1984 \*  
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President, Kenneth Biggie  
Vice President, Doris Koestler  
Secretary, Kenneth Kimble  
Treasurer, John Raymond

We wish you, the newly elected officers of the B.A.A., a very successful term during the 1984 - 1986 years

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## + FURTHER THOUGHTS ON OBSERVING MARS +

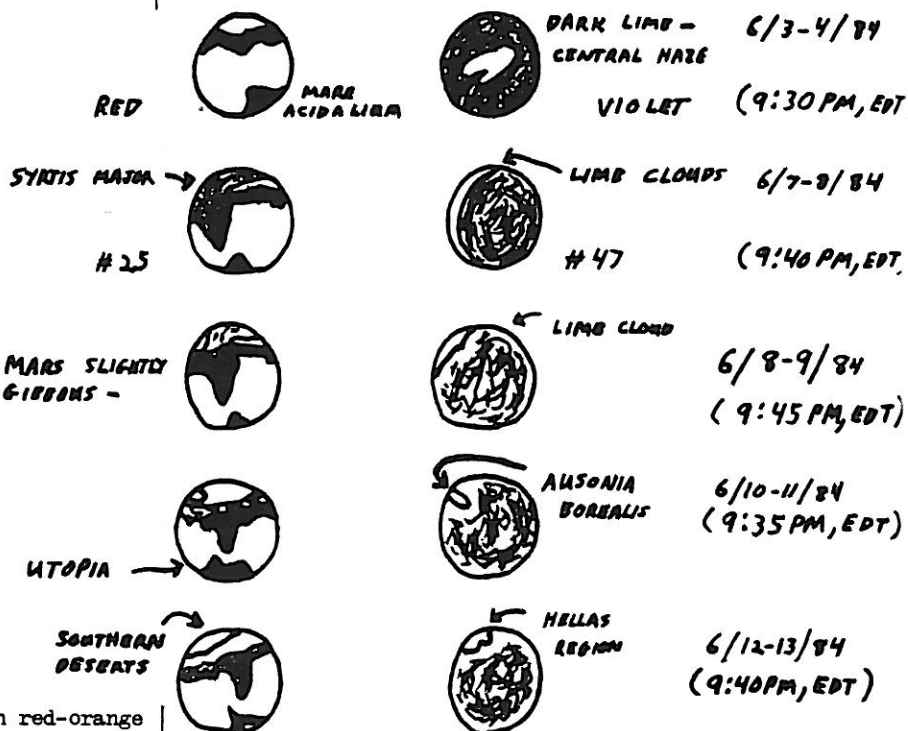
The planet Mars has often proven to be a most difficult object to observe, the low contrast of its surface features, its rather tiny disc and the turbulence of our own earthly atmosphere have all contributed to this general impression. With this in mind I have been experimenting with methods of enhancing the visibility of these subtle Martian features.

As Mars is truly a red planet it would seem that the most useful method of enhancing surface detail could be had by employing colored filters. This is by no means an original idea but one that has proven quite successful. Obviously a red filter will boost contrast between red-orange desert and the grayish Martian Mare but by employing, in addition, a blue-violet filter atmospheric features can be visually enhanced.

The suitable combination of a fairly high magnification and a #25 red Wratten filter renders a large apparent disc reduced glare and high surface contrast. With the red filter no additional surface forms are actually discerned but what is visible is made more evident. By alternately interposing a #47 blue-violet Wratten filter one can "BLINK" surface and atmospheric features against one another and in so doing render both more apparent. This effect is possible because a blue-violet filter will tend to subdue red tinted surface details and renders both clouds and haze as white patches seen upon a nearly blank disc. Yellowish dust clouds will, of course, be more apparent with no filters being employed for here is where the human retina is most sensitive as per spectral response.

On several nights cloud formations were detected on the sunset limb and upon occasion detached haze and/or cloud patches were also noted. The Hellas Desert region often appears as a false polar cap in both red and blue light. Allowing no great artistry here are a few examples:---

As stated, in my own case the most useful filters have proven to be the Wratten #25 and #47. With the current sixteen arc second diameter planetary disc the most useful magnification employed in conjunction with the filters have been 372x in the 13.1 inch reflector, 317x in the 12.5 inch reflector and 218x or 381x in the 6 inch reflector. With suitable instrumentation and a little education



of the observer's eye Mars is by no means a bland world..

Michael Idem

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ACKNOWLEDGEMENTS:- Edith Geiger, Michael Idem, Darwin, Donald Magor, Bill Owens, Anonymous, Ken Kimble, Ernst Bot Carl Milazzo, Ed Lindberg, & Donald Botteron.

-!Thank you all; it has been greatly appreciated. editor:-

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## ASTRONOMERS from the PAST

William Snyder Eichelberger was born in Baltimore, Maryland on September 18, 1865. He graduated from the University of Johns Hopkins in 1886. From 1889 to 1890 and again from 1896 to 1898 he was an assistant in the 'Nautical Almanac' office. From 1890 to 1986 he served as an instructor in mathematics and astronomy at Wesleyan University, Connecticut. In 1900 he became professor of mathematics in the United States Navy. He headed the division of meridian instruments in 1902 to 1907 and of astronomical observations in 1907-1908 at the United States naval Observatory. In 1910 he became the director of the 'Nautical Almanac'. He was at various times in charge of eclipse stations. Finally in 1925 he published "Positions and Proper Motions of 1504 Standard Stars" in the American Ephemeris Papers.

Darwin Christy

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Our heartiest congratulations to Ernst Both who has been named Director of the Buffalo Museum of Science. We are very proud that one of our members has attained this high position.

A most interesting and informative article on Ernst appeared in the summer issue of Buffalo Spree, the cultural magazine of Western New York.

Fred Price has finished a 337 page typescript of a book on which he has worked for the past three years. The book is entitled The Moon for the Amateur Astronomer. Fred hopes to find a publisher in either England or the United States.

Two of his observational drawings of Jupiter made during the '77 and '78 apparitions have been accepted for publication in the ALPO Journal (Association of Lunar and Planetary Observers). He made more observational drawings of sun spots with his 3" refractor while at home in England during the summer.

