

The Objective View

Newsletter of the Northern Colorado Astronomical Society

February 2005

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Open House, Chamberlain Observatory, dusk to 10 pm
Feb 12, Mar 19, Apr 16 303 871 5172
<http://www.du.edu/~rstencil/Chamberlin/>

Longmont Astronomical Society
February 17 7 pm 550 Coffmann St
<http://longmontastro.org/>

About Our February Speakers

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.

Next Meeting: February 3 7:30 PM

Astronomy of Ancient Peoples

Drs. Steve and Irene Little

Ancient civilizations without historical records reveal the astronomical knowledge of their cultures through the structures they leave behind. We will give some examples of these interpretations of ancient astronomical knowledge and explain what they were observing.

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 Dark Sky Star Party Dates

February 4, 5, 11, 12

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. The site is now officially wheelchair accessible, but there are no facilities so bring essentials. Call **Tom Teters**, tomt@starmon.com, with questions about star party status or dates, 482-5702.

Starwatch at Discovery Science Center

703 E Prospect Ave, Fort Collins

February 18 6:30 pm

Other Events

Little Thompson Observatory Star Night, Berthoud

February 18 Star Night

<http://www.starkids.org>

Cheyenne Astronomical Society

February 18 7 pm Cheyenne Botanical Garden

<http://home.bresnan.net/~curranm/>

January 6 Program

The Kansas Cosmosphere, by Dr. Dan Laszlo

Travelers on Interstate 35 near Wichita see directions to a space place sprouting among the cornfields. The area hosts Amish and agriculture, and an extraordinary collection of aerospace artifacts. Adjacent to Hutchinson Community College, Titan and Redstone rockets tower over the Cosmosphere. Near the entrance, a bronze sculpture commemorates the last footsteps on the Moon. Inside, an SR-71 Mach 3 spyplane dips within reach. Recreated to scale is the nose and cargo bay of the Space Shuttle Endeavour, and a research jet is suspended in a hard bank. Visitors are invited to lunch in the café and catch an IMAX or planetarium show. The dome projector is a Spitz sphere. The main floor hosts Dr. Goddard's Laboratory and a few spacecraft on static display. Downstairs is the heart of the space history display. The collection begins with a V-2 rocket in a recreation of the underground factory in the tunnels of Nordhausen. The ballistic rockets were not prohibited by the Treaty of Versailles. The display describes the grim process that cranked out thousands of V-2s and pulse-jet V-1s, their effect on the British in WW II, and the drain the project imposed on German resources. The role of Werner von Braun is

discussed. Never built was a modified 2-stage version which could have crossed the Atlantic. Germany's best test pilot was a woman, Hanna Reitsch. Her rides on a modified V-1 prototype allowed correction of its flight instability. "It was like riding a cannonball." As the end of the war approached, von Braun surreptitiously kept V-2 documents and transferred most of his team, plus train cars of material, to U.S. hands. Stalin reacted by impounding all remaining materials and German staff. Led by Russian visionary Sergei Korolev, the U.S.S.R. jumped ahead in development of the ICBM. The limits of the human body were probed with massive centrifuges and rocket sleds. Development of pressure suits was as costly and time-consuming as creation of the X planes of high altitude research. Chuck Yeager piloted the Bell X-1 through the sound barrier. The world awoke to the success of the Soviets in 1957 with the launch of Sputnik I. The travails of the U.S. Space Program, the Race to the Moon, and Post-Apollo years are well documented. The collection includes the gloves worn by Armstrong and Aldrin on their moonwalks. The Apollo 13 capsule is on display. Full-scale models of the Lunar Module, and the unmanned Russian Lunokhod lander are shown. The Cosmosphere hosts the world's premier space artifact restoration program. Projects since 1979 included Gus Grissom's Liberty Bell 7 Mercury capsule. Currently the Gemini 6 & 10 capsules are under restoration for the National Air and Space Museum. The center is a Smithsonian affiliate. Gift shop visitors can take home aerospace momentos, such as a MiG pilot flight suit. Camps are offered for children and adults. In all, the center is well worth a visit, see www.cosmosphere.org for more information.

