The Objective View

January 2007

Newsletter of the Northern Colorado Astronomical Society

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Next Meeting: January 11, 2007 7:30 PM
Choice Images of the Messier Catalog,
by Lee Gregory
Discovery Science Center, Ft Collins

Club Business and Elections at 7:15 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 Programs

February 1	Richard Dietz	Solar Eclipses
March 1	Dan Durda	SWRI

NCAS Public Starwatch

January 26	6:30 pm	Discovery Science Center
February 23	6:30 pm	Discovery Science Center

Other Events

Little Thompson Observatory Star Night
January 19 7:30 pm Basic Winter Observing, Dan Laszlo
http://www.starkids.org

CSU Madison Macdonald Observatory Public Nights
On East Drive, north of Pitkin Street
Tuesdays 8 pm if clear, when class is in session

Cheyenne Astronomical Society, Cheyenne Botanical Garden
January 19 7 pm Nautical Astronomy / Celestial Navigation
http://home.bresnan.net/%7Ecurranm/index.html

Chamberlin Observatory Open House, dusk to 10 pm
Jan 27, Feb 24, Mar 24, Ap 21, May 26 303 871 5172
http://www.du.edu/~rstencel/Chamberlin/

Longmont Astronomical Society January 18 7 pm FRCC on 2121 Miller Road Joseph DiVerdi on DSES
http://longmontastro.org/

December 7 Program
Astronomy Equipment for Beginners, by Nate Perkins

Nate launched his survey with advice to consider the observer's age, ability, and patience with equipment. How much weight can comfortably lifted? Will the user be able to operate the gear safely without assistance? How long will observing sessions run? Ideally, the user has a basic knowledge of astronomy and starts with a few objects in mind to view. Interest in astronomy for a year or more is a plus. Another sign of long term interest is enjoyment from repeated views of celestial objects. What is the user's technical aptitude? An 80mm refractor can be enjoyed immediately. A 6 inch homemade reflector is satisfying but typically takes at least a few months with some expert help. Basic woodworking tools will do for construction, does the builder have those skills? What are local viewing conditions? Observers in the area can advise on how far to travel for dark skies. The temperature, humidity and wind can make observing difficult. The darkest skies are prized. If you are accustomed to mediocre skies, the improvement in view from a truly dark site can seem like 2 to 4 inches have been added to your telescope aperture. Observing can be a solo or group activity. Many amateurs will enjoy small groups for the chance to exchange eyepieces, view an object with a variety of instruments, or see some unfamiliar objects. Telescope selection is aided with a little basic knowledge of optics. The main lens or mirror is the objective. It gathers the light that enters the telescope. In general, a larger objective gives the opportunity to see fainter objects and distinguish finer details. An 8 inch (200mm) objective has 1000 times the light collecting area of a 6mm human pupil. It can resolve features 1/30 the size visible with the eye alone. The focal length of the objective is the distance from it to its focal point. The f/ ratio is the focal length divided by the objective diameter. It is easiest to make instruments with moderate focal ratios from f/6 to f/12. At f/5 or below, quality in optics is harder to achieve. Even with perfect optics, several types of distortion may occur. Observers choose the smaller f/ ratios for ease in transport and mounting, and wide fields with low magnification. Magnification is calculated by dividing the objective focal length by the eyepiece focal length. The maximum useable magnification is given by multiplying the objective diameter in inches by 50, thus 400x for an 8 inch telescope. Turbulence in the atmosphere will limit the useful power to 200x or less most nights. There are dozens of sights to enjoy at lower power. With too much power, a dim, fuzzy image results. Nate then discussed gear starting with binoculars. They are recommended for learning the night sky. The wide vistas can be gorgeous from dark sites. Even inexpensive binoculars at $100 or less can be quite functional. The view with 2 eyes is comfortable and upright. Beginners are often steered toward 7x to 10x power, and objectives from 35mm to 50mm. Hand-holding is easy with smaller units. Weight rapidly gets uncomfortable with larger glasses over 50mm, and even at 10x, most people will need a support to avoid shaky views. At some point, most binocular users are ready for more light gathering and more power. Most people