Fred is now a member of the newly founded Pennsylvania Selenological Society.

Al Ricciuti of the Class of '31 at the University of Buffalo was at the 50th-year reunion of the Class of '34 in June, where he discussed his plans for planting a memorial garden outside Abbott Library to honor Dr. Charles Abbott, the university's first director of libraries. Al has offered to donate his 40 rare Japanese tree peonies for the garden.

Claudia Bielinski attended the International Astrological Convention in Chicago from July 27 to August 1 for a workshop in research and new techniques. These meetings are held every two years.

Rick Janas continues in the Ph.D. program at the University of Buffalo. His major is policy studies and he figures it will take him at least another year to complete the work.

John Dlugosz has a thriving wood burning stove business. He is a certified solid fuel safety technician for the safety of insulation of wood burning appliances and stainless steel chimneys. He is quite a fisherman and has seen a large number of meteorites as he watches the sky while fishing. He is also interested in geology and spends many hours hunting fossils.

Walt and Gertrude Whyman went to Michigan for a week's vacation. Walt, who is an authority on covered bridges, has traveled all over the country photographing and recording this part pf Americana. On the trip he discovered one unknown or unreported bridge.

Bill Kirst is the godfather of Dave and Anita (Kirst) Williams' baby daughter, Christine Maria.

Congratulations to our editor, Darwin Christy, who has been invited to give a lecture (on tape) of the May 30, 1984 eclipse of the sun as seen from his Honeyhouse Observatory, using electronic instruments. This lecture will be given before the 17th General Assembly of the Amateur Astronomy Association of Japan held at Ōmi-Hachiman Shi near Kyoto, on October 14th. The tape will be given in English and also translated into Japanese. Darwin's sketches and drawings will be shown along with the lecture.

By the way, October 14th will be Ruth and Darwin's 41st wedding anniversary, giving them two wonderful things to celebrate.

Man overboard! Sailors, Al Kolodziejczak and Ken Biggie, spent a restful afternoon sailing in the river in Ken's 23 ft. sailboat. When the time came for docking, Ken gave experienced Al the job of jumping to the floating dock to secure the boat. Al, whose feet suddenly tangled in the ropes, found himself plunging into the river, but the quick thinking on Ken's part brought Al safely aboard. Three cheers for Ken! Al also has a sailboat. Has anyone thought of going on an excursion with Al at the ropes????

Edith L. Geiger

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Dear Chris,

The July-August issue of the "SPECTRUM" was very interesting. Especially the article by Carl Milazzo on the contrasting colors of double stars and the two page list that accompanied it. While I have never known how many amateurs are interested in double star observations, I am sure his list will be greatly appreciated by those that enjoy double star observing. Then too, the list is drawn up in usable fashion since it shows the locations of the stars, their magnitude, distance and colors. Please congratulate Carl on his outstanding work. It is something new and he thought of it first.

I checked the list back against my 800-900 card list of double star observations and checked all out satisfactorily except one. In my four reference catalogs and atlases I could not find B87-Eri. I assume that the +20-35 latitude was meant to be south 20-35, but that did not help. I am curious as to the source of that double.

As I mentioned in my previous letter on the subject, there is likely to be considerable difference between the colors recorded by different observers. I was pleasantly surprised that my cards agreed with the colors listed on about 60% of the total on his list. On the other 40% terminology comes into play. What I might call deep yellow he my list as gold and that accounts for most of the 40%.

Again I commend Carl for his foresight in preparing a list that everyone else has neglected for so many years.

Sincerely

Donald Magor.

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(DUES ARE DUE - DUES ARE DUE - DUES ARE DUE)

#### ANNUAL MEMBERSHIP DUES

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#### COMPUTERS & CALCULATORS

For years, a programmable calculator was the amateur astronomer's best friend. With the advent of inexpensive computers, however, it has become less popular. Yet the calculator has several important advantages over the computer: low cost, small size and ease of use. Inexpensive models like the Radio Shack EC-4004 and the Texas Instruments TI-55-II have ample power for most common astronomical tasks, but cost only \$35 and \$45, respectively.

To give you an idea of the usefulness of one of these machines, here are two short programs for the EC-4004. They can be adapted for the TI-55-II by following the formulae:

Program 1 - Sidereal Time

$$\text{Equation } \text{LST} = \text{K1} + (\text{K3} \times (\text{LT} + 5)) + (\text{K2} \times \text{DAY\#}) - \text{K4}$$

LST is local sidereal time, LT is local time and DAY# is the day of the year (found on any desk calendar). The constants are:

K1 = 6.59057904 - Sidereal time at the beginning of year. Changes every year:

|                   |                   |
|-------------------|-------------------|
| 1984 - 6.59057904 | 1989 - 6.64242696 |
| 1985 - 6.64037496 | 1990 - 6.62651304 |
| 1986 - 6.62446008 | 1991 - 6.61059792 |
| 1987 - 6.60854592 | 1992 - 6.59468400 |
| 1988 - 6.59263200 | 1993 - 6.64447896 |

K2 = .0657098232 - rate of sidereal time change per day.

K3 = 1.0027379093 - ratio of solar day to sidereal day

K4 = Local longitude in hours

Note: During daylight savings time, change the underlined 5 to a 4.

# Program:

|    |      |     |                       |
|----|------|-----|-----------------------|
| 1  | ENT  | LT  | Enter local time      |
| 2  | +    | 5   | Convert to UT         |
| 3  | =    | x   |                       |
| 4  | KOUT | 3   | Retrieve Constant 3   |
| 5  | +    | (   |                       |
| 6  | KOUT | 2   | Retrieve Constant 2   |
| 7  | x    |     |                       |
| 8  | ENT  | DAY | Enter day number      |
| 9  | )    | +   |                       |
| 10 | KOUT | 1   | Retrieve Constant 1   |
| 11 | -    |     |                       |
| 12 | KOUT | 4   | Convert to local time |
| 13 | =    |     |                       |

Constants 1-4 must be stored in memories 1-4. If the time output is greater than 24, subtract 24 to find the true time.