NCAS Business, January 6 2005

President Dan Laszlo called the meeting to order. The treasurer's report was given by Nate Perkins. Nominees for 2005 officers were Greg Halac, President; Nate Perkins, Vice President; Dave Chamness, Treasurer; Dan Laszlo, Secretary. No other nominees were submitted. The slate was elected by the attending members. NCAS participation in IDSA and the Astronomical League was discussed. Public events were announced for January 2005. Members were reminded about Comet Machholz.

Four Essential Lunar Atlases Become Affordable

by Lee Gregory

Four lunar atlases that are essential for the serious lunar observer have recently become affordable. Perhaps the most popular of these is The Atlas of the Moon by Antonin Rukl. This detailed atlas has been out of print for a decade and copies go for about \$300.00 on the used book market. A "revised, updated, and improved with expanded text and maps" edition (red ink replaced by blue ink) has recently been printed by Sky Publishing (Sky & Telescope magazine) at a price of \$44.95 plus shipping (<http://skyandtelescope.com/shopatsky/detail.asp?catalog%5Fname=Skypub&product%5Fid=59074>)

The Consolidated Lunar Atlas by Gerald P. Kuiper, Ewen A. Whitaker, Robert G. Strom, John W. Fountain, and Stephen M. Larson was published in 1967 through necessity of the US space program. It consisted of a blue box of photographic prints and a booklet guide. Its strength is that features on the Moon are shown at several different illuminations, with particular attention paid to the terminator. The imagery is the best ground-based whole-Moon collection ever assembled and allows the discernment of relief features only a meter high at the terminator. This is great for Earth-bound observers. Only 250 copies were produced. Today, a complete set is rare and ultra-expensive, selling for many thousands of dollars. Fortunately, it is now available online for free (<http://www.lpi.usra.edu/resources/cla/>) or can be ordered as a two CD-ROM set for \$10.00 plus shipping from the Lunar and Planetary Institute (<https://www.lpi.usra.edu/store/products.cfm?prod=41>)

The Lunar Orbiter Photographic Atlas of the Moon, SP-206 (LOPAM) by David E. Bowker and J. Kenrick Hughes, prepared by NASA's Langley Research Center, was published in 1971. This atlas contains 675 photographic plates compiled from images taken by the Lunar Orbiter missions in the 1960s. Today, it is still the definitive reference to the global photographic coverage of the Moon. The high-resolution images are excellent for studying lunar morphology because they were obtained at low to moderate Sun angles (about 20%). This atlas, of course, shows the most detail. Selling for \$19.95 when published, it now goes for about \$300.00 a copy. It also is available online for free (http://www.lpi.usra.edu/resources/lunar_orbiter/) or can be ordered as a DVD-R for \$10.00 plus shipping from the Lunar and Planetary Institute (<https://www.lpi.usra.edu/store/products.cfm?prod=49>). Also, publisher Springer-Verlag has announced that it will publish in 2005 the Lunar Orbiter Photographic Atlas of the Near Side of the Moon by Charles J. Byrne. "Using 21st century techniques, Charles Byrne---previously System Engineer of the Apollo Program for Lunar Orbiter Photography---has removed the artifacts and imperfections to produce the most comprehensive and beautifully detailed set of images of the lunar surface. The book has been organized to make it easy for astronomers to use, enabling ground-based images and views to be compared with the Orbiter photographs. The photographs are striking for their consistent Sun angles (for uniform appearance). All features have been identified with their current IAU-approved names, and each photograph has been located in terms of latitude and longitude. To help practical astronomers, all the photographs are systematically related to an Earth-based view. A CD is included with the book, providing the enhanced and cleaned photographs for screen viewing, lectures, etc." The projected price is \$79.95.

