

The Objective View

July 2003

Newsletter of the Northern Colorado Astronomical Society

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Next Meeting: July 10 7:30 PM

Stellar Evolution, by Drs. Steve and Irene Little

Our presentation on July 10 will be on evolution of stars to the main sequence and their post-main sequence evolution. We will try to give a physical explanation of their main sequence lifetime, their reasons for leaving the main sequence and becoming giant stars, and the end points of stellar evolution. We will discuss the effects of the sun's giant star evolution on the planets of the inner solar system. If we have time, we will discuss endpoints of massive star stellar evolution (supernovae, neutron stars, black holes, etc.).

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
August 7 Max Moe ALCON 2003
Sept 4 Dr Roger Culver Mars Mania

NCAS Star Party Dates

July 18, 19

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**, starmon@jymis.com, with questions about star party status or dates, 482-5702 or 482-0807.

Rocky Mountain National Park Starwatching 2003

Contact Dan Laszlo, djlaszlo@aol.com, if you wish to volunteer with your telescope for programs in the park this summer. Dates are: July 18, July 25, August 1, August 22. A weather cancellation message can be consulted at 472-3990 after 5 PM.

Longmont Astronomical Society 1st Quarter Moon Public Viewing Nights, Flanders Park

July 5

Other Events

Little Thompson Observatory Star Night, Berthoud
July closure for maintenance
August 15 Star Night 7 – 10 pm
<http://www.starkids.org>

Cheyenne Astronomical Society
July 11, Aug 22 Cheyenne Botanical Garden 9 PM
<http://home.attbi.com/~curranm/>

Open House, Chamberlain Observatory, dusk to 10 PM
July 12, Aug 9, Sep 6 303 871 5172
<http://www.du.edu/~rstencel/Chamberlin/>

Longmont Astronomical Society
July 17, Aug 21 Longmont Christian School, 550 Coffman St
<http://laps.fsl.noaa.gov/cgi/las.cgi>

Biographical Briefs on Dr. and Dr. Little

Drs. Stephen and Irene Little have been involved in teaching astronomy to undergraduates at a variety of institutions for over 30 years. Stephen received his Ph.D. from UCLA and Irene from Indiana University. While currently retired, they still maintain a research connection with the University of Colorado in Boulder. Both Stephen and Irene have taught astronomy courses at CU including a course on Ancient Astronomies. Both Irene & Steve have published numerous scientific papers dealing with the evolution of stars and are currently involved in research in archeo-astronomy (astronomy of ancient cultures). Stephen and Irene have presented workshops for college teachers of astronomy on teaching methods and the use of telescopes and astronomical software for 5 summers at CU Boulder. At Crow Canyon Archeological Center in Cortez, CO they have given week-long programs on the astronomy of ancient cultures in the four corners area. Through the Rocky Mountain Nature Association they have presented day-long seminars on such topics as 'Highlights of Astronomy,' 'New Discoveries in Astronomy' and 'Astronomies of Native Americans'. In conjunction with Ranger Jeff Maugans they have developed an ongoing astronomical observing programs in RMNP (with NCAS' help). Since 1992 thousands of visitors have come to these sessions.