## Program 2 - Coordinate Conversion

Equations:  $\sin(\text{Altitude}) = (\sin \text{DEC} \times \sin \text{LAT}) + (\cos \text{DEC} \times \cos \text{LAT} \times \cos \text{HA})$

$\cos(\text{Azimuth}) = \frac{(\sin \text{DEC} - (\sin \text{LAT} \times \sin \text{ALT}))}{(\cos \text{LAT} \times \cos \text{ALT})}$

DEC is the declination of the object in degrees.

LAT is the latitude of the observer.

HA is the hour angle of the object in degrees; HA = Sidereal Time - Right Ascension.

# Program:

|    |      |     |                      |
|----|------|-----|----------------------|
| 1  | KOUT | 1   | Retrieve Declination |
| 2  | SIN  |     |                      |
| 3  | KIN  | 4   | Store sin DEC        |
| 4  | x    |     |                      |
| 5  | KOUT | 5   | Retrieve sin LAT     |
| 6  | =    |     |                      |
| 7  | +    | (   |                      |
| 8  | KOUT | 1   | Retrieve Declination |
| 9  | COS  |     |                      |
| 10 | x    |     |                      |
| 11 | KOUT | 6   | Retrieve cos LAT     |
| 12 | x    |     |                      |
| 13 | KOUT | 2   | retrieve Hour Angle  |
| 14 | COS  |     |                      |
| 15 | )    | =   |                      |
| 16 | INV  | SIN | Convert to Altitude  |
| 17 | KIN  | 3   | Store Altitude       |
| 18 | INV  | HLT | Pause                |
| 19 | SIN  |     |                      |
| 20 | x    |     |                      |
| 21 | KOUT | 5   | Retrieve sin Lat     |
| 22 | =    |     |                      |
| 23 | ±    |     | Change sign          |
| 24 | +    |     |                      |
| 25 | KOUT | 4   | Retrieve sin DEC     |
| 26 | =    | /   |                      |
| 27 | (    |     |                      |
| 28 | KOUT | 6   | Retrieve cos LAT     |
| 29 | x    |     |                      |
| 30 | KOUT | 3   | Retrieve Altitude    |
| 31 | Cos  |     |                      |
| 32 | )    | =   |                      |
| 33 | INV  | COS | Convert to Azimuth   |

Declination must be placed in memory 1, Hour Angle in memory 2, sin Latitude in memory 5 and cos Latitude in memory 6. The first number displayed will be the Altitude; press the RUN key and the Azimuth will be shown. If the hour angle is negative, subtract the Azimuth from 360.

If you do not have a programmable calculator, simply key in the formulae. If you have any problems, questions or suggestions, please call me at 692 8832, 4:00 to 9:00 any afternoon.

Bill Owens

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## ??? WHAT'S WRONG WITH ASTROLOGY ???

- 1) Some ancient civilizations had the primitive belief that Planets are 'Stars' that moved. In reality they are worlds of dust and clouds that are made visible by ordinary sunlight reflecting off them, the same as the Earth.
- 2) They believed that the Planets wandered unpredictably, so they conclude the Planets are controlled by gods with supernatural powers. In reality their movement is do to retrograde, Kepler's laws of motion and Newton's laws of gravity.
- 3) They believed that Stars were able to affect the Earth because they were located slightly beyond the Planets. The fact is that the nearest Stars are over 8,000 times beyond the orbit of Pluto.
- 4) Not only do Astrologers of today ignore the laws of physics, they even ignore some of the rules to Astrology, which they pretend that it's a branch of science. The precession cycle of 25,827 years has caused the ascending ecliptic to cross the celestial equator in Aries about 2,000 years ago, and today it is in Pisces, which makes it the first one.
- 5) The top self proclaimed astrology experts, using the same rules come up with different answers. When astronomers use Kepler's and Newton's laws of physics their answers are exactly the same.
- 6) Astrologers pretend that the stars rule parts of the body, starting with Aries ruling the head and moving downwards in perfect sequence to the legs and back up the other side. This simple minded idea wasn't from a detailed clinical study and if the stars did rule, it would be in a random relation.
- 7) There is both more light and gravity from many asteroids and comets, which are not included in the making up of a horoscope, then from Pluto which is included and there is even less gravity from the stars.
- 8) Astrologers say that they need to know exactly when one is born to the very minute, but ignores how long one is alive before that minute. Yet this personal horoscope is deliberately made vague so they can't go wrong.
- 9) The Sun takes 9 days to cross Scorpius and 43 days for Virgo, yet today horoscopes range only from 29 to 32 days and originally the zodiac consisted of 11 constellations.
- 10) American astrology is based on the Greek civilization which says that Mars means war because it looked reddish which reminded them of blood, but in reality Mars' color is simply because it's iron rich rocks are rusted. Most cultures were dictated by astrological witch-doctors who pushed their nonsense onto the public. The truth is that its simply psychological. The European astrologers say that black is a bad omen, yet the Maya astrologers say its a good omen.
- 11) The stars are real but the constellations are imaginary, the Greeks imagined Libra as scales for weighing, to the Chinese a dragon, to the Egyptians a goat and to the Arabs a crocodile. And just as unmatched are the stories told by the astrologers of these cultures. Is astrology a force from outer space, or a clever scam used by an obsessed occult guru who wants to dominate the gullible?
- 12) Their stories conflict, the claims astrologers are, that people born between June 21 through July 22 are the same, yet a person born a minute apart from another is claimed to be different.
- 13) The stars and planets do exert a feeble force, but even much more so is from the near by buildings of down town. Also from the closest star to Earth named Alpha Zodiac, more commonly called the "SUN".

Astronomer Dr. Bart Bok, professor emeritus of astronomy of the University of Arizona, warned that what begins for some as a fun game, can be taken seriously and warp their judgment.

Anonymous

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('SPECTRUM' deadline for NOV:DEC Issue is OCT 25th)



**PAVO**, 'The Peacock', is one constellation which is not to be seen by us in the northern hemisphere. It's northern most boundary is at latitude -57 degrees. Pavo is bordered on the south by Octans; on the east by Apus; on the west by Indus; and on the north by Telescopium.

