

The Objective View

Newsletter of the Northern Colorado Astronomical Society

May 2003

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Next Meeting: May 1 7:30 PM
Tonight's Sky, by Corey Radman
Museum Educator, Discovery Science Center

Starlab Demonstration
Simultaneous Telescope Clinic by NCAS members
Bring your telescope mysteries: Collimation assistance,
startup help, advice on eyepieces, etc.
Planet viewing if weather permits

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 Star Party Dates

May 2, 3, 27, 28

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.

Discovery Science Center Starwatching

May 9 8:00 pm
May 15 Total Lunar Eclipse

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: June 6, June 22, 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
May 10

Other Events

Little Thompson Observatory Star Night, Berthoud
Dr. Ed Friedman, Meteorites
May 16 Star Night 7 – 10 pm
<http://www.starkids.org>

Cheyenne Astronomical Society
May 16 Cheyenne Botanical Garden 8 PM
<http://home.attbi.com/~curranm/>

Open House, Chamberlain Observatory, dusk to 10 PM
May 15, June 7, July 12, Aug 9, Sep 6 303 871 5172
<http://www.du.edu/~rstencel/Chamberlin/>

Longmont Astronomical Society
May 15, Longmont Christian School, 550 Coffman St
<http://laps.fsl.noaa.gov/cgi/las.cgi>

April 3 Program

Mysteries of Mars

Dr Steve Lee

Mars has been the most intensively investigated place since the Earth. It was studied with progressively improving telescopes for centuries, and hosted a series of spacecraft visits within the past 40 years. Steve Lee focused on Mars starting in 1974, with a college class project. Mariner 9 had returned 7000 images of Mars, which he reviewed. A favorite image dates from 1995, by the Hubble Space Telescope. From 60 million miles, the planet shows a prominent polar cap, clouds, bright and dark surface features. A brown spot is an 80,000 foot mountain, 300 miles in diameter, about the size of Colorado. The peak protrudes through the clouds. Mars' diameter is 1/2 of Earth's. Mars is very dry, no oceans. Water is locked in permafrost and the polar caps. Atmospheric water would condense to knee deep on Earth, but only a human hair's width on Mars. The Martian year is 687 days long, the day is 24h 37 minutes. Steve dreamed of owning the Jenny Craig franchise on Mars, promising instant 40% weight loss. Unfortunately the launch cost to Mars is \$50,000 per pound on Earth. The mass is 0.11 of Earth's, the atmosphere is CO₂ with pressure 0.6% of Earth's. This matches the pressure at 80,000 feet above Earth. A pressure suit is required. The temperature swings by 140 degrees from day to night. Percival Lowell was pictured at his refractor in Flagstaff, Arizona. He did the most to popularize Mars in the last half of