picture a telescope as a refracting telescope. The objective is a lens. Galileo's design dates to 1609. These scopes are low-maintenance. They are promoted for sharp, contrasty views. Daytime use is simple. Low cost designs will have a doublet objective lens, called an achromat. The short focal ratio achromats have chromatic abberation visible to most people on bright objects. The Moon and bright planets will have a violet edge. The color error can be less in a doublet lens with a fluorite or ED element. An Apochromat fits a strict definition for color correction. They are costly. Larger refractors over 4+ inches are an effort to mount or move for most people. In pursuit of more aperture, many choose a Newtonian reflecting telescope. The design dates to 1671. These have the largest aperture for a given cost. Mirrors have no chromatic abberation. The objective mirror is mounted loosely to avoid strain that distorts the images. Collimation (alignment) is adjustable and often needed after these scopes are transported. At f/8, the alignment is forgiving. An f/4 telescope should be aligned to better than 1/32 inch to perform its best. The parabolic mirrors in common reflectors have an abberation called coma which increases away from the center of the field. Observers often add corrective lenses to tame coma when the focal ratio is f/5 and below. Reflectors with long focal lengths require a step-stool or ladder to reach the eyepiece. The optics are exposed to dust. Daytime use is not favored due to an inverted view and base with fixed height. Telescopes which employ mirrors and lenses to gather light are catadioptric designs. The folded light path gives a compact tube. This makes transport and mounting easier. The primary is protected so it stays clean. Collimation needs are limited. The units are relatively expensive for their aperture. They need measures to prevent dew collection on their front element. Units that focus by moving their main mirror can suffer image shift which affects CCD imaging. Scopes with a relatively large central obstruction >25% of the aperture compromise low-contrast planetary detail. Nate then tabulated the strengths and weaknesses of telescopes in small, medium and large apertures. Even the best optics can suffer if the telescope mount is inadequate. A flimsy mount will vibrate with contact or wind. Vibration should be damped within a second or two, to avoid prolonged waits for sharp views. An ideal mount gives a comfortable range of viewing positions working at the horizon or zenith. Be aware that every mount will make some part of the sky inaccessible or awkward to view. The Alt-azimuth mount allows motion horizontally or vertically. Dobsonian reflectors and less expensive refractors use altazimuth mounting. They are simple for daytime use. They do require a motion on both axes to track celestial objects. Catadioptric scopes may be set up this way. If one axis is aimed to parallel the Earth's axis, the mount becomes an equatorial mount. It allows simple motion about one axis for tracking as the Earth turns. Some practice is needed to set up and use equatorial mounts, but such mounts with drive systems are suited to viewing for large groups and astrophotography. Either type of mount is available with motors and electronics which will point the telescope. "Go-to" mounts allow many objects to be sighted in an evening. Expect moderate expense for good accuracy. If on a first telescope, owners of Go-To mounts may not be motivated to learn their way around the night sky. Telescope eyepieces allow the user to change magnification and field of view. Plossl and orthoscopics are good budget designs. More expense buys wider fields, more sharpness at the edges. Most observers pick up a Barlow lens that couples to several eyepieces and increases their power by 2 or 3 times. Filters can help views of brighter objects like planets or the Moon. Light pollution filters reject some of the background sky brightness, so planetary and some diffuse nebulae stand out. Essentials for observing enjoyment are: clothing for 20 degrees F colder than the forecast low. Recommended are gloves with thin fingers or removable tips, hat, thermal underwear with Merino wool, wool socks with silk liners. Chemical glove warmers help. An LED flashlight with adjustable switch is best. Good star atlases include a planisphere, and basic atlas such as the Cambridge Star Atlas. Terence Dickinson's Nightwatch has good intro charts. A table and adjustable chair are great for comfort and easing fatigue. Remember to pack basic tools for telescope and mount. How to start, based on a budget? The bargain choice for $0 to $25 is attending an astronomy club. If spending $200 or less for a new scope, most advise starting on binoculars and books. For $300 to $500, a reasonable 3 or 4 inch refractor, or 6 to 8 inch Dobsonian reflector can be found. Most observers will be happy for several years before aperture fever hits. Beginners are cautioned to avoid units that tax the physical strength of the user. Avoid scopes promoted by extremes of magnification. Look for standard 1.25 or 2 inch eyepiece holders, not smaller. A mount that shakes or sticks will likely become frustrating. Nate steers away from binoculars under $50 or greater than 10x, refractors for less than $300 or 3" aperture, reflectors <$300 or 4 inch aperture, and catadioptrics under $300 or 3 inch aperture. Lightly used gear can offer bargains, assuming it cost more than these limits initially. However, enjoyment is possible with a wide variety of instruments, as long as they get used. Among local vendors, Jax in Ft Collins, AstroSystems in LaSalle, and S&S Optica in Englewood are helpful. On the web, Anacortes Telescope and Wild Bird, Astronomics, and Orion Telescope provide good service. Local amateurs are delighted to field questions and give demos, so give local star parties a visit. The Internet has free reviews at www.cloudynights.com, www.astromart.com, and Ed Ting's www.scopereviews.com.