The title is appropriate for the enduring stars, as this bird has been a symbol of immortality and fancifully said to be from the annual shedding and regrowing its feathers. Although it is common to all birds, it was believed to symbolize the fact that its starry tail rendered the peacock sacred to Juno, the immortal queen of the heavens; thus in classic times, as in the days of chivalry, it was an object of adoration.

Interesting objects in this southern asterism, should you travel south with telescope in hand, are as follows: Galaxies, I,4662 - I,4710 - I,4721 - I,5052 and NGC's 6684, 6699, 6721, 6744, 6753, 6769, 6776, 6782, 6808, 6810, 6876, 6943, & 7020 - Planetary Nebulae, I,4723 and NGC-6630 - Globular Cluster, NGC-6752

Variable Stars, V, W, (17h 45m dec. 60.5°), R, RT, T, Z, KAPPA, S, X, SU, U, KZ, Y, and SX - Double Star, KZ (one of the variable stars. It's colors were listed as red and green but no magnitudes were given.

## SEPTEMBER CONSTELLATION

**CEPHEUS**, 'The KING', is claimed to have been known by the 'Chaldeans' 23 centuries ago. Cepheus was held in high esteem by the ancients and we find the King's story in the literature of Greece as far back as the 5th century B.C.

He was the King of Ethiopia and the husband of the beautiful Cassiopeia, who was placed near him in the sky with her daughter, Andromeda. He is depicted in the old atlases of the heavens as seated on his throne in regal fashion, holding his sceptre upraised in his left hand and holding his robes in his right hand.

It is written that Cepheus was one of the famous band known as the 'Argonauts' who accompanied Jason on his dangerous journey in quest for the Golden Fleece. Because of the part in which he played in this famous expedition he was honoured by a place high among the stars.

Cepheus is one of our circumpolar constellations which we can observe throughout the year. It is bordered on the north by Ursa Minor; on the east by Draco; on the west by Camelopardalis; and on the south by Cassiopeia, Lacerta & Cygnus. Part of its southern boundary lies in the Milky Way, near that area of Cygnus. Cepheus is well dotted with interesting deep sky objects which follow:

Galaxies, NGC's 2276, 2300, & 6951

Planetary Nebulae, I,1454, I,1470, NGC's 40, 7139, & 7354

Diffuse Nebulae, I,1396, NGC's 7023, 7129, 7133, 7538, & 7822

Open Clusters, I,1396, NGC's 188, 6939, 7142, 7160, 7235, 7261, 7281, 7380, 7419, 7510, & 7762

Nova, IV - N-1971

Variable Stars, SS, RX, U, CW, V, AR, S, NY, AH, EK, BV382, T, VV, EM, XZ, DM, MX, W, ST, RW, FZ, DQ, SW, VW, & Mu the famous Garnet Star

Double Stars

|  |                                   |                               |
|--|-----------------------------------|-------------------------------|
| Kappa                                    | M4.4 - 8.0                        | white & blue                  |
| Beta                                     | M3.3 - 8.0                        | white & blue (also variable)  |
| Delta                                    | M3.8 - 7.5                        | yellow & blue (also variable) |
| Xi                                       | M4.6 - 6.5                        | white & yellow                |
| (another source lists it as blue & blue) |                                   |                               |
| Pi                                       | M4.7 - 6.7                        |                               |
| Omicron                                  | M5.0 - 7.3                        | gold & yellow                 |
| 47                                       | magnitudes and colors not listed. |                               |

|      |                  |                   |
|------|------------------|-------------------|
| 2816 | M6.0 - 7.6 - 7.0 | (triple)          |
| 2840 | M6.0 - 7.0       | greenish & bluish |
| 2873 | M6.2 - 7.0       |                   |
| 2883 | M6.2 - 8.2       | white & blue      |

## OCTOBER CONSTELLATION

**AQUARIUS**, 'The WATER CARRIER' is one of the signs of the Zodiac lying on the ecliptic. Aquarius was represented in ancient times as a man pouring water from an inverted jar. It is an emblem of the rainy season, and the Egyptians had thought that the floods on the river Nile were caused by the 'Water Carrier' when he dipped his jar into the river to refill it.

Myths and legends connected with the constellation have come down to us which have identified Aquarius with Deucalion, son of Prometheus and Clemene, and, according to Grecian legend, Aquarius represents Ganymede; it being the favorite of the all powerful Jupiter. As the story goes, Ganymede was guarding his father's flocks on Mount Ida, one day, when he was suddenly transported to the sky where he became the cup bearer to the gods.

Aquarius is surrounded by Pisces, Pegasus, Equuleus, & Delphinus on the north; Aquila & Capricornus on the east; Capricornus, Piscis Austrinus, & Sculptor on the south; and Cetus & Pisces on the west. It is well situated for observing the deep-sky objects at our location at Beaver Meadow. Objects of interest include:

Galaxies, NGC's 7171, 7184, 7218, 7252, 7300, 7302, 7309, 7371, 7377, 7392, 7585, 7600, 7606, 7721, 7723, & 7727

Planetary Nebulae, NGC's 7009 (Saturn Neb) & 7293 (Helix Neb)

Globular Clusters, NGC's 6981 (M-72), 7089 (M-2), & 7492

Open Clusters, NGC 6994 (M-73)

Variable Stars, W, T, DV, VY(N-rec), R(diffuse neb), Z, EE, X, S, & Chi

Double Stars

|          |  |                        |
|----------|--|------------------------|
| Beta     |  |                        |
| Zeta     | M4.4 - 4.6                                 | greenish & pale yellow |
| Psi (91) | M4.5 - 10.3                                | yellow & blue          |
| Psi (95) |  |                        |
| 12       | M5.9 - 7.3                                 | yellow & blue          |
| 24       |  |                        |
| 41       | M5.6 - 7.4                                 | yellow & blue          |
|          | (another source lists it as gold & yellow) |                        |
| 83       |  |                        |
| 94       | M5.3 - 7.3                                 | yellow & gold          |
| 96       |  |                        |
| 107      | M5.7 - 7.0                                 | fine colors            |

Editor's note:- All of the deep-sky objects listed in the Constellations of the months can be found in the "W. Tirion - SkyAtlas 2000.0".

