THE ECLIPTIC

JOURNAL OF THE LACKAWANNA ASTRONOMICAL SOCIETY
KJC Observatory, Fleetville, Pa. Everhart Museum, Scranton, Pa.

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MEETING PLACE CHANGED

The March 4 Meeting will be held at the KJC Observatory, not the Everhart Museum, because Bill Speare will be on vacation. The time will be 7:30 p.m. as usual.

LENDING OUT THE 6" CRITERION

The following is a suggested from to be used when members borrow the 6" telescope owned by the LAS. Please look it over and let us know if you feel any revisions are needed, at the next meeting.

I, the undersigned, accept responsibility for any damages that may occur during the period _____ that the 6" telescope, owned by the LAS, is in my possession.

_____

If a junior member _____
Parent or Guardian

CHECK LIST

	Before	After
Mirrors	____	____
Finder	____	____
Eyepieces	____	____
Clock Drive	____	____
Mount	____	____
Setting Circles	____	____

(This form would be a necessary formality and in no way reflects on the competency of the borrower.)

MEMBERSHIP DUES REQUEST

The membership list will be made up in March. Persons who have not paid up their dues for 1974-75 will not be on the list and will not get copies of "The Ecliptic" sent to them. Please try to take care of your dues by March.

ARTICLE REPRINTED

We're proud to say that an article from the "Ecliptic" has been reprinted in another bulletin, "Pegasus," the newsletter of the ~~Bucks~~ Berks County Amateur Astronomy Club. The January 13 issue contained the article "Carbondale 1974" written by Mike Babcock about the UFO sighting there.

DID SOMEBODY MENTION ECLIPSE?

An historian at a solar eclipse is much like a thoroughbred race horse at a stock car track. Things look familiar, but some mighty strange activity is taking place. My presence in a grass emmeshed field at Cap Chat, an obscure town on the Gaspe Peninsula, was occasioned by a decision of some members of the LAS to snatch telescopes and pursue the most elusive of wild goose, a total solar eclipse.

A devotion to astronomy is a chief characteristic of two of my closest friends - Jo-Ann, a science teacher, and her sister Diane, a secretary converted into a semi-scientist. Two years before they had joined the LAS. Ever since with missionary zeal, they have urged me to "try it, you'll like it." I, along with a few hardy souls, have frozen in a farmer's field in Factoryville, Pa. While they gurgled with glee locating star clusters, nebula, and mysterious "M's" - 45, 31, et al; I was pointed at Mars, Orion, the Big Dipper, with a firm faith that eventually I would identify these on sight. I do not claim to be even a fledgling star gazer. I voted to join the Gaspe jaunt strictly in the role of an observer. I came away with a deeper understanding and sympathy for the astronomer's craft.

The expedition took shape as negotiations for motel reservations in Matane began in July. Deposits were sent in by February. The world, I was assured, would descend and haste was a necessity. I remained skeptical. Really, how many people are willing to bake for hours in some god-forsaken spot staring at an immobile telescope?

As departure neared the decision was to travel light. For one who requires seven native bearers, this was a sacrifice. Nevertheless, I managed to cut down to one suitcase. In deference to my eccentricities, a make-up case and hair dryer were allowed. The baggage loading was simple, however, the science paraphernalia required placement by a contortionist! The light load heading to the border included: one dismantled 6" reflector telescope, two odd sized white cardboard disks, telephoto and instamatic cameras, two pair of binoculars, a flight bag with lenses and mirrors, and a knapsack the contents of which I never did discern. My sympathy went to the bell-boy in Quebec who gazed in resignation at our trunk moaning "it's the third telescope I've packed around this morning."

Arival in Matane was planned for Sunday evening. Ours coincided with James Patterson, Bill Speare and Don Murray whose wives and children had accompanied them. However, Ken Mason, Randy SHafer and John Sabia, whose minimum cruising speed was apparently an even hundred, had been registered since eleven that morning. They had already inspected the eclipse site some forty miles away. Abandoning John to hold field-space, they had dashed back to Matane, secured rope from the motel manager, and were about to depart as we arrived. Crowds, they reported, were already heavy but the LAS was assured a good location.

What should have read as an omen occurred upon the boys return. Their car alternator broke, completely destroying their means of transportation. This meant, come morning, they and their equipment would be sandwiched into our car. On departure, Randy, the most talkative member, rode up front with me to act as native guide. A clear mistake, as babbling contentedly, we almost overshot the site. John, from the rear, hollered "telescopes on the right!" Thus reminded, we swung into a pasture where all manner of tents, campers, even a chartered bus were gathered on a slightly sloping hill.