The Lunar Aeronautical Charts (LAC), 44 charts at a scale of 1:1,000,000 (22 by 29 inches), were produced by the U.S. Air Force in the 1960s. These charts were made for astronaut navigation in lunar orbit and landing approach, mission planning, and such. Photographic data and visual observations made at Lowell Observatory were combined to produce the

charts. The perspective is from above the middle of the chart, not from Earth. These beautiful shaded-relief charts were published in book form in 1969 as the Times Atlas of the Moon. This out of print book now goes for \$150.00 to \$300.00 a copy. A complete set of the original charts, if it could be found, would cost thousands. The LAC shows more detail and nomenclature than Rukl's Atlas of the Moon. Fortunately, the charts are now available online for free

(<http://www.lpi.usra.edu/resources/mapcatalog/LAC/>)

or can be ordered as a CD-ROM (JPEG2000 viewer required) for \$10.00 plus shipping from the Lunar and Planetary Institute at

<https://www.lpi.usra.edu/store/products.cfm?prod=50&cat=5>

. Another source of the scanned charts is a CD-ROM (no special viewer required) for about \$11.00 (includes shipping) from Peter Grego, Lunar Section Director, Society for Popular Astronomy (UK), author of the books Collision Earth! and the Moon Observer's Guide (Firefly), in England

([http://stores.ebay.co.uk/Moon-Maps-and-](http://stores.ebay.co.uk/Moon-Maps-and-Memorabilia_W0QQssPageNameZVISToreHeaderLinksQQTZ)

[Memorabilia_W0QQssPageNameZVISToreHeaderLinksQQTZ](http://stores.ebay.co.uk/Moon-Maps-and-Memorabilia_W0QQssPageNameZVISToreHeaderLinksQQTZ) [km](http://stores.ebay.co.uk/Moon-Maps-and-Memorabilia_W0QQssPageNameZVISToreHeaderLinksQQTZ)) (an eBay Store).

From Andrea Schweitzer: Huygens images

At the moment, I think some amateurs are ahead of the pros at stitching together this raw data into panoramic images!

Take a look at the images at:

<http://anthony.liekens.net/index.php/Main/Huygens>

to get an idea of how much the amateur community is accomplishing.

On Mon, 17 Jan 2005, Andrea Schweitzer wrote:

> Subject: see all the Huygens raw images

>

> By now you've probably seen some of the incredible
> images of Titan!

>

> But if you'd like to see the behind-the-scenes

> raw images, check out:

> <http://esamultimedia.esa.int/docs/titanraw/index.htm>

>

> Andrea

EVENT UPDATE FROM BOULDER BOOK STORE

<http://www.boulderbookstore.com>

Thursday, February 24, 7:30 p.m.

SIR ROGER PENROSE will speak & sign "The Road to Reality."

<http://www.amazon.co.uk/exec/obidos/ASIN/0224044478/026-5491357-1022806>

Synopsis

The Road to Reality, some 1000 pages long, aims to provide a comprehensive account of our present understanding of the

physical universe, and the essentials of its underlying mathematical theory. No particular mathematical knowledge on the part of the reader is assumed - the early chapters providing the essential mathematical background for the physical theories described in the remainder of the book. The aim is to convey something of an overall understanding - a feeling for the deep beauty and philosophical connotations of the subject, as well as of its intricate logical interconnections. Clearly, a work of this nature is challenging, but there is enough descriptive material to carry the less mathematically inclined reader through, as well as some 450-500, mostly hand-drawn, figures. The book provides a feeling for all the key issues and deep current controversies, and counters the common complaint that cutting-edge science is fundamentally inaccessible. The topics covered in this book include: the roles of different kinds of numbers and of geometry in physics; the ideas - and magic - of calculus and of modern geometry; notions of infinity; the physics and mathematics of relativity theory; the foundations and controversies of quantum mechanics; the standard model of particle physics; cosmology; the big bang; black holes; the profound challenge of the second law of thermodynamics; string and M theory; loop quantum gravity; twistors; fashions in science; and new directions.

