

The ASTERISM

Volume XVII No. 4

Happy New Year!

January 2006

Transitions

by Jeremy P. Carlo
Editor, *The Asterism*

I can still remember nearly six years ago when I took over *The Asterism* from its previous editor, Sue Kalas, who had done an excellent job on the newsletter for about as long as I can remember. Since then I've been keeping up the same tradition, and I hope I've lived up to the high standards of my predecessors. Little did I realize how much work goes into mailing out about 175 newsletters each month, but it's a task I've considered my privilege for the last five and a half years.

But the time has come to infuse new creative spirit (and elbow grease) into this little publication, and over the next few months I will be passing along the torch to one of our newest and younger members, Aaron Zuckerman.

My grandfather and I have known his grandfather, Herman, since we started coming to the club nearly fifteen years ago. I always regard him as a special friend, who always has advice, always has an interesting story – what with his experiences in the Marines during WWII, including being at Pearl Harbor on December 7, 1941, in the Newark Police Department, as well as astronomy -- and always a kind word. More recently his son Alan and grandson Aaron have joined the club as well – Alan is currently our Vice President, and Aaron has done an excellent job handling the archives.

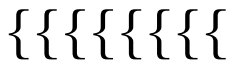
So over the next few months Aaron and I will be working together to smoothly transition *The Asterism* into its next incarnation, just as Sue showed me the ropes in the beginning, and I'm sure has happened with the editors before that. I've found that preparing the newsletter is often, as Edison said, 10% inspiration and 90% perspiration (and sometimes just frustration, dealing with the Post Office at times) but it's a rewarding and creative way to get involved with the club.

The editor@asterism.org address still works as before, and for the time being will reach both of us as we work on the transition.

I hope you'll find this issue interesting, loaded with lots of unusual factoids – Did you know Keanu Reeves has a rock band? Observing within throwing distance of the Meadowlands arena? How about the Occult (-ation of a star by Mercury)?

I would also like to thank all those who've helped me in getting this newsletter up and running each month – Ron Ruemmler for his informative sky columns, Al and Bonnie Witzgall, Dr. Lew Thomas, Ernie Rossi, Stewart Meyers, and all the others I could count on to provide articles to fill up the pages of these volumes, Ray Shapp for invaluable assistance of all sorts, and everyone else who has provided me assistance in one war or another over the last five plus years.

You'll still see my handiwork here for the next few months, and maybe some contributions in the future, but I will be leaving you, dear reader and fellow AAI member, in the capable hands of my successor, who I believe will do a wonderful job continuing this little tradition.



AAI Astronomy Day

Saturday, April 29, 2006

*AAI will be holding its annual
Astronomy Day at Sperry
Observatory!*

*There will be talks, presentations,
and weather permitting, solar ob-
serving and nighttime observing.*

Keep the date open!

Monthly Meeting
Friday, January 20th
at 8:00 PM

in the Roy Smith Theater

This month our speaker will be

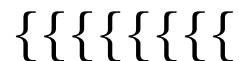
Kevin Conod

Newark Museum

Dreyfuss Planetarium,

whose topic will be

"Fire and Ice: Upcoming
NASA Missions"



Membership Dues

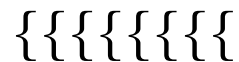
Regular Membership: \$21
Sustaining Membership: \$31
Sponsoring Membership: \$46
Family Membership: \$5

Sky & Telescope subscription:
\$32.95

Astronomy subscription:
\$34.00

First Time Application Fee: \$3

*Dues can be paid to the Club
Treasurer or Membership
Chairperson at the Observatory.*



The  ASTERISM

can be reached at
editor@asterism.org

THEATER IN THE SKY

by Ron Ruemmler

February 2006 presents the familiar Winter Hexagon wearing an attractive pair of earrings. Saturn is on the left of these bright constellations while a slightly dimmer Mars is on the right. The best Mercury of the year and a lunar occultation round out this month's attractions.

Every February observing session has to start with the Hexagon. Start at the bottom with brilliant Sirius low in the south. Move clockwise to Procyon, through Pollux and Castor, to Capella at the top. Then down and around through Aldebaran and Rigel back to Sirius. Betelgeuse is near the center of everything. All this month Saturn is to the upper left of Procyon and Mars is to the upper right of Aldebaran.

Near the start of February, Betelgeuse, Aldebaran and Mars form an evenly spaced line of orange objects, with Mars the brightest. The planet rapidly fades as it nears Aldebaran heading toward a perfect conjunction of brightness in March.