the 1800's. He spent a substantial sum from his family fortune to build his namesake observatory. Martian details were coming in better focus with the giant refractors of the day, and Lowell caught the public's imagination with his sketches with networks of linear canals. The canals, he proposed, were proposed to carry water from the shrinking polar caps toward the equatorial regions. The "wave of darkening with Martian summer was supposed to be growing vegetation. Some credence was given to the possibility of surface plants in the 1930's and 40's, but instrument evidence pointed to inhospitable cold. In 1965, Mariner swept by, obtained 22 images from 7 thousand miles away. All had craters. Mars was more like the Moon, it was thought, and hope of finding widespread life was dashed. Steve's introduction to the planet came with the next mission, Mariner 9, which revealed a 3000 mile canyon, and images of dry riverbeds. The hunt for life proceeded with the 2 Viking landers, accompanied by orbiters. Landers were 1000-pound craft with stereo cameras and robot arms for soil sampling. They operated through 2 Martian years. The South Polar Cap accumulates 1/3 of the atmosphere in its winter, dropping the pressure 30-40%. Olympus Mons was revealed as a massive shield volcano. Steve pictures standing on its cliffs at 30,000 feet, and looking up to 2/3 of the mountain. Valles Marineris shows massive landslides on its rims. It perhaps formed after volcanic eruptions led to a change in tilt, followed by a fracture in the crust. Subsurface permafrost then melted, and the soil collapsed, progressively widening the canyon. Steve has been involved with Hubble Space Telescope imaging of Mars since 1990. Researchers pooled proposals to improve their odds of telescope time. Scientists were horrified to learn of the mirror figuring error. Desperate for good publicity, a Mars image was sought in December 1990. The raw image revealed little, but with several months of processing, deconvolution, the first color image of Mars with HST made the cover of Life magazine. The science yield by 1997, after the 1993 repair mission, was a revelation. Massive belts of water ice clouds showed in blue light images. A 1999 image showed a 1000 mile cyclone with a 300 mile eye. Nothing like the persistence of a hurricane, it was gone in 6 hours. A map was created by WFPC2 images in March 1997. There are dark eroded lava flows, like Hawaii. Huge dust storms were tracked. Suspended dust can circulate for months. Pathfinder was to land July 4, 1997. Steve found a tan streak on a June 27 HST image, which progressed to fill Valles Marineris. Word of the storm crossed the globe by email, and his box was jammed with queries about the impending crash of Pathfinder due to the dust storm. It fortunately landed without complications. Pathfinder's landing was cushioned by airbags. The Sojourner lander is the size of a microwave oven. It roamed the site for 90 days, analyzing nearby rocks with an xray spectrometer. Internet access fueled interest in Pathfinder, with 2 billion website hits in 90 days, a record which stood until the Clinton scandal. Rocks in the area were tilted, at the tail end of a flood channel, likely triggered by volcanism. The tabloids promptly showed Pathfinder next to a Biblical Ark. In September 1997, Mars Global Surveyor began its ongoing mission. Its camera points straight down and images a 2.5 km swath. It showed miles of dune fields. Peculiar irregular tracks defied explanation until a dust devil with shadow was caught in the act of marking the surface. The poles are waist deep in CO2 ice and frost. Dark sand dunes encircle the pole. "Fingerprint

terrain" and "Swiss cheese terrain" was found. Geologically very recent changes, dating between 10 minutes to 10,000 years old, include gullies in crater walls. Salty solutions in liquid water could exist within 100 meters of the surface. The laser altimeter showed that the Northern Hemisphere is very smooth. In late 2001, the Mars Odyssey mission began. It showed flood channels in more detail. No geothermal sites have been found. The immediate future is with the Mars Explorer rovers. They are designed for 100 meters of travel daily for many months. Software is improved to allow managers to pick a rock, and the rover will maneuver to it. Rovers have a rock abrasion tool, camera and microscope. In 2005, the Mars Reconnaissance Orbiter, with its 40cm resolution, is to launch. Steve is on the team making the color camera. In 2007, one of 4 possible missions includes an atmospheric sample collector for return to Earth. A smart lander is planned for 2009. Current landers set down in a 50x100 mile zone. The smart lander would use cruise missile technology to accurately reach the landing site. Ultimately, humans will visit Mars, likely years (20+?) in the future. Expense and travel time are huge obstacles. No doubt explorers will see Martian sunsets one day.

NCAS Business, April 3

President Dan Laszlo called the meeting to order. Vice President Max Moe was congratulated for his outstanding achievement, winning the national First Place in the Astronomical League's Young Astronomer Award. Max announced upcoming NCAS programs and encouraged members to prepare for May 10 Astronomy Day events. Nate Perkins, Treasurer, gave his report and circulated a member list with dues status. Kimon Berlin polled member wishes about an update for the NCAS webpage. The poll was favorable, but some members have since asked for more input. Dan Laszlo invited members to join the public starwatch on April 4.