Darwin Christy

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Shaun J. Hardy

Receiving awards is a natural part of Shaun's life, as is his boundless energy. He was born in Buffalo, but the family soon moved to Amherst where Shaun attended the Academy School and Dodge Elementary School, both in Williamsville. After his mother's death he lived with his grandparents. One clear, dark night, when he was six years old, he was riding home with his head resting comfortably on the top of the back seat of the car. When he gazed out of the back window, there it was; the Big Dipper. What an impression it made on his young mind, and what excitement it created. He had actually recognized a constellation. The next year when his father came to visit, he brought Shaun the Golden Nature Guide to the Stars, which provided him with many hours of enjoyment as he learned about the heavens. Shaun's grandfather took him to the Remick Memorial Observatory in Lockport to look through the 12" telescope, and the very first object he saw was glorious M13. What a thrill! From then on, Grandpa took his grandson to the observatory every Wednesday night.

-4- Sylvia Mosure, a member of the Lockport Astronomy Associ-

ation and a former B.A.A. member, taught this enthusiastic youngster a great deal about astronomy, and nurtured his continuing interest.

Shaun's first award came when he was in the third grade. He has always been fond of flowers, and his asters won Best of Show in the Dodge Elementary School Country Fair. He spent his sixth and seventh grades at the Casey Middle School in Williamsville, and then the family moved to Lockport where Shaun became a student at North Park Junior High and a graduate of Lockport Senior High.

When he was a junior, one of the school counselors told him about Earth Watch, the non-profit organization in Massachusetts which sponsors amateur projects. Shaun applied and won a scholarship to Washington and Lee University in Lexington, Virginia. He won it in archaeology, and spent the three weeks in the summer of '76 excavating the site of Liberty Hall Academy, which was the first secondary school west of the Blue Ridge Mountains. It was a busy three weeks, digging and cataloging.

As a junior in high school, he joined the Lockport Astronomy Association. When he was a senior he attended a class in instrument making given by B.A.A. member, Orrin Christy, and ground a 6" mirror and made a telescope which he still has, though he does most of his work at Remick where he has the keys to the observatory.

In 1977 Shaun graduated from high school as class valedictorian, and won the Bausch and Lomb Science Award, the Rensselaer Polytechnic Institute Science-Math Award, the school's German Award, and the school's English Award, plus a Regents Scholarship.

He entered the University of Rochester where he had a chance to work with the 24" telescope at the university's Mees Observatory in Bristol Springs. After his freshman and sophomore years, he could expose and develop plates, and learned how to use a spectrograph and image tube. One of the role models in Shaun's life has been his astronomy professor, Dr. Stewart Sharpless, who is a very warm, sensitive, high-minded human being. Along with Shaun's academic work at the university, he became employed in his senior year as a grader for the advanced thermodynamics class. He graduated summa cum laude in 1981 with a B.A. in physics and astronomy, and a B.A. in geological sciences. He received the Geology Department Award and graduated Phi Beta Kappa.

During his years at the university, Carl Milazzo would pick him up and they would go to the astronomy meetings at the Rochester Academy. Shaun became a member of the Botany Section, but didn't join the Astronomy Section.

In his senior year, he decided that as he enjoyed working with people, his future would revolve around something in that area rather than in continuing research. A training program in museum education was held at George Washington University for which he was accepted and given an internship at the Smithsonian Institution, but as his grandparents became ill, he couldn't go, and returned to Lockport to help care for them. He decided to enroll in the geophysics program in the University of Buffalo's graduate department, where he received the Henry Woodburn Fellowship with full tuition and a stipend of \$5500. He was there for one semester, but with increasing responsibilities at home, he decided to take a leave. His grandmother passed away in 1982, so he went to work at the Kenan Center in Lockport where he had been employed in the summers during his college years, and had earned the William R. Kenan Work Scholarship which was a summer work program for students in Niagara County. He did gardening during the day, and taught astronomy classes in the evening for children and adults, and German, physics and math for high school and college students.

In 1982 he was appointed part-time as Cultural Services Coordinator, taking over the education program, conceiving new classes along with scheduling and working on publicity for Kenan Center events. Being impressed with the Brooklyn Botanical Herb Garden for the Blind, Shaun envisioned a similar garden for the Kenan Center, where

the blind could touch and smell the growing herbs. He approached the Lions Club, winning its support for what is now the only such garden for the blind in Niagara County.

In July of 1983, Shaun became Art and Education Director at the Center, and is responsible for curating science, history and art. He has added twenty-five classes in adult education, with three sessions a year. Summer programs this year included those in literature and art with most classes lasting six weeks. Shaun is co-host for a cable TV program entitled "The Kenan Connection," which is on Channel 10 every Friday night at 6:30, featuring demonstrations and interviews. Unfortunately, this program can be seen in the Lockport area only. Shaun's work at the Kenan Center has been spectacular, making the Center an important cultural focal point on the Niagara Frontier.

With his continuing interest in botany, he became a volunteer in the Botany Department at the Buffalo Museum of Science and worked in the Clinton Herbarium doing sorting and preserving tasks. In 1983 he took a botany course, and four members of the class got together and decided that there was a need for a botany club at the museum. Thus the Niagara Frontier Botanical Society was born, with Shaun as vice president. It now boasts 100 enthusiastic members.

In 1981 Shaun joined the B.A.A. and in the same year became president of the Lockport Astronomy Association, an office which he still holds. His special interests in astronomy include double stars, spectroscopy, and the history of astronomy, especially that of the nineteenth and early twentieth centuries. In 1981 he had the privilege of visiting the U.S. Naval Observatory in Washington, and as he was the only visitant there at the time, he had the opportunity of inspecting the 26" refractor and the 6" transit circle, and enjoyed some very fine interviews. Someday Shaun would like to visit Yerkes Observatory to see the 40" refractor housed in its 90-ft. dome. He has given lectures on double stars and meteorites. We all remember the splendid talk entitled "The Classification and Origin of Meteorites," which he gave at our January 1983 meeting. He spoke on the same subject to the Lockport Astronomy Association, the Niagara Centre of the R.A.S.C., and the Niagara Peninsula Geological Society. He has given tours at the Remick Observatory, with slide shows for groups including Boy Scouts, Senior Citizens, and the Rotary Club of Lockport. Besides his membership in astronomical groups and the Niagara Frontier Botanical Society, he is a member of the Niagara County Historical Society. He has amassed a large collection of books, including early astronomy texts. He likes to read the biographies of scientists, but has never been bitten by the "science-fiction" bug.