NCAS Business, December 7 2006

Vice President Nate Perkins called the meeting to order. Nominations for officers were solicited. Nominees are: Nate Perkins, President. Greg Halac, Vice President. Robert Michael, Treasurer. Dave Chamness, Secretary. Additional nominations are welcome until the January 2007 meeting. The meeting schedule and observing nights were announced. Members were alerted to the planetary trio, Mercury, Jupiter and Mars.

Decay of COROT Booster Seen From Northern Colo, Nebraska on Jan 4 2007

Hi Everyone,

I was lucky enough to observe something breaking up in the atmosphere this morning at 6:14 a.m. Luckily this was also seen by the 7news helicopter pilot, so you can see the end of the event at www.thedenverchannel.com . I would estimate this was the last 1/2 of the entire event, time wise. I was in my car traveling north on the west side of Fort Collins. I am used to seeing big jets on approach to DIA coming in over the mountains from the North West with their landing lights on. When these bright landing lights hit a small cloud it can look like a very bright spot with a bit of white halo due to the cloud. After just a few seconds I determined that this was not the case. The brightness increased, and started to break up, but when I first saw it, there was just one bright spot. The path of the object appeared to be north to south, almost exactly, as far as I could tell. What ever this was appeared to be crossing the sky at a rate that is comparable to the ISS passes we have seen lately, but perhaps a little faster. I watched it for about a minute as it traveled from the northwest to the southwest. Very slow for a meteor-like object, yes?

Finally, walking into work this morning, a FEDEX driver mentioned that he had seen the morning 'fire-ball' but he saw it when he was "20 minutes south of DIA." As he described it, he saw the object appear and disappear at the approximately same Northwest and Southwest angles that I did. So considering that we viewed the same event from 60 miles apart, the object must have been very far away.

Anyone else get a look at this thing?

Regards,

Jim Hulings
From Tom Teters:

My brother just called from Mitchell, Nebr (35miles east of Wyoming line)and told me he went out to fed his dog at 6:20 am this morning and guess what he saw. Said it was about 10* above the horizon and going directly N/S, as far as he could tell and it was breaking up, one bright object and a few dimmer ones flying off. He was asking what it was. Very kewl, I also told him about cloudbaitobservatory report page, has anyone else made reports or taken pictures? Looks like about 30 folks did around the region.
T.C. ***TjT***

At about 6 AM this morning, I was out looking for Quadrantids and saw the same object, about 15 deg above the horizon, moving about 8 degrees per second from direct North to South, over Horsetooth Mountain in Fort Collins. I thought this was a bolide, but it was moving way too slow. There were about 15 focal light points, followed by 4-6 degree long "tails". After doing some looking on the web, it appears to be the reentrant booster stages of a Russian Soyuz 2-1B rocket that was used to launch the French Space Telescope-COROT.