An occultation occurs when one body, usually the Moon, interrupts the light from another object, usually a star or planet. The Moon looks so big and the sky so full of stars that one would think that lunar occultations would happen almost every night. But only about 30 or so occur in a typical year and most of them are lost in polar regions or bright daylight. Still, most places can expect half a dozen or so chances to see one. This year, however,

only one lunar occultation of a first magnitude object is visible from New Jersey.

Spica, the alpha star in Virgo, the Virgin, is occulted by the Moon on Friday, the 17th. The bright edge of the Moon passes over the star so a telescope will be needed to see it, but it is conveniently scheduled and located just above the southeastern horizon. The reappearance from behind the dark limb of the Moon occurs without warning about an hour later.

It is rare, but possible, for a planet to occult a star. This month an unusually well placed Mercury passes directly in front of a small star in Pisces on the 24th, but this can only be observed in Australia. Finally about once every millennium a planet will occult another planet. No, this doesn't happen this month, but it comes close. On the 14th, Mercury is just two percent of one degree northeast of Uranus as viewed from the longitude of Iraq. This is the closest conjunction of two planets by far between 2000 and 2013! The little planet appears 631 times as bright as the gas giant and almost twice its apparent diameter. Capturing the orange Mercury so close to the green Uranus would be a major challenge in astrophotography.

Finally, the two brightest planets do not appear until after midnight. Jupiter is already high in the south before dawn, while Venus is at its maximum brightness of the year as it rises around 4:30 AM. Ω

FEBRUARY SKY CALENDAR

1 Wed 7:00 PM Saturn just below Beehive star cluster
5 Sun 1:28 AM First Quarter Moon
5 Sun 7:00 PM Mars two degrees below the Moon
12 Sun 11:44 PM Full Moon
14 Tue 6:00 AM Venus at maximum brightness (-4.6 magnitude)
14 Tue 6:00 PM Uranus just below Mercury (binoculars needed)
17 Fri 6:00 PM Mercury at maximum brightness (-1.1 magnitude)

17 Fri 9:00 PM Mars below Pleiades star cluster
17 Fri 10:00 PM Moonrise, prepare for...
17 Fri 11:00 PM Occultation of Spica by the Moon
21 Tue 2:17 AM Last Quarter Moon
23 Thu 6:30 PM Mercury at maximum elongation from the Sun
24 Fri 3:26 AM Mercury occults 14 Piscium from Australia
25 Sat 6:40 AM Thin crescent Moon far below Venus
27 Mon 3:20 PM Closest moon of 2006, just 4.2 hours before...
27 Mon 7:32 PM New Moon; expect extreme tides

Stewart's Skybox

by Stewart Meyers

Since this is the column for the January 2006 Asterism, I was originally going to discuss (and debunk) the "Great Year" theory – a piece of nonsense about an unseen companion star to the Sun. But, researching further, I found that this theory is so absurd that the only people who would take it seriously are those who think *Star-gate SG-1* is a docudrama.

However, theories such as the Great Year are part of a larger phenomenon. It seems that there are many people who believe that ancient civilizations had to have mysterious means (or alien help) to get their knowledge or build their buildings. So, instead of just attacking the Great Year, it might be more productive to examine how the ancients actually acquired some of their astronomical knowledge.

Precession Puzzle

One of the more interesting bits of ancient astronomical knowledge concerns what we call precession of the equinoxes. Contrary to what the Great Year advocates claim, precession is caused by the gravitational tugs of the Sun and Moon on Earth's equatorial bulge, not some undetectable companion to the Sun. While the cause of precession is not really mysterious, it is still impressive that the ancients knew of its effects.

According to conventional wisdom, the Greeks in the second century BC were the first to notice precession. However, there is evidence that it was known before then. Joseph Campbell felt that the knowledge of precession (and its cyclic nature) was known to a number of cultures all the way from Scandinavia to India and possibly even the ancient Hebrews. For example, he cited that the number 432 pops up various forms (432,000; 43,200; etc.) in the mythologies of these cultures. And when 432 is multiplied by 60 (the Babylonians had a base-60 number system), one gets 25,920 which is close to the length of the precession cycle in years. Campbell also believed that the cyclic nature of time in Hindu mythology, Ragnarok in Norse mythology, and even the flood in Genesis are based somewhat on this cycle. Of course, this can be explained without recourse to companion stars, aliens, or other odd stuff.