When Shaun was in elementary school, he studied piano for three years. He has continued to play when time permits. His musical interests include Viennese waltzes, operettas, ragtime, and the works of Gilbert and Sullivan, Richard Strauss, Wagner, Tchaikovsky and Debussy. He also has a modest record collection.

He has a fine appreciation of the works of great artists, and is also fond of paintings of American landscapes, especially the Hudson River School of Landscapists which appeared after the Revolution and have come closest to a distinct national school. He is also stirred by the paintings of the French Impressionists with their soft, light, natural effects.

Shaun is a multi-talented young man with many consuming interests. His exuberant spirit, inexhaustible energy coupled with an intuitive creative impulse, and a commitment to excellence makes him an extraordinary being with a tremendous potential for the future.

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

???? QUIZ ????

Who am I??? I used to play a clarinet in a dance orchestra in the late '30s. My favorite music was 'Star Dust' as played by Bennie Goodman. Today I collect such material on glass slides.

## ASTRONOMICAL HAPPENINGS

**SOLAR:-** From Leo, the Sun passes into Virgo during which time it reaches Autumnal Equinox on September 22nd. The nights will become longer than the days until Vernal Equinox. In October the Sun will pass out of Virgo into Libra.

**LUNAR:-** The Moon's phases for September are, first quarter on the 2nd; full (harvest) moon on the 10th; last quarter on the 18th; and new moon on the 24th. For October they are first quarter on the 1st & 31st; full (hunter's) moon on the 9th; last quarter on the 17th; and new moon on the 24th

**LUNAR Conjunctions for September:-**

Mars - 2nd & 30th  
Uranus - 2nd & 29th  
Neptune - 3rd & 30th  
Jupiter - 4th  
Venus - 26th  
Saturn - 27th  
for October:-

Jupiter - 1st & 29th  
Venus - 26th  
Uranus - 27th  
Neptune - 28th  
Mars - 29th

**PLANETARY Conjunctions for September:-**

Mars & Uranus - 4th  
for October:-  
Venus & Saturn - 8th  
Mars & Jupiter - 13th  
Mercury & Saturn - 29th  
Venus & Uranus - 29th

**PLANETARY & STELLAR Conjunctions in September:-**

Mercury & Regulus - 3rd & 8th  
in October:-

Venus & Antares - 27th

**METEOR SHOWERS for September:-**

Beta Lacertids - 1st  
Aurigids - 1st  
Epsilon Perseids - 11th  
Southern Piscids - 20th  
Kappa Aquarids - 21st  
Alpha Aurigids - 22nd  
Sextantids (daytime) - 29th  
for October:-  
Quadrantids \*\*\* - 2nd  
Andromedes - 3rd  
Draconids \*\*\*\* - 9th  
Northern Piscids - 12th  
Epsilon Arietids - 17th  
Epsilon Geminids - 19th  
Orionids \*\*\*\* - 21st  
Leo Minorids - 24th

\* \* \* \* \*

additions in "Spy and Tell."

On June 30, Carl Milazzo and Tristan and Debby DiLapo attended the R.A.S.C. General Assembly, part of which was held at McMaster University in Hamilton, and part at Niagara Falls. About 150 people were there, coming from every province in Canada.

Larry Carlino and his folks are building a home in Rapids, in Niagara County.

The following members enjoyed the 50th Anniversary Celebration at Stellafane: Steve Krickovich, Al Kolodziejczak, Gene Witkowski, Beverly Botto, Tristan and Debby DiLapo, and Carl Milazzo.

Jayne and Jack Mack and their two children spent the latter part of August in California, visiting Jayne's family.

## BAA ANNALS

**5 YEARS AGO-** The Sept. 1979 meeting was not held because of severe flooding conditions throughout the area. The topic scheduled for

Sept. was moved up to October. That was "The Story of Time" as presented by Ed and Olga Lindberg. As I remember it was quite enjoyable. It was also the first edition of the Spectrum to be edited by our present Editor, Darwin Christy.

**10 YEARS AGO-** The Sept. 1974 meeting was host to Ken Chilton, then president of the Hamilton Ontario RASC. Mr. Chilton spoke on "Unusual Astronomical Theories". The speaker at the Oct. meeting was Orrin Christy. His presentation was about the Sun's influence on the Earth's weather. At this time also the single member dues were raised to \$ 7.50 and the family to \$ 10.00.

**15 YEARS AGO-** The Sept. 1969 meeting was addressed by Mr. Richard Karlson. His topic was "Stonehenge". The October meeting was again entertained by Orrin Christy, this time on "Amateur Radio Astronomy". Orrin must like to give his presentations in October. Most of the star parties had been rained out that year. Walter Semerau had just retired and the Story of Time presentation I mentioned was given at the Sept '79 meeting was in its birth stages, as Ed and Olga Lindberg had just returned from the Scandinavian countries. I believe many of their interesting slides were taken there.

KEN KIMBLE

\* \* \* \* \*

## +++ MEETING NOTICES +++

**SEPTEMBER-** The first meeting of the year will be held in the auditorium of the Science Building at Buffalo State starting at 7:30 P.M., September 10th. Dr. Jack Mack, Chairman of the Department of Geosciences, Physics and Interdisciplinary Sciences at the State University College at Buffalo will give a talk on "How Far Is a Star?". Jack, a member of the BAA, is affiliated with the American Astronomical Association, the American Physical Society, the American Association for the Advancement of Science and is a member of the Society of the Sigma Xi. He obtained his B.S. degree from Fordham University and his Ph.D. in Physics from the University of California, Berkeley.