ISS Transits the Moon, Captured on Video

Last Thursday the ISS transited the moon from my location here in South Bend, Indiana. I was able to make a short movie with a digital camera and subsequently had images made from individual frames. I have posted the best photo along with a small movie clip (.avi format @ 104K) at the following web site:

<http://members.aol.com/mrtsp91/iss.htm>

Enjoy

Tom Laskowski

Rutan unveils SpaceShip One

MOJAVE, Calif., April 18 — Aircraft designer Burt Rutan unveiled Friday a fully-built launch system that, if flights outside the atmosphere prove successful, would be the first private manned space program. Both the spacecraft, called SpaceShipOne, and its launch platform, a futuristic jet known as the White Knight, were developed and built in secret and have already begun tests at lower altitudes.

<http://www.msnbc.com/news/902224.asp?0cb=-113151818>
<http://www.msnbc.com/news/903100.asp?0bl=-0>

Observing Report for April 26 2003

After months-long PhoDep (Photon Deprivation), a handful of us from the AG (Astronomy: General) list decided to head for the Deer Trail dark sky site. The evening started out partly cloudy with movement to the NE - I saw a major bank of clouds all across the north horizon, so I started worrying for the folks at Sterling too. I got to meet a few new characters, and few old ones I hadn't seen in months. We had a good time chatting, guffawing at jokes, and general time-wasting waiting for the clouds to clear. I did my negative-vibs suppression routine not wanting to hear any suggestions that we would be skunked.

Around 10pm we began chasing sucker holes - and got a laugh out of having some many scopes trained on one object, but that is a sign of just how bad the holes were. We had a steady breeze which was welcomed, though later it die down to one of those summer doldrum kind of nights, and then suddenly at 12:45ish, the wind came back all of a sudden, and stronger than before. This event was heralded by the gradual creep of clouds from all directions except the southeast.

The seeing started out poor and steadily increased all night until the clouds got us a little after 1pm. It was only three hours of observing, but it was 1000% more scope-time than I had previously had for the year. We had about 100" of aperture on hand, three of them 12"+ dobs.

SCT report: Mickey has traded his 9.25" away for an N11 and joined the big SCT crowd, and I think I heard Jim (not Sapp) complimenting SCTs for their advantages over Dobs. :)

My foot-wide (12") Big Blue Behemoth was put through the paces on big galaxies, bright (and faint) globulars, and blue planetaries (wow - double, almost doubly double alliteration!) and I was pleased to pickup a few old favorites from the H400 list too. 4565 (needs no introduction), 5907 (Splinter), 6543 (Cat's Eye), 4361 (Corvus), 3242 (Ghost of Jupiter), the real Jupiter, M83 (Southern Pinwheel), M104 (Sombrero), M101 (best I've ever seen the Pinwheel), M51 (not bad too, but I've seen it better), M63 (Sunflower), M64 (Black Eye), and 2403 (nice).

I put the 31mm in comfortably just under 100X for fields of view tests - trio in Leo fit nicely, M81/M82, I didn't waste time with the Double Cluster (though some were really horizon hopping), but I know they fit too.

It wasn't perfect, but starting back up the ladder, it was close enough. That's a figurative ladder - remember, I have a large SCT.
LeRoy Guatney

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. \$500 complete, Steve Smith (970) 663-1513 (Loveland).

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 Saturn 5/4, by Jupiter 5/8 by Mars 5/21, 5/22, by Venus 5/28, 29,
Mercury	Low in E, by Venus 5/26
Venus	low in E predawn
Mars	In S predawn By Neptune 5/13, 5/14
Jupiter	Near overhead at sunset
Saturn	High in W at sunset
Uranus	In Aquarius predawn
Neptune	In Capricornus predawn

Total Eclipse of the Moon May 15

Total phase from 9:14 to 10:06 MST

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/>

Radio Free Mars is a production of MarsNews.com in cooperation with the Mars Society's Radio Free Mars task force.

The first two broadcasts of Radio Free Mars from last fall are available for download at the website above.