Dave Getzy
Fort Collins

Sent: Friday, January 05, 2007 4:14 AM
Subject: 2006-063B decayed

2006- 063B #29679 Soyuz U - last stage (COROT launch) SPACETRACK announced in their second final message issued January 4, 13:30 UTC the decay on January 4. 2007, 13:15 UTC +/- 1 minutes, 51.6°N, 252.8°E descending over Canada. MPM+ REENTRY (Version2.0) based on ELSETs 07003.676... - 07004.468... and SFX 080, Ap 010, shows the decay on January 4, 13:14 UTC +/- 11 minutes, 55.40°N, 252.90°E also over Canada.

Harro Zimmer, Berlin Germany

Space Weather News for Jan. 4, 2007
http://www.spaceweather.com

DENVER FIREBALL: A spectacular fireball streaked over Denver, Colorado, this morning. Observers described it as "brilliant, slow, twinkling, sparkly and full of rainbow colors." Contrary to some reports, it was not a Quadrantid meteor. It was the decaying body of a Russian rocket that launched the French COROT space telescope on Dec. 27th. Links to video and a ground track may be found at http://spaceweather.com.

Best Looks

Moon	By Saturn 1/6 eve
	By Antares and Jupiter 1/15; by Venus 1/20
Mercury	Very low in SW end of Jan; below Venus 1/31
Venus	Low in SW at dusk
Mars	Low in SE at sunrise
Jupiter	Low in SE at sunrise
Saturn	High after middle of night
Uranus	In Aquarius early eves
Neptune	Not visible in twilight

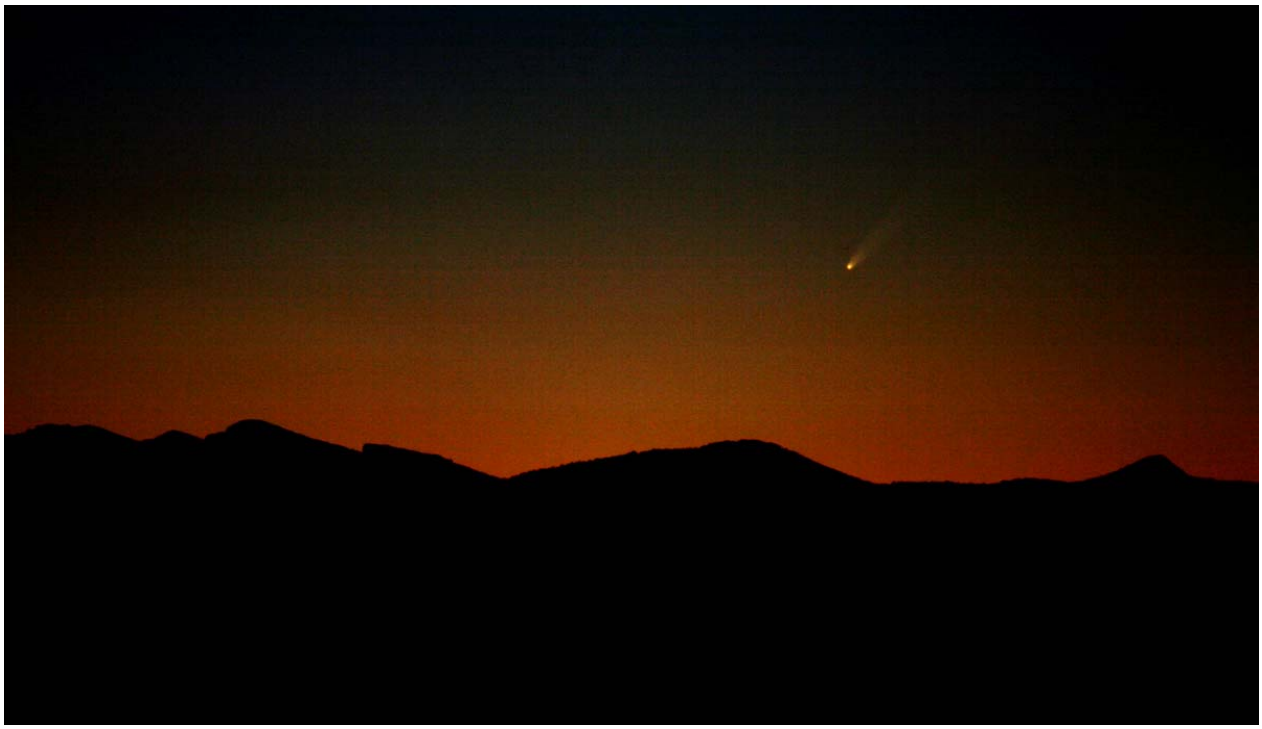
From:
Daniel Laszlo
2001 S Shields St Building H
Fort Collins CO 80526