**OCTOBER-** Dr. James Houck, Professor of Astronomy at Cornell University, will speak at Buffalo State at 7:30 P.M., October 12, 1984. His subject will be "Results from the Infrared Astronomy Satellite (IRAS)".

Dr. Houck earned his Ph.D. at Cornell University in 1967 and subsequently became a member of the Department of Astronomy faculty, specializing in infrared astronomy, interstellar and interplanetary dust. He is currently a member of the Science Team of the Infrared Astronomical Satellite (IRAS). Also, he has been recently designated as principal investigator for the infrared spectrometer instrument in NASA's Space Infrared Telescope Facility (SIRIF) which is in its initial planning stages. At Cornell, he is involved with middle-infrared astronomical spectroscopy using the NASA-Ames Kuiper Observatory (KAO), which operates from a C-141 aircraft flying through the lower stratosphere. He is a member of the American Astronomical Society and the International Astronomical Union, directs the Cornell University's Fuertes Observatory and Hartung-Boothroyd Observatory, and has received the Clark Award for Distinguished teaching.

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Board Member

Because Doris Koestler has been elected to the office of Vice President, there is a vacancy on the Board. Nomination and election will be in order at the September meeting. Anyone interested to be on the board (volunteering), please contact Ken Biggie, our newly elected President.

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# BOOK REVIEW

"THE LIGHT-HEARTED ASTRONOMER" by Ken Fulton, Astro-Media. Milwaukee, Wisconsin, 1984. 115 pages. \$ 6.95

Ken Fulton's name should be familiar to readers of "Astronomy" magazine - some chapters in the book under review first appeared as articles in that magazine. Written as it is by an experienced amateur astronomer whose love for his subject is very obvious, this book speaks essentially to potential amateurs. It appears to be intended as a travel guide through the "jungle of astronomy," a phase that is particularly dear to the author (and much overworked in the book, I might add). I say "appears to be" because I am not really sure that it accomplishes what it sets out to do. One appreciates the fact that modern astronomy can be quite bewildering and a beginner might be quite intimidated by the pages of "Sky & Telescope" or "Astronomy" for that matter. But as Fulton indicates more than once, one need not understand all the theoretical ins and outs to enjoy the beauties of the night sky. On the other hand (something that the author does not stress sufficiently) there are today enough elementary aids available to at least "get a feel" for the theoretical framework. Even a very basic understanding of the framework can only enhance the appreciation of the beauty of it all.

A brief introduction leads into sixteen chapters ranging in length from four to sixteen pages. Much of the first half of the book deals with the proper selection of a telescope with emphasis on how to properly interpret ads in magazines. There is much repetition here and a bit of unnecessary verbiage - but then the book is written "from the heart" and not the brain.

What is a bit irritating though (throughout the book) is the author's use of fictional names of telescope manufacturers and books side by side with actual names. This situation can be remedied (and turned into a rainy night activity) if the reader consults copies of "Astronomy" and "Sky & Telescope".

Some explanations are of little help to the reader. For example, after reading Fulton's discussion of a Dobsonian reflector I wasn't at all sure that I understood what it really is, other than "a Dobsonian reflector is the simplest and best method for getting the largest aperture for the least amount of money."

The second half of the book deals mainly with observing, what to specialize in, how to observe "in the wild", and similar topics. Here Fulton seems to be more successful and personal. Particularly good is his advice on how to build up a basic library. His choice for the best astronomy text is the late George Abell's "Exploration of the Universe" a choice I heartily endorse. As a matter of fact practically all his choices are excellent ones.

Fulton's book is different from any astronomy book I have ever read. It is written in a "light-hearted," colloquial style with a very personal touch. I enjoyed it despite some of its irritating features. As a guide for potential amateur astronomers through "astronomy's jungle" it fills a definite need. But how successful it fills this need only a potential amateur can answer.

Ernst E. Both  
Member B.A.A.

## \*\*\* OBSERVATIONS \*\*\*

June 15-16 a moderately strong aurora occurred, even before the end of twilight at 10:10 PM EDT, an amorphous glow was noted some 10 to 15 degrees above the northern horizon and extended in azimuth from 300 to 60 degrees. By 10:30 PM, the glow became more intense but still remained amorphous. Some slow brightness and fading were now apparent, by 11:00 PM, however, the aurora's energy output increased greatly. Rays and arcs now erupted upward from the lower amorphous glow, up to about 45 degrees of latitude. Aurora very strong at 11:30 PM, rayed spikes now extending as much as 15 degrees past the zenith and into the southern skies. The lower amorphous arc is now a shimmering curtain, faintly

green in color. Aurora faded after 11:45 PM but some detached rays and near-zenith arcs persisted.

During late June the eruptive variable star SS Cygni brightened to maximum light, pretty much on schedule, but full light was maintained for an abnormally brief period. Far stranger still, SS Cygni again burst forth to maximum light just four weeks later, a total surprise. The next predicted maximum should have occurred during mid-August.

August 5-6 I observed newly discovered Nova Vulpecula 1984 this night. At present it looks to be of magnitude 6.5. When first seen on July 27th, from Japan, it was already shining at magnitude 9.2. This Nova is beautifully placed at just over 1° southwest of the bright double star Alberio (1950 coordinates R.A. 19h24m - dec +27° 16').

Michael Idem

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A bright and active aurora was seen on June 15th that started out as a low gentle arch that was green and amorphous. Soon afterwards it flared and pulsed to nearly the zenith with rays and curtains, that were violet, green, yellow and gold.

In northern Sagittarius a star cloud was seen on July 24th and that night the skies were so dark, 7th magnitude stars could be seen with the naked eye. The star cloud was 2 degrees in diameter and had 3 dust lanes silhouetted with diffuse edges and were all parallel to each other. It was seen with my 5 inch f:4.2 refractor at 21x which has a field of view of 3.1 degrees.

3 degrees east of Gamma Andromeda is a medium surface brightness edge-on galaxy (NGC-891) which is 9.5 magnitude and 12 x 1 minutes in size and has a dust lane running across it's nucleus. Three quarters of a degree S.E. of it is the galaxy cluster 'Abell 347' which is 350 million l.y. distant. Within an area of a 1/4 degree I could see 5 13th and 14th magnitude galaxies that are 1 minute of arc in size, and the brightest one had an intense core. They were seen with an 8 inch telescope on August 25th and in addition that night there was an aurora. Though it was low in height and medium brightness it was active with curtain and rays and a pale green and yellow noticeable.