From: Dan Laszlo
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TO:

International Space Station Passes for Fort Collins-Loveland

May 2003

Soyuz mission in progress at time of predictions, so expect times to change with boost soon
 Many low passes have been omitted, see URL for latest predictions:

<http://www.heavens-above.com/main.asp?Loc=Fort+Collins&Lat=40.585&Lng=-105.084&Alt=1525&TZ=MST>

Date	Mag	Starts Time	Max. Alt	Altitude Az	Ends Time	Alt	Az	Time	Alt	Az
30 Apr	1.8	05:29:48	10	S	05:32:07	19	SE	05:34:26	10	E
02 May	0.5	05:12:35	10	SSW	05:15:33	38	SE	05:18:32	10	ENE
03 May	1.6	04:18:28	16	SSE	04:19:29	18	SE	04:21:44	10	E
04 May	-0.7	04:56:55	17	SW	04:59:11	84	SSE	05:02:23	10	NE
05 May	0.4	04:02:56	36	SE	04:03:06	37	SE	04:06:04	10	ENE
06 May	-0.0	04:41:19	21	W	04:43:05	47	NNW	04:46:11	10	NE
07 May	-0.4	03:47:16	69	ENE	03:47:16	69	ENE	03:50:08	10	NE
07 May	1.6	05:21:09	10	WNW	05:23:30	19	NNW	05:25:50	10	NNE
08 May	1.0	04:25:36	18	WNW	04:27:12	28	NNW	04:30:00	10	NE
09 May	0.4	03:31:31	44	N	03:31:31	44	N	03:34:08	10	NE
09 May	2.1	05:06:00	10	NW	05:07:50	14	NNW	05:09:40	10	NNE
10 May	1.7	04:09:50	13	WNW	04:11:32	19	NNW	04:13:54	10	NNE
11 May	1.3	03:15:44	27	NNW	03:15:44	27	NNW	03:18:09	10	NE
12 May	2.2	03:54:12	10	NW	03:56:04	14	NNW	03:57:55	10	NNE
13 May	1.9	02:59:56	19	NNW	02:59:56	19	NNW	03:02:15	10	NNE
14 May	2.5	05:16:12	10	NNW	05:18:04	14	NNE	05:19:55	10	NE
15 May	2.7	04:20:30	10	NNW	04:21:52	12	N	04:23:14	10	NNE
16 May	2.3	05:00:29	10	NNW	05:02:52	19	NNE	05:05:14	10	ENE
17 May	2.6	04:04:56	10	NNW	04:06:48	14	NNE	04:08:39	10	NE
18 May	1.6	04:44:55	10	NW	04:47:44	28	NNE	04:50:32	10	E
19 May	2.3	03:49:25	10	NNW	03:51:48	19	NNE	03:54:10	10	ENE
20 May	0.4	04:29:32	10	NW	04:32:38	50	NNE	04:35:44	10	ESE
20 May	1.0	21:07:36	10	S	21:09:44	17	SE	21:11:52	10	E
21 May	1.6	03:34:02	10	NW	03:36:52	28	NNE	03:39:40	10	E
21 May	-0.7	21:46:50	10	SW	21:49:58	76	SSE	21:53:16	10	NE
21 May	2.2	23:24:10	10	WNW	23:26:35	19	NNW	23:29:02	10	NNE
22 May	-0.8	04:14:24	10	NW	04:17:34	78	SW	04:20:44	10	SE
22 May	0.1	20:51:34	10	SSW	20:54:32	34	SE	20:57:29	10	ENE
22 May	1.5	22:27:56	10	W	22:30:48	29	NNW	22:33:40	10	NE
23 May	0.3	03:18:51	10	NW	03:21:58	50	NNE	03:25:04	10	ESE
23 May	1.0	04:55:50	10	W	04:57:56	17	SW	05:00:02	10	S
23 May	0.4	21:31:57	10	WSW	21:35:06	51	NNW	21:38:15	10	NE
25 May	1.7	21:17:31	10	W	21:20:23	29	NNW	21:23:16	10	NE
27 May	2.3	21:03:28	10	WNW	21:05:55	19	NNW	21:08:21	10	NNE