June 5 Program

Satellites of Summer, by Dr. Dan Laszlo

Amateur astronomers can expect questions about satellites from friends after clear, warm summer evenings. What satellite did I see? Can I see the Hubble Space Telescope, a spy satellite, or the International Space Station? I saw a bright streak in the sky, was it space junk? Amateurs with telescopes ask about fainter sights, such as “stars” slowly drifting by M11 in Scutum, or in the Orion Nebula. They might ask, can I see a geostationary satellite? The most common question is: What satellite did I see? Sunlight streaming over the North Pole in our summer keeps many satellites illuminated through the night. Several hundred objects can become bright enough to be noticed by eye alone, as they reach 4th magnitude or brighter. Binoculars and telescopes multiply the number of satellites visible. To narrow the possibilities, the sky location with an accurate date and time for the sighting is important. Useful are its magnitude, direction, and any changes in brightness. Ideal is a timing of the passage between 2 known stars. Satellites traveling East to West are uncommon, since a launch to the West exacts a penalty in payload. The Earth’s rotation assists Eastward launches. Web-based satellite prediction sites are easy starting points, www.heavens-above.com is likely the easiest. NASA’s J-Track is also helpful. Neither addresses classified objects, but some tips can be gleaned from the Visual Satellite Observer’s Web Page. Amateurs often seen objects crossing the Moon or Sun. In addition to high-flying birds, which fly long distances at night, about 1200 weather balloons are released at airports daily. The circular objects which take several seconds to cross the Sun or Moon are generally balloons, party escapes or trailing instruments. Very few satellites are large enough to be apparent as they cross, but movies are accumulating of the International Space Station, John Locker and Marcus Mehring have clips on the Web. Lights streaking in the sky are nearly all meteors, lasting at most a second or two. Space debris is much slower, visible for half a minute or more. Alan Pickup’s website tallies objects which are approaching decay. Astrophotographers capture unexpected streaks on film. Photos of M11 or M42 will include the orbits of geostationary satellites, the Clarke Belt. With some luck these can be identified. Undriven telescopes will remain centered on a geostationary object, as stars drift by. Satellite software and the GEO.TLE orbital elements will help with geosynchronous satellite ID. For our latitude, a couple weeks before the Spring Equinox, and after the Autumn Equinox, lighting and phase are favorable, and some geos can approach unaided eye visibility. Tumbling geos can glint to 2nd magnitude. Superbird A has a 20 meter solar cell span, is tumbling in near-geostationary orbit, and has predictable periods of visibility, easy in binoculars. Familiar satellites like the HST, some weather satellites, ISS and Space Shuttles can be seen. GPS would be difficult. Spy satellites can also be challenging, but are observed by hobbyists. Many popular objects are rocket 3rd stages which tumble for several months after venting excess propellant. The Iridium telephone system relies on about 70 satellites with very reflective antennas. Glints to magnitude minus 6 to minus 8 can be predicted by the Heavens-Above website. Accurate latitude and especially longitude are important for Iridium flare predictions. An error of a few miles can

substantially diminish the appearance of a flare. Iridium satellites are about 5th magnitude when not flaring. Unusual objects in orbit are “disco balls,” tethered satellites, and groups like the NOSS 2 triplets. The Japanese geodetic satellite Ajisai twinkles like a strobing 5th magnitude light. It has mirrors and retroreflectors. It is readily visible with binoculars, barely eye-visible. The TiPS pair, Ralph and Norton, reach about 8th magnitude so can be seen in large binoculars and modest telescopes. Their 4 km tether sometimes glints during a pass. The discarded solar panel from the first HST repair mission would slowly tumble and glint to 3rd magnitude. The NOSS 2-x trios are often spotted by amateurs at summer star parties. Usually 5th magnitude, they can shine temporarily at 2nd or 3rd. They typically fit in a binocular field, within 5 degrees. They are classified but can be predicted with the Heavens-Above database by input of NOSS%; find TiPS there also. Faint, challenging objects include Vanguard, Chandra X-Ray Observatory, and interplanetary spacecraft. The NEAR asteroid probe was oriented to produce a glint from its solar panels during its period of visibility. Vanguard and Chandra require a telescope. CCD cameras provide a great tool for capturing faint objects. Video cameras, night vision scopes, and webcams are finding application for satellite observing. Construction of the ISS has been documented by ground-based imaging. GOTO telescopes can be programmed for satellite tracking. See helpful weblinks below.

Dan Laszlo is an allergy physician, with Big Thompson Medical Group. His satellite observing days began with ECHO in the 60s. He is a regular lurker on the SeeSat-L newsgroup.

NCAS Business, June 5

President Dan Laszlo called the meeting to order. Vice President Max Moe announced upcoming NCAS programs. Nate Perkins, Treasurer, gave his report circulated a member list with dues status. Brad Jarvis invited members to the June meeting of the Mars Society, presented by Tony Muscatello. Dan Laszlo announced the return of 3D astrophotographer Bryan White, presenting at Discovery Center for the Summer Solstice celebration on June 21. Dan Laszlo invited members to join the public starwatches in Rocky Mountain National Park this summer.