Many ancient cultures paid close attention to the sky. To them, it was not a hobby, but a matter of survival. In the days

before clocks and written calendars, watching the changes in the sky was the only way to keep track of time. Some built large structures (eg. Stonehenge) to roughly mark the rising and setting points of the Sun and Moon throughout the year, so they could better track the seasons and know when to plant their crops. Others used when various stars rose or set to determine seasons. However, just as precession shifts our celestial coordinate system around (that is why we use 2000 epoch coordinates as opposed to the earlier 1950 ones), the seasonal patterns would shift gradually over generations and eventually throw off the predictions. Campbell (and others) believed that the Sumerians or Babylonians, due to their skill at mathematics and written records, found that this shift was regular and could be calculated, thus keeping the seasons predictable. This knowledge likely spread along the trade routes and diffused throughout the ancient world.

Pyramid Scheme

Nothing has inspired more crazy speculation than the great pyramids of Egypt. Despite the claims of the fictional Dr. Daniel Jackson (and a long list of real-life pyramid nuts), the pyramids were just large monuments to dead pharaohs and were built, not with alien technology, but large numbers of workers, lots of time, and simple engineering. While most of the engineering is beyond the scope of this article, the method used to establish the cardinal directions did involve astronomy. Back when the pyramids were built, the star nearest the north celestial pole was Thuban in Draco. However, it was two degrees from the pole (currently, Polaris is only about half a degree away), so it was not all that precise. But the Egyptians had a way to compensate for that. This method, known to amateurs who have equatorial mounts, is to use the upper and lower culminations of the pole star. When at upper culmination (highest in the sky), Thuban was above the pole and when it was at lower culmination (lowest in the sky), it was below the pole. Egyptian astronomers simply noted the position of each culmination and a line through the two positions defined the north-south axis. Once that axis was found, the east-west axis was simple to deduce.

Dog Star

No, this isn't about that lousy rock band Keanu Reeves has. It refers to the star Sirius and this part of the article will discuss the mythology of the Dogon tribe

in Mali when it comes to the star and other objects in the sky.

In the 1970's, Robert Temple studied reports about the tribe from the 1930's. According to those, the Dogon venerated Sirius (a belief evidently acquired from the ancient Egyptians). They also claimed that it had an invisible companion composed of a very heavy substance. Closer to home, they also state that Jupiter has four companions and Saturn has a ring. Sound familiar? Temple believed that the only way the Dogon could know this stuff was because aliens came in the past and told them. But the real answer is more down-to-Earth.

While the Dogon appear primitive, they were not isolated. Throughout the late 19th and early 20th centuries, the Dogon had visitors from Europe. French traders, missionaries, and anthropologists traveled to the villages. It is entirely possible that one of these foreign visitors may have struck up an astronomical conversation and told the Dogon of some modern tidbits of knowledge or even shown a small telescope. There was also another way the Dogon could have learned astronomy. Many Dogons served in the French army during World War I. So, it is possible while these men were seeing ol' Patee, they might have picked up some knowledge. Upon returning home, they told what they had heard and the new information was incorporated into their mythos, which the anthropologists in the 1930's recorded.

Doing It For Themselves

As we see from these examples, every time ancient cultures display astronomical knowledge, they got it by watching, paying attention, and in one case, listening. And they did these things all by themselves. No space aliens needed. Ω

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The Astronomers of Xanadu Meet the Swamp Thing

by Bonnie B. Witzgall

Did you read the story published in February 2005 issue of the Bergen Record? It explains the latest addition to the new Meadowlands Millennium Master Plan! The Meadowlands Commission is paying architect Fredric Rosen \$236,000 to design the new astronomical complex for public and private use in Lyndhurst, NJ. The building includes a permanently mounted 20" inch scope, an astronomical display area and a lecture hall where local astronomers will deliver 'timely' astronomical talks to a public audience. Construction costs for the facility is an estimated \$2.2 million and with construction to begin in the Fall of 2005. The exact location of the project is rather vague, but Lyndhurst, NJ is just a football's throw from the Meadowlands Sports Complex. It is also just across the street from the newly planned Xanadu Project. That's the massive indoor family theme park set for development all around the new Giant Stadium and the Meadowlands Race Track, which sprawls between the Hackensack River and Route 17 in East Rutherford.