A meteor of magnitude -5 was seen at 2:00 A.M. on August 26th near Franklville, N. Y. It traveled 40 degrees in 2 1/2 seconds starting from Cassiopeia, missing Polaris by 2 degrees and ending in Camelopardalis. It was white and left a glow for 1/2 second.

Carl Milazzo

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On June 20th at 12:30 AM EDT, I observed five Ophiuchids in a 15 minute period before falling off to sleep. They were of 2nd magnitude and 1st magnitude, white, with very short but extremely fast streaks. Their time was near 1/2 second and trajectory about 15 degrees in length. The sky was very high for the Tonawanda's light pollution but I was able to determine 5th magnitude stars. After a 'short' nap, lasting to about 02:30, I again saw 12 more Ophiuchids with the same results, fast and short. The strange thing I noticed was, they did not appear to travel a southern course, rather, they all seemed to streak towards the north and north-west. "Strange"--NOT one mosquito!!

On the morning of July 29th near 02:00 to 03:00 hours, I observed 22 meteors; 17 being from the Delta Aquarids. They were long (nearly 100° from start to finish), lasting about 2.5 seconds. A sort of greenish-blue hue at magnitude 3 was prevalent. The other 5 sporadic meteors of a similar magnitude, although reddish in color, could have been either the Alpha-Beta Perseids, Alpha Capricornids or Piscis Australids; these being at maximum on the 27th, 30th & 30th respectively.

I have observed that there are only a few members who send in any observation reports for the "Spectrum". Come on B.A.A. members and let's hear or see, by drawings or whatever, what you may have observed----after all, we are amateur astronomers aren't we; and when it is clear, we do observe, don't we!?

Your editor

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\*\*\*INSTRUMENT NOTES\*\*\*

The Museum of Science has had to cut expenses. One of the casualties has been our Friday evening meetings. The Museum will have to be closed on Friday evening. The regular club meetings will not be affected in the immediate future as we will be meeting at Buffalo State College until the year-end. However, the Instrument Section has now lost its Happy Home.

Our section has been meeting on the fourth Friday of the month for most of the 15 years of its existence. Now we are faced with some changes. Among the possible alternatives is a change of meeting night. Ernie Both has assured me that the first four evenings of the week are still available. Another alternative, perhaps less popular, is daytime meetings. Still less popular might be a change of meeting place.

If you have any idea, call me at 633-7625. Any comments will be received with interest.

Ed Lindberg.

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\*\*\*STUDY SECTION\*\*\*

It has been given me that the Study Section will be given another chance. Dr. Fred Price will give it a go. Of course there will be an announcement at the meeting as to where and when.

Darwin Christy

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BINOCULARS

The iris of the dark-adapted human eye opens to a maximum of about 7 mm, at which time it can see stars as faint as 6th magnitude. Great improvement can be made with binoculars, which are also useful as a non-astronomical aid.

The best glass under ideal conditions is a 5 x 50 (seven power with a 50 mm diameter objective). Such a glass has an exit pupil (the cylinder of light coming out of the eyepiece) with a diameter of  $50/7 = 7.1$  mm, just about the size to be admitted in its entirety by the fully dark-adapted iris. If the exit pupil were any larger (larger objective or lower power) light would strike the opaque ring of the iris and be wasted.

A handier glass for general use is a 7 x 35, which has an exit pupil of  $35/7 = 5$  mm, smaller than the maximum iris size, but the iris is smaller in less than full darkness or in older eyes, so there is really little genuine loss of efficiency. In addition, this size is much lighter. The typical 7 x 35 glass weighs about 620 g, much lighter than the typical 7 x 50 weighing 1020 g. Your neck will appreciate the lighter weight.

A 35 mm objective gathers much more light than a 7 mm pupil by a factor of the square of  $35/7$ , or 25. The brightness ratio of two stars one magnitude apart is 2.51 (actually the fifth root of 100), so with 25 times as much light being funnelled into the eye it should see stars down to about magnitude 9.5; note that magnification has nothing to do with this.

The field of view of most binoculars is about  $6^\circ$  (a bit more than the distance between the pointers in the Big Dipper), and depends on the construction of the eyepiece. The circle seen in the eyepiece is an apparent  $42^\circ$  wide, but at 7x the real field seen is  $42^\circ/7 = 6^\circ$ . Some instruments have a wide field of about  $11^\circ$ , but they cost in money and weight.

Fairly decent 7 x 35 binoculars can be bought for about \$25-30 (if you can find the right sale), but better ones can cost many times this. If the optical axes of the two halves are parallel even a cheap glass will serve well. This can be roughly checked by laying the focused binoculars on a solid surface, pointed toward a distant scene. With the eyes about 10" back of the eyepieces, if you see the same area when sighting through each eyepiece the collimation is reasonably good.

The usual binoculars have three adjustments which should be handled in this way: swing the hinge between the two halves until the two fields of view coincide; close the right eye and adjust the focus with the knurled knob on the hinge pin; now with the left eye closed adjust the focus of the right eyepiece by rotating the focusing ring. At this point it's a good idea to repeat all three steps. Now the adjustments should be just right; you can save a lot of time in the future by remembering the readings on the hinge pin and right eyepiece and resetting to these readings automatically. If you can focus properly without glasses, DO SO. If you have only a moderate amount of near- or far-sightedness the normal binocular adjustments will compensate, but if you have a large amount of astigmatism you may have to keep your glasses on. With glasses and with deep eye cups the pupil of the eye is too far back and the edges of the field are cut off.

Be warned that while you are magnifying the field of view you are also magnifying all of the unsteadiness in your body. Looking at Jupiter with hand-held binoculars you see little but the glare of the planet, but if the binoculars are in a clamp on a tripod you can usually make out the shape of the planet and a couple of the four larger moons.

Dr. Donald Betterton

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