Max Moe Takes Space Odyssey

Hello everybody,
My family and I attended a special viewing of the new Space Odyssey exhibit and Gates Planetarium at the Denver Museum of Nature and Science last night. It is definitely a must see. The planetarium show was a tour of the solar system. The heavenly spheres seemed so 3-dimensional and realistic as they filled the dome. I thought I could just reach my hand out and grab a hold of Saturn, rings or feel the warmth as Io, volcanoes spewed into space. The majority of Space Odyssey is dedicated to Mars and the upcoming landers to reach the red planet this winter. They even have an astronaut on a Martian landscape conducting field work who explains what she, doing and answers questions the viewers have. You can drive a Martian rover, create a dust devil over 8 feet tall, and experiment with water flow over the Martian surface. A spectroscopy demonstration allows you to see different sources of light and emission lines through diffraction

grating glasses, infrared cameras and sensors let you view objects in a way your eyes can, observe, a turntable with concentric rings and varying speeds reveal Kepler, laws of planetary motion, computers take you through the evolutionary process of a star of your choice, and there is so much more. I sat in on a short program called Space Today which told of the latest space stories in a T.V. news format. Not only is Space Odyssey informative and enjoyable for adults (and adolescents like myself), but there are many fun activities for small children. Kids can dress up in spacesuits and astronaut gear in the Astrotot training center, or hear a Dr. Seuss story about the cosmos on an interactive big screen.

I hope this sparks your interest and that you venture out to the museum after the exhibit officially opens June13. Clear skies.

Max

**Forwarded from Andrea Schweitzer:
Subject: Space Station Moon Movie**

Astronaut Don Pettit looked out the window of the International Space Station earlier this month and saw the full moon setting behind Earth's edge-on atmosphere. Using a handheld digital camera, he captured a rapid-fire sequence of images. The resulting movie reveals a moonset like nothing you've seen on Earth.

FULL STORY

http://science.nasa.gov/ppod/y2003/28apr_moonmovie.htm

Forwarded from Ron Baalke:

I've added a "Where's Spirit Right Now?" page to the MER website:

<http://mars.jpl.nasa.gov/mer/mission/spiritrightnow.html>

The page will track the position of Spirit (formerly MER-A) from Earth to Mars until arrival at Mars in January 2004. Five views are currently provided and are updated every 10 minutes.

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.

Scope for Sale. 10" f8 home assembled Newtonian. Excellent precision mirror by Galaxy Optics, made about 1985, optimal size high precision quartz secondary. Scope is optimized for planetary imaging, gives truly excellent images. Sonotube, Novak mirror cell and spider. Homemade focuser 1.25". Finder is half of a binocular; wooden mount a bit clunky, but it works. 12 and 24mm University Konig eyepieces included. **\$400 complete,** Steve Smith (970) 663-1513 (Loveland).

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	\$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

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

Heads up July 16-17, Mars nearly occulted by the Moon, nearest about 0130 MDT on 7/17.

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/>

From: Dan Laszlo
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TO:

Date	Mag	Starts			Max. Altitude			Ends		
		Time	Alt	Az	Time	Alt	Az	Time	Alt	Az
03 Jul	0.2	04:26:21	16	SSW	04:28:31	41	SE	04:31:32	10	ENE
04 Jul	1.4	03:30:48	18	SE	03:30:54	19	SE	03:33:12	10	E
04 Jul	0.2	05:03:44	10	WSW	05:06:47	45	NNW	05:09:51	10	NE
05 Jul	-0.7	04:07:28	29	SW	04:08:55	84	SE	04:12:06	10	NE
06 Jul	0.7	03:11:46	32	ESE	03:11:46	32	ESE	03:14:06	10	ENE
06 Jul	1.0	04:44:31	10	W	04:47:18	28	NNW	04:50:06	10	NE
07 Jul	-0.1	03:48:16	34	W	03:49:18	51	NNW	03:52:25	10	NE
08 Jul	0.6	02:52:25	38	ENE	02:52:25	38	ENE	02:54:33	10	ENE
08 Jul	1.7	04:25:22	10	NNW	04:27:47	20	NNW	04:30:12	10	NNE
09 Jul	0.9	03:28:46	26	WNW	03:29:39	31	NNW	03:32:31	10	NE
09 Jul	2.4	05:05:04	10	NW	05:06:30	12	N	05:07:55	10	NNE
10 Jul	1.2	02:32:48	32	NNE	02:32:48	32	NNE	02:34:43	10	NE
10 Jul	2.2	04:06:14	10	NW	04:08:11	15	NNW	04:10:10	10	NNE
11 Jul	1.7	03:09:01	19	NW	03:09:54	21	NNW	03:12:27	10	NNE
11 Jul	2.6	04:45:48	10	NNW	04:46:56	11	N	04:48:04	10	NNE
12 Jul	1.7	02:12:55	25	NNE	02:12:55	25	NNE	02:14:40	10	NE
13 Jul	2.2	02:49:01	14	NW	02:50:10	16	NNW	02:52:14	10	NNE
14 Jul	2.1	01:52:48	20	N	01:52:48	20	N	01:54:26	10	NNE
16 Jul	2.4	01:32:22	17	N	01:32:22	17	N	01:34:04	10	NNE
18 Jul	1.5	04:22:57	10	NW	04:25:49	30	NNE	04:28:40	10	E
19 Jul	-0.7	05:00:36	10	WNW	05:03:44	73	SW	05:06:54	10	SE
19 Jul	-0.0	21:35:55	10	SSW	21:38:47	34	SE	21:41:41	10	ENE
19 Jul	1.5	23:12:07	10	W	23:14:53	28	NNW	23:17:40	10	NE
20 Jul	0.3	04:02:25	10	NW	04:05:30	50	NNE	04:08:35	10	ESE
20 Jul	0.2	22:13:27	10	WSW	22:16:31	52	NNW	22:19:36	10	NE
21 Jul	1.6	03:04:21	10	NW	03:07:06	27	NNE	03:09:53	10	E
21 Jul	-0.1	04:40:17	10	WNW	04:43:14	36	SW	04:46:10	10	SSE
21 Jul	-0.7	21:15:07	10	SW	21:18:14	69	SE	21:21:21	10	ENE
22 Jul	1.4	21:53:11	10	W	21:56:02	31	NNW	21:58:54	10	NE
23 Jul	-0.1	20:54:30	10	WSW	20:57:37	62	NNW	21:00:44	10	NE
24 Jul	2.1	21:33:00	10	WNW	21:35:31	22	NNW	21:38:03	10	NNE
29 Jul	1.8	23:07:03	10	NNW	23:09:09	20	NNE	23:09:09	20	NNE
30 Jul	2.2	22:08:48	10	NNW	22:10:38	14	NNE	22:12:29	10	NE

