

# The Objective View

Newsletter of the Northern Colorado Astronomical Society

September 2003

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**Next Meeting: September 4 7:30 PM**

**Mars Mythology and Mania**  
**By Dr. Roger Culver, CSU**

**Please bring scopes and help with Marswatching**  
**after the program!**

**Discovery Center Marswatch also on Sept 5**

**NCAS Business at 7 PM**

**Meeting directions Discovery Science Center**  
703 East Prospect Rd, Fort Collins  
<http://www.dcsm.org/index.html>

In Fort Collins, from the intersection of College Ave and Prospect Rd, head East about 1/2 mile. See the Discovery Center sign to the South. Enter the West Wing at the NE corner. From I-25, take Exit 268, West to Lemay Ave, continue West 1/2 mile, see Discovery Center on the left.

**NCAS Meetings**

Oct 2 Dr Joe DiVerdi VLF radio as probe for energetic events, GRB & more

**Starwatch at Discovery Science Center**

Next dates and start times are:

September 5	7:30 pm
October 3	7 pm
November 7	6:30 pm
January 30	6:30 pm
February 27	6:30 pm

**NCAS Dark Sky Star Party Dates**

**September 20, 21, 26, 27**

Cactus Flats site is on undeveloped parcel of prairie about 6 miles West of Briggsdale. Take Colo Hwy 14 East from I-25

(Exit 269). Go 19 miles East to Ault. Continue 18 miles East of Ault. At County Rd 65 (Milepost 170), turn North, go one mile. Site is through the wire gate on the right, no road, close gate and set up. Beware of the cactus. Our standard nights are the weekend of the New Moon, sometimes a weekend before and after. The site is now officially wheelchair accessible, but there are no facilities so bring essentials. Call **Tom Teters**, [tomt@starmon.com](mailto:tomt@starmon.com), with questions about star party status or dates, 482-5702.

## Other Events

Little Thompson Observatory Star Night, Berthoud  
September 19 Star Night 7 – 10 pm  
Brad Jarvis, Mars Society President  
<http://www.starkids.org>

Cheyenne Astronomical Society, Cheyenne Botanical Garden  
Sep 19 8 pm  
<http://home.bresnan.net/~curran/>

Open House, Chamberlain Observatory, dusk to 10 pm  
Sep 6, Oct 4, Nov 8 303 871 5172  
<http://www.du.edu/~rstencel/Chamberlin/>

Longmont Astronomical Society  
Sep 18 7 pm Longmont Christian School, 550 Coffman St  
Sep 5 Flanders Park Public Starwatch, sunset  
<http://laps.fsl.noaa.gov/cgi/las.cgi>

## August 7 Program

### Astronomical League Convention 2003

By Max Moe

Max received a phone call from Italy last spring from Bob Gent, cofounder of the International Dark Sky Association. Bob was pleased to inform Max that he had won the Astronomical League's National Young Astronomer Award. Max recalls being nearly speechless, but excitedly thanked Bob, and made plans to attend the League convention in July, in Nashville, Tennessee. Max presented some highlights from the meeting, and his award-winning research. A favorite was the talk on the James Webb Space Telescope. It has a 6.5 meter segmented primary, IR cameras and spectrometry. It will seek distant galaxies with redshift >13, the first 1% of the universe. It should show a dust ring around Vega. It will be stationed at the L2 Lagrangian point, so service after launch will be impossible. Launch is slated for August 2011. The Galaxy Evolution Explorer is currently charting nearer galaxies in UV. Lou Mayo spoke on work across the nation to involve young people in astronomy. He has promoted a Student Observation Network, and after-school camps. He prods amateur astronomers to team with a teacher once a semester, for demonstrations. Alka-Seltzer in a film canister can demonstrate the pop in rocket fuel, and a giant pizza can be used to model planet sizes. He showed a string scale model of the Solar System. ALPO Board member Robert Schmude presented his work on the disappearance of Jupiter's North Temperate Belt. Jupiter's moons were used as standard candles for the planet. Polarized light from Mars was measured,