Imagine that! A group of 'serious' town planners hired a high-priced architect to plan and build a working observatory in the middle of incessant swampland four miles from midtown Manhattan. They also anticipate 'serious' astronomers to work there and entertain the public with interesting talks and telescopic views of the Heavens. They also expect this scientific facility to fill with folks eagerly intent on learning the majestic truths about space science and big astronomy.

Oh, yeah? Well, they can expect anything they want, but the majestic truths will be a painful dose of Uncontrolled Reality! The reality of too much dew from the endless track of swampland will drench everything and everyone who uses outdoor optics. (They don't call it Wetlands for nothing.) Too much light pollution from the great Metropolis area and too much glitz from the Xanadu Extravaganza will overshadow the small natural pinpoints of lights from the real night sky. Can you imagine the out-of-this-world lighting stanchions designed for Xanadu's vast parking lot? Not to mention what all the black asphalt and vehicle pollution will do to the fragile seeing conditions.

Sperry Observatory suffers the same fate. It no longer sits within a dark site location, as it did in back 1967 when the observatory was dedicated. Union County College, neighboring towns and interstate highways all expanded around the functional observatory. AAI's staff continually copes with poor weather, opulent light pollution and an obligation to satisfy our inquisitive public visitors. Yet, here is a designer planning to build a new working astronomical facility next to a luminous theme park in an already urbanized and swampy place. Erecting an observatory in the center of a flashy developed playground seems as outlandish as the idea of Xanadu itself.

Strangely, this strategy of establishing a working observatory in the Meadowlands is not in keeping with the Xanadu's goal of carefully controlled reality. Tourists are expected to pay dearly for their programmed vacation fantasies. All fantasies will be happen on cue via computer and carefully controlled within a huge indoor operation. Astronomers dream of having such manipulation abilities at the push of a cosmic button. Yet, until we figure out the space-time continuum thing, we must plod along with our real instruments and observations.

Those who staff that ill-fated observatory will be slammed with a giant dose of verbal abuse. They will catch all the complaints from the disappointed tourists. Tourists, who just returned from the floating zero-g ride in Xanadu, will visit the observatory expecting the same emotional rush. They will not understand nor tolerate the blurry, washed-out image offered from a wet eyepiece while viewing from within a freezing or humid dome room. Anybody ever witness or felt the Jersey Giant Mosquito? Ever drive along Route 3 during a smoky brush fire? Have you attempted to view the heavens while across the street from a construction zone? Ever try operating a Go-To drive system, which can't receive its GPS signal through a metal dome? That modern observatory in Rutherford, NJ will not only be wide open to the murky urban sky, but also to every life form, and hazard native to the local swamp.

It's a nice idea that the Meadowlands Commission is attempting to bring real astronomy to the masses. However, with a giant theme park booming across the street, I'm sure the real sky view will pale against the Xanadu man-made effects. Once the public blames their staff astronomer for the

lousy view and wasted admission fee, the Meadowlands Commission may look to get rid of their 'lousy' 20" scope and dew drenched dome. Could AAI step in and take away the offending equipment? That would leave room for the Meadowlands Millennium Master Plan to do a 2nd phase revision. Perhaps the building of an environmentally controlled planetarium or I-Max Theater would be much more suited to the Xanadu fantasy idea. Then AAI could take the wayward instrument and dome to a dark sky site, which would be far from the Meadowlands area. The equipment would then finally serve and educate the public as originally designed. Need advice on urban sky gazing or building a public observatory next to a swamp? Need guidance on bringing real excitement from the night sky to curious people? Don't hire a lavish architect. Don't employ a construction company for \$2.2 million dollars. Just ask a frustrated but serious city astronomer who is continually deals with urban reality!

Ω

Dome Duty Schedule

| | |
|----------------|---------------|
| Jan. 20 | Team A |
| Jan. 27 | Team B |
| Feb. 3 | Team C |
| Feb. 10 | Team D |
| Feb. 17 | Team E |
| Feb. 24 | Team A |
| Mar. 3 | Team B |

Friday Night Talks at Sperry

January 27, 2006

The Exploration of Saturn

--Al Witzgall

February 3, 2006

Earthquakes and Tsunamis

--Mike Luciuk

February 10, 2006

Astro-Imaging Using Digital SLR Cameras --Ed Carlos

February 17, 2006 *General Meeting*

March 3, 2006

How Did We Get Our Crazy Time Scales? --Dr. Lew Thomas

March 10, 2006

Astronomical Themes in Currency
--Gordon Bond