A Few Bright Iridium Flares for Lemay and Trilby, Fort Collins

Date	Local Time	Mag	Alt	Az	Distance to flare centre	Intensity at flare centre
02 Jul	22:40:04	-6	19°	265° (W)	4.9 km (W)	-6 Iridium 49
03 Jul	03:18:53	-5	35°	130° (SE)	9.9 km (E)	-8 Iridium 54
04 Jul	22:37:15	-5	17°	269° (W)	27.4 km (W)	-6 Iridium 45
06 Jul	22:34:31	-6	14°	274° (W)	15.3 km (W)	-6 Iridium 22
08 Jul	02:57:29	-7	37°	141° (SE)	6.2 km (W)	-8 Iridium 50
10 Jul	04:22:31	-7	26°	101° (ESE)	11.2 km (W)	-7 Iridium 17
13 Jul	21:00:34	-6	23°	342° (NNW)	9.6 km (E)	-6 Iridium 45
15 Jul	04:00:52	-5	28°	111° (ESE)	15.0 km (E)	-7 Iridium 43

Ajisai (EGP) - Visible Passes. A tumbling, flashing geodetic satellite, 5th mag
Binoculars recommended!

Date	Mag	Starts			Max. Altitude			Ends		
		Time	Alt	Az	Time	Alt	Az	Time	Alt	Az
12 Jul	9.6	04:12:15	10	SE	04:14:16	11	ESE	04:16:17	10	ESE
14 Jul	9.0	04:20:31	10	S	04:26:59	22	ESE	04:33:25	10	ENE
15 Jul	9.4	03:30:06	10	SE	03:33:30	13	ESE	03:36:52	10	E
16 Jul	8.4	04:31:48	10	SSW	04:39:53	37	SE	04:47:57	10	ENE
17 Jul	8.8	03:39:44	11	S	03:46:14	24	SE	03:53:03	10	ENE
18 Jul	9.2	02:48:28	10	SSE	02:52:43	14	ESE	02:57:00	10	E
18 Jul	7.8	04:44:11	10	SSW	04:53:01	59	SE	05:01:51	10	ENE
19 Jul	8.1	03:52:52	17	S	03:59:11	40	SE	04:07:25	10	ENE
20 Jul	8.6	03:01:31	20	SSE	03:05:30	27	SE	03:12:37	10	ENE
20 Jul	7.5	04:57:15	10	SW	05:06:22	84	SE	05:15:30	10	ENE
21 Jul	9.0	02:10:06	15	SE	02:11:57	16	ESE	02:16:56	10	E
21 Jul	7.6	04:05:49	20	SSW	04:12:20	63	SE	04:21:15	10	ENE