as a function of phase angle and dust storms. Of 30 presentations, other highlights included Sten Odenwald's Venus Transit talk, the ISS Amateur Space Telescope, Richard Berry on CCD imaging, and surveillance video cameras for imaging, more sensitive than webcams. A 12 inch telescope detected magnitude 18 stars with an inexpensive surveillance camera. A star formation talk showed the many proplyds in the Orion Nebula. High redshift supernovae and the accelerating universe were discussed by Rob Knopp. Meteorites and "meteor-wrongs" by Dr. Michael Reynolds brought lots of chuckles. The annual Star-B-Que was held at Dyer Observatory. There was live space music, a large celestial globe, and views of E.E. Barnard's telescope. The Seyfert telescope has interchangeable secondaries for f/5 to f/22. A two hour trip led to the US Space and Rocket Center at Huntsville, Alabama. There Max saw a full-scale Lunar Module, Lunar Rover, and an Apollo 16 moon rock. Max laid in a cramped Apollo capsule. On display were a Saturn I rocket, Saturn V model and engines, and many other rockets. Max then presented his research, as given at the conference. The commercial light bulb dates from work of Thomas Edison, released in 1878. An image of any urban landscape shows how technology has been abused, at the expense of the night sky. Max desired to quantify the local extent of light pollution, and use his data to assess Walker's Law, the light pollution relationship to population derived in the late 1970s. Walker determined that light pollution intensity (I) was related to population (P) and distance from city center (D) as follows:

$$I = 0.01 P^*D^{-2.5}$$

Max built a Dark Sky Meter with plans from Gote Flodqvist's article in Sky & Telescope magazine, February 2001. The meter is built in a length of PVC pipe. A 6.2 degree circular field is seen when viewing through the pipe. The sky end of the pipe holds an LED and diffuser, but is mostly open. A simple power supply controls the variable brightness of the LED, and an ammeter is used to measure the current. In the field, the meter is aimed at the desired sky region, the LED is adjusted to match the sky brightness, and the current value is recorded. Max did a calibration, so he could assess the limiting visual magnitude by reading the current. His initial survey was 72 measurements per sky, repeated on 8 nights, at 3 locations, urban, suburban, and rural. He selected nights with low humidity. He constructed light pollution contour maps. His data contained some surprises. He concluded that light pollution from the Pawnee Grasslands site was mostly from Denver, rather than Greeley. Max plotted limiting visual magnitude vs angular altitude, and relative stellar brightness vs air mass cosecant. The latter relationship was linear to 17 degrees elevation. Max found in our area, he derived an exponent of -2.3 to -2.4, rather than -2.5 per Walker. Members speculated that the lamps in cities have changed substantially from Walker's years, with fewer incandescents and mercury vapor lamps, and many high-pressure sodium currently. Max then presented results of his "Frontiers of Science" camp at University of Northern Colorado. He used his Dark Sky Meter to quantify the sky brightness at various lunar phases. The increase by 2 magnitudes, at most, surprised him. The awards ceremony introduced Max to several other young astronomers from across the US. Some he had met at the University of Arizona Astronomy Camp last summer. Max was thrilled to receive a Meade LX200 telescope, and a lifetime pass

to MacDonald Observatory, near Big Bend in SW Texas. Dr. Martin Weisskopf gave the banquet lecture on 25 years involvement with Chandra X-ray observatory, a spectacular talk. Max then reviewed his other work from the UNC Science Camp, a data mining project on 4 variable stars in Aquarius. About 90% of long period variables are Mira-type. They are Class M stars with dynamic behavior. The change in brightness in Mira, Omicron Ceti, was first noticed in 1596. Its periodicity was discovered in 1638. Thousands of Mira-type variables are known. They have an amplitude of at least 2 magnitudes. They are on the asymptotic limb of the H-R diagram. Mass is like the Sun, but average size is 30 million solar volumes. If centered on the Sun, the outer edge would reach beyond the orbit of Mars. The size varies, with a cycle of collapse, heating, increase in visible and infrared radiation. After enlarging, the stars cool, liquids and solids can form in their outer layers. Molecules including cyanogens, silicates, and oxides can persist. Brightness drops up to 11 magnitudes, with condensation of solids and cooling. Max obtained data from the Stardial Camera, on the Internet. A 50mm lens is aimed unguided at 8 degree field. Max obtained 155 FITS images of a star field in Aquarius which contains 4 Mira-type variables. 2 stars, T Aqr and W Aqr, are established as fitting the type. Max assembled confirmatory data on them, and also attempted to illuminate the status of FP Aqr and TV Aqr which could be assessed in the same field. Max was able to see a period of 404.3 days for FP, and 371.9 days for TV. Over the years of his data, these variables appear to be regular, not semiregular or irregular variables as previously described. He is taking time to observe with his new scope this summer, getting his best view of Mars with it. We all extend our warmest congratulations to Max for his extraordinary year!