It was ten o'clock. Equipment arranging consumed two hours, Mirrors were remounted in telescopes and a search begun for a completely level patch of ground for placement. Once the scopes were free of wiggle, a single lens reflex camera would be added to one of the six inch models. A wooden frame resembling a three layer cake housed a neutral density filter which was attached to the front of the telescope.

Much time was devoted to mounting telephoto cameras and taping exposed film as filters to their lenses. After this plans were formulated for timing pictures and decisions reached on which phases would be photographed. Once totality was reached, timing was all important in ripping off lense shades and capturing Bailey's beads, the diamond ring effect, and other phenomena. Camera assignments were made and watches syncronized.

A spectroscope was attached to the smaller 2,4" refractor telescope, to observe dispersion of light rays. The blanket-draped car hood held a variety of small objects from various sized screw drivers to a radio that beeped every second and gave time on a 24 hour clock. This would time the shadow contact with the sun. Flowing across the rear window of the car was a bed sheet to capture the effect of shadow bands.

By noon most work was completed. The French farmers whose houses adjoined the site opened them to the assembled scientists. A small stand had been set up selling food and drink. The most sought after item, home-made bread from outdoor brick ovens. Following the luncheon break, boredom settled. This was broken only by expressions of rage at cars speeding in and out of the pasture kicking up dust which was extremely bad for lenses. Oddly enough these cars belonged to people at the site, not visiting sight-seers.

All morning a blazing sun and mostly clear sky caused color to appear on the workers. Suddenly around one o'clock clouds began to menace. Tension mounted as the sun coyly ducked in and around the clouds. Fear and frustration mixed with a few prayers. Nothing, however, could hasten the show. Slowly, spirits sinking, we watched a formerly blue sky turn to broken gray and white. Just before first contact at 3:20 the sun broke through. Cameras clicked and time records were started. By four o'clock a solid mass of dull, thick gray had completely sealed away the sun. All but one camera was dismounted and stripped of its filter. As totality approached, all was a sullen silent disappointment.

Darkness oozed from a spot on the St. Lawrence horizon reflecting black from sky to water. Slowly a moving shadow, black as the robes of an archbishop brushing the floors of a mediaeval monestary, slid across the field encasing all in its folds. Far down the hill, traffic threaded a two lane highway in a turtle-like pattern resembling moving miners' lamps in a darkened tunnel. Only this showed aside the eerie feeling of standing on Irish shores with Druid priests of another age.

For one brief interval at almost near totality the clouds separated slightly, just enough for the naked eye to see a sliver of crescent shaped in gold. As crys and shouts greeted the sun, the one camera left intact was, with split second speed, stripped of its filter and a picture snapped before the clouds regrouped.

Darkness also woke every insect in the field. Rising in visible profusion, they began to munch on the uncommon feast. They circled their victims leaving a constellation design of red welts.

To off-set gloom, pictures were taken of expedition members during totality and as darkness was lifting. Afterwards the disgruntled groups began the dismantling process. The entire scene resembled a small town whose civic officials had gathered a band, strung banners, assembled the population, and rehearsed a welcoming speech for a visiting politican only to learn at the last minute a change of plans had swung his route to another town. Bill Speare summed up everyone's feelings as "resigned, but bitter."

Ironically, we missed the six o'clock news on Matane's only television station. It showed pictures taken at totality further down the Gaspe. The eleven o'clock news was never broadcast. Instead a film in French on the joys of deep sea fishing brought us to the point where today blends into tomorrow.

Nancy McDonald

Editor's Note: We felt it was safe in 1975 to stir up memories of the 1972 Cap Chat eclipse since time heals all wounds and time had help in its task for those who had gone on the cruise to the great African Eclipse of 1973. If you're getting restless for another chance at seeing the dragon eat the sun, be advised that there are no total eclipses of the sun in 1975. However, we do have a list of total solar eclipses for the next fifteen years. (Information from the 1975 "Observors Handbook" of the RASC.)