TO:

International Space Station passes for Loveland – Fort Collins January 2007

Date	Mag	Starts			Max Altitude			Ends		
		Time	Alt	Az	Time	Alt	Az	Time	Alt	Az
13 Jan	2.9	06:12:57	10	SSE	06:14:03	12	SE	06:15:08	10	ESE
14 Jan	0.7	06:32:57	10	SSW	06:35:33	37	SE	06:38:10	10	ENE
15 Jan	2.7	05:21:46	10	SSE	05:22:34	11	SE	05:23:21	10	ESE
16 Jan	0.7	05:42:41	21	S	05:43:59	34	SE	05:46:33	10	ENE
17 Jan	-1.0	06:04:32	33	WSW	06:05:33	65	NW	06:08:20	10	NE
18 Jan	2.7	04:54:41	11	ENE	04:54:41	11	ENE	04:54:48	10	ENE
18 Jan	0.4	06:26:01	17	WNW	06:27:18	24	NNW	06:29:40	10	NNE
19 Jan	1.9	05:15:54	15	NE	05:15:54	15	NE	05:16:33	10	NE
19 Jan	1.2	06:47:39	10	NW	06:49:10	14	NNW	06:50:43	10	NNE
20 Jan	1.4	05:36:55	16	NNE	05:36:55	16	NNE	05:37:50	10	NNE
21 Jan	1.4	05:57:47	14	N	05:57:47	14	N	05:58:50	10	NNE
26 Jan	1.9	06:10:03	10	N	06:10:35	10	N	06:11:06	10	NNE
27 Jan	1.5	06:30:30	10	NNW	06:32:16	15	NNE	06:34:02	10	ENE
29 Jan	1.6	05:39:18	14	N	05:39:42	15	NNE	05:41:24	10	NE
30 Jan	0.7	05:59:42	17	NNW	06:01:10	27	NNE	06:03:36	10	E
31 Jan	-0.9	06:20:08	14	NW	06:22:22	75	NNE	06:25:10	10	ESE
01 Feb	1.6	05:09:19	21	ENE	05:09:19	21	ENE	05:10:48	10	E
01 Feb	0.2	06:40:55	10	WNW	06:43:24	29	SW	06:45:52	10	SSE
02 Feb	-0.6	05:29:49	63	ENE	05:29:49	63	ENE	05:32:21	10	ESE
03 Feb	-0.1	05:50:23	33	SW	05:50:33	33	SW	05:53:05	10	SSE

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



Comet McNaught C/2006 P 1 **Dan Laszlo 1/9/2007 Boyd Lake by Loveland CO**