### NCAS Business, August 7 2003

President Dan Laszlo called the meeting to order. Mike Smith of Front Range Community College invited NCAS participation at the new Observatory Park in Fort Collins. Corey Radman circulated raffle tickets for the benefit of Discovery Science Center. Mars-watching events were announced, including Brad Jarvis' talk at Little Thompson Observatory. Dan Laszlo invited members to join the final public starwatches in Rocky Mountain National Park this summer.

### From Thom Peck:

UA awarded largest grant in school history to explore Mars further. In March 2001, UA scientists helped find water on Mars. In May 2008, they will help look for life. The National Aeronautics and Space Administration (NASA) announced Monday that the University of Arizona was awarded a \$325 million grant — the largest grant in UA history — to study water and organic molecules just beneath the surface of the planet. See: [http://wildcat.arizona.edu/papers/96/159/01\\_1.html](http://wildcat.arizona.edu/papers/96/159/01_1.html)

### Issues of Sky & Telescope available

From tighome@verinet.com:

I am cleaning house. Is there any interest in the NCAS in my collection of S&T from 1989 to 2002? Free? Like to give them a good home rather than recycle. Thanks.  
Mark

**Scope for Sale by lgm@charter.net**

For Sale: Meade Instruments Corporation SATURN  
Model DS-114. D=114 mm, F= 910 mm, f/8  
Sells for \$400+ new. Asking \$190.  
Call Estes Park 970-586-1959  
lgm@charter.net

**Scope for Sale**

Coulter 10 inch Dobsonian. Like new. Includes Kellner eyepiece, eyepiece rack, red-dot aiming device, aperture stop, dustcap. \$600. Call Gene, 970-568-0545.

**Telescope for Sale:** Meade LX200 10 Inch Schmidt-Cassegrain and heavy duty tripod.

	Original cost
10 inch f/10 LX 200	\$2695 (today = \$2495)
Super Wedge	\$ 380
Electronic Focuser #1206	\$ 145
Electronic DC Adapter #1812	\$ 90
LX200 Interface Cable	\$ 25
f/6.3 Focal reducer	\$ 125
Tube balance weight system	\$ 95
Telrad	\$ 37
shipping	\$ 245
GPS	\$ 110
Epoch 2000 Software	\$ 175
TOTAL	<hr/> \$4122

Used about 2 years. Like new condition.  
Sacrifice for \$1995. Call Patrick Earhart  
(970) 898-1057

**From Patrick Earhart to C8 buyer:**

To the person who bought my Celestron C8 about two years ago. I have found some spare parts for your telescope. Please call me, Patrick Earhart (970) 898-1057

**Clear Sky Clocks for Colorado**

[http://cleardarksky.com/csk/prov/Colorado\\_clocks.shtml](http://cleardarksky.com/csk/prov/Colorado_clocks.shtml)

**From Jim S: Best Moon Site I've Seen:**

<http://www.moon-phases.com/>

**Best Looks**

Moon by Jupiter 7/1, 2, by Regulus 7/3  
7/17 occults Tau Aquarii about 0000 MDT  
7/16, 17 less than 1 degree from Mars from moonrise until dawn, by Saturn 7/26, 27  
Mercury Low in W end of month  
<2 deg from Jupiter 7/26, 27, 28

Venus low in ENE predawn first week  
By Saturn 7/8  
Mars In S predawn  
Jupiter Low in West in evening twilight  
Saturn Low in ENE predawn, easier end of month  
Uranus In Aquarius predawn  
Neptune In Capricornus predawn

**From Brad Jarvis:**

MarsNews.com will present weekly broadcasts of our hour-long program "Radio Free Mars" starting Tuesday, March 18th. The program will feature a weekly space newscast, information on past, present, and future missions to Mars, and phone interviews with newsmakers and space experts. The program will be hosted by James Burk, Editor-in-chief of MarsNews.com, an expert on the Red Planet and the past President of the Mars Society's Seattle chapter.

The broadcasts will be aired on ZeroPointRadio.com, an Internet radio network and will also be available for listening & download at the following address:

<http://www.marsnews.com/radio/>

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**TO:**