DATE	Maximum Duration of Totality	Area of Visibility
1976 Oct. 23	4.9 minutes	Africa, Indian Ocean, Australia
1977 Oct. 2	2.8 minutes	Northern South America
1979 Feb. 26	2.7 minutes	NW United States and Canada
1980 Feb. 16	4.3 minutes	Central Africa, India
1981 July 31	2.2 minutes	Siberia
1983 June 11	5.4 minutes	Indian Ocean, Indonesia
1984 Nov. 22	2.1 minutes	Indonesia, South America
1987 March 29	0.3 minutes	Central Africa
1988 March 18	4.0 minutes	Phillipines, Indonesia, Pacific
1990 July 22	2.6 minutes	Finland, Arctic
1991 July 11	7.1 minutes	Hawaii, Central America, Brazil

HISTORICAL NOTES ON ASTRONOMY
Part I of a Series

We have broken the bonds of gravity and with that have found that the earth is only a tiny speck in the universe, but let us not forget the men who have preceded us. Their early philosophies were only conjectures, but some of their theories came near the truth and were literally shouted down by more articulate orators who, in one particular case, advanced a theory that was widely accepted and was wrong for 1500 years.

Man knew, for at least 8,000 years, that the sun travelled along a prescribed path (the Zodiac) touching certain star configurations every month. He also identified the constellation that marked the beginning of spring. We now call it the "Spring Equinox."

The spring equinox occurs when the sun crosses the Zodiac at heliocentric longitude 180°. This occurred last year on March 21st. The sun was then in the constellation Pisces (The Fishes). But Pisces has not always been at 180° longitude, this point moves slowly from one constellation to the next, reaching it in about 2,000 years. The following table marks the era in which the spring equinox occurred for 8,000 years, also the old and contemporary names of the 12 constellations of the Zodiac arranged in the order they will subsequently host the spring equinox:

The names of the 12 constellations of the Zodiac based on Mythology or other Factors		Era of the Equinoxes
The age of the Twins	Gemini	6300B.C.-4300B.C.
" " " Bull	Taurus	4300B.C.-2100B.C.
" " " Ram	Aries	2100B.C.-100A.D.
" " " Fishes	Pisces	100A.D.-2300A.D.
" " " Water Bearer	Aquarius	
" " " Sea Goat	Capricorn	
" " " Archer	Sagittarius	
" " " Scorpion	Scorpius	
" " " Scales	Libre	
" " " Great Mother	Virgo	
" " " Lion	Leo	
" " " Crab	Cancer	

The temple of Dendra in Egypt was built circa 100 b.c. and has a magnificent painting of the 12 constellations of the Zodiac on its dome, but the Twins, not the Ram, marks the beginning of the spring equinox on the painting; leading scholars to conjecture that the nation came into being during the age of the Twins.

Merton Ruth

MILES TO GO BEFORE I SLEEP

Robert Frost ends his well known "Stopping by Woods on a Snowy Evening" with the line "And miles to go before I Sleep". Taking that line literally, I wonder how many of us are aware of just how many miles we all go before we sleep?

Let's see what the total number of miles we,as passengers aboard the planet Earth, travel each day.

Earth's rotational velocity (at the equator)	-	1,000 mph
Earth's orbital velocity	-	18.5 mps
Sun speed relative to neighboring stars	-	12.2 mps
Galaxy's rotational velocity (at the point of the sun)	-	162.7 mps

This gives us a total of well over 16,000,000 miles in a single 24 hour period.

So we do indeed have miles to go before we sleep.

Don Murray

DID YOU KNOW that when the moon is overhead the nation's gold supply at Fort Knox weighs one pound less than when the moon is on the horizon?

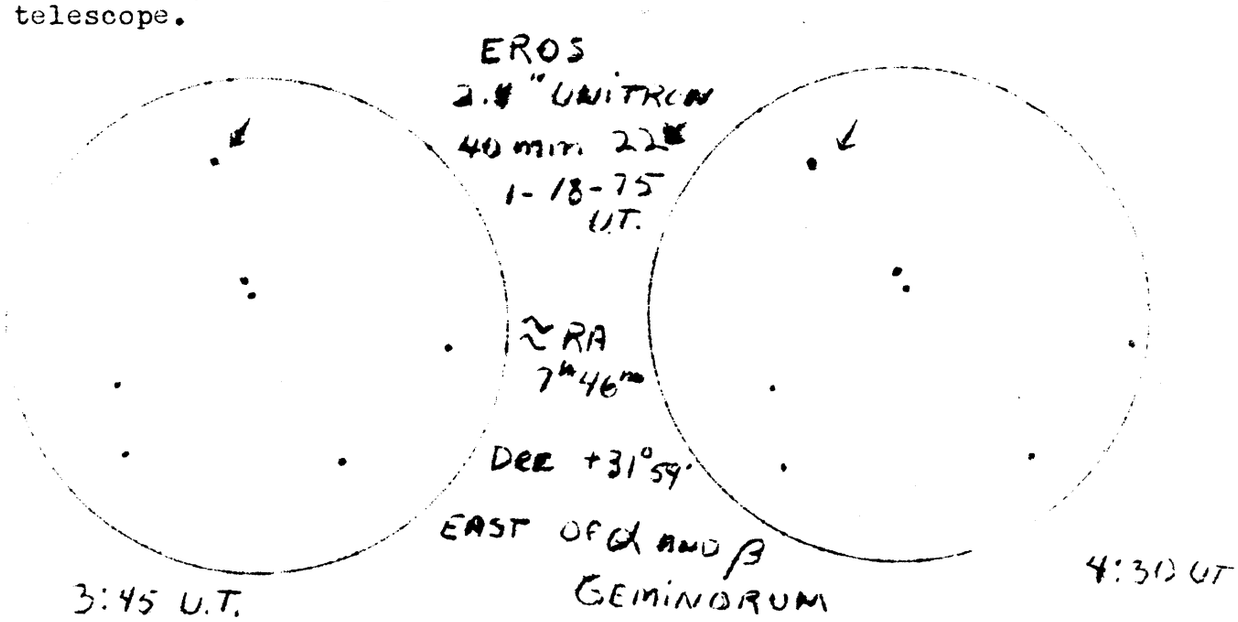
Contributed by Frank Adams Jr.

OBSERVER'S NOTES

During the months of December 1974 and January 1975 minor planet Eros was the prime target of interest of many amateurs. At one of it's closest approaches in 44 years, the minor planet was an easy object to detect in the sky with a moderate instrument. With a maximum brightness of 7.8 magnitude, Eros moves through the sky at a rate of 1° per day when near opposition.

On the nights of December 5 and 7, 1974, photographs of Eros were obtained with an 8" Schmidt camera. Each of the photos overlap making it possible to construct a mosiac of the movement of Eros.

Using a 2.4" refractor owned by Bill Mecca, the two of us were able to witness the movement of Eros over a period of 45 minutes on January 18, 1975. At 22x with a 400 mm ocular a movement of approximately 5 to 8 minutes of arc was noticed. By using a pair of 8 x 50 binoculars, Eros was plainly seen after identification with the telescope.



MR. KNOW IT ALL (OR THE ANSWER MAN)

Q. When was the first measurement of a star parallax made?
A. The parallax of a star was first measured by Friedrich Bessel in 1838. It was attempted earlier many times, but unfortunately because of poor instruments, choice of distant stars, etc., they were unsuccessful. Bessel, however, selected the star 61 Cygni which is the closest star visible to the naked eye. The parallax he measured was 1/3 of a second of arc, about the width of a human hair at the distance of 16 feet.

Q. What is proper motion?
A. Proper motion is the movement of individual stars on the celestial sphere. For most stars, this motion is very slight. Barnard's Star has the greatest proper motion known. In 180 years it will move relative to the other stars the distance equal to the apparent diameter of the moon.

Q. What size telescope was Herschel using when he discovered Uranus?
A. A seven inch reflector of his own construction

Q. Who first determined the speed of light?
A. Olaus Romer approximated the speed of light in 1675. He used the eclipses of Jupiter's satellites for his determination. Prior to that, light was thought by many to be instantaneous.

Our Mr. Know It All is Don Murray. He has said he is willing to take on all comers. Any questions for this feature should be sent to:

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COMING SKY EVENTS

March 6	Mercury at greatest elongation W. (27°)
March 21	Equinox, Spring begins
March 28	Spica 1° N. of Moon. Occultation
March 31.	Neptune 0.7° N. of Moon. Occultation
April 20	Uranus at opposition
April 22	Lyrid Meteors
April 24	Close approach of Venus and 95 Tauri. Spica 1° N of Moon
April 28	Neptune 0.7° N. of Moon. Occultation
May 5	Aquarid Meteors
May 11	New Moon. Partial Eclipse of Sun not visible in N. America
May 16	Mercury at greatest elongation E. (22°) favorable
May 22	Spica 1° N. of Moon. Occultation
May 25	Full Moon. Eclipse of Moon
	Neptune o.7° N. of Moon. Occultation
June 1	Neptune in opposition
June 16	Mars 0.5° S. of Jupiter
June 18	Venus at greatest elongation E. (45°)
	Spica 1° N. of Moon. Occultation
June 21	Solstice. Summer begins
	Neptune 0.8° N. of Moon. Occultation

FINAL NOTE: For the summer "Ecliptic" please send in any articles, observational notes, fillers or cartoons by May 10, 1975 to:

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