>From the Publisher: Nothing less than a comprehensive guide to the universe, this is arguably the most important work of science, aimed at the general reader, to be published in living memory.

Best Looks

Moon	By Mars 2/5; By Pleiades 2/15 evening; By Saturn 2/19, 20; Near Jupiter 2/27
Mercury	Low in W end of month
Venus	Difficult near Sun
Mars	Low in SSE at dawn
Jupiter	In S predawn. Near Theta Vir 2/19
Saturn	Overhead in middle of the night

Scope for sale

Complete Nexstar 9.25 GPS with XLT coatings, carbon-fiber OTA, purchased in November, 2003. Under warranty. Selling to invest in a large dob. Plus flex dew shield, 2 in TV visual back and 2 in TV diagonal, Bob's Knobs; plus all the 1 1/4 inch accessories including the full 1 1/4 inch EP kit, HC "wing" that mounts on fork arm; tripod. Scope has been used many times, works well. Includes dust on corrector, and no doubt you'll find cosmetic scratches if you look hard but nothing you'll mind as long as you recognize that this is a used scope! The LCD unit of the HC is slightly loose in its housing. I sometimes get the slow slews and failure to level discussed in Nexstar Yahoo group, apparently fixed with download of new firmware but I'll leave that up to you. Right now alignment and GoTo are right on and this scope will be in monthly new moon use until sold (and that's when I send my deposit to Obsession!). Will ship in original box/foam at your expense, or meet within a couple hundred miles of Boulder, CO. \$1500. Email bill.travis@att.net

From: Dan Laszlo
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Fort Collins CO 80526

TO:

International Space Station Passes

February 2005

Date	Mag	Starts Time	Alt	Az	Max Altitude Time	Alt	Az	Ends Time	Alt	Az
07 Feb	1.7	06:21:14	10	SSW	06:23:42	24	SE	06:26:11	10	ENE
09 Feb	1.0	05:41:38	10	SSW	05:44:16	30	SE	05:46:55	10	ENE
10 Feb	-0.8	06:09:17	10	WSW	06:12:09	67	NW	06:15:05	10	NE
11 Feb	0.7	05:05:08	36	ESE	05:05:08	36	ESE	05:07:32	10	ENE
12 Feb	-0.7	05:32:29	53	NW	05:32:38	54	NW	05:35:33	10	NE
13 Feb	0.8	05:59:39	17	NW	06:00:46	21	NNW	06:03:07	10	NNE
14 Feb	1.8	04:54:58	18	NE	04:54:58	18	NE	04:55:55	10	NE
14 Feb	1.6	06:27:42	10	NW	06:29:04	12	NNW	06:30:26	10	NNE
15 Feb	1.3	05:21:52	18	N	05:21:52	18	N	05:23:24	10	NNE
16 Feb	1.7	05:48:40	11	NNW	05:49:29	12	NNW	05:50:40	10	NNE
18 Feb	2.0	05:10:25	11	N	05:10:25	11	N	05:10:48	10	N
20 Feb	2.0	06:05:15	10	NNW	06:06:31	12	NNE	06:07:45	10	NE
22 Feb	2.0	05:25:14	10	NNW	05:26:39	13	NNE	05:28:06	10	NE
23 Feb	1.3	05:52:23	10	NNW	05:54:46	22	NNE	05:57:09	10	ENE
24 Feb	2.0	04:46:47	14	NNE	04:46:47	14	NNE	04:48:20	10	NE
25 Feb	1.2	05:13:28	18	NNW	05:14:46	24	NNE	05:17:16	10	E
26 Feb	-0.6	05:40:13	15	NW	05:42:33	70	NE	05:45:29	10	ESE
27 Feb	1.5	04:35:23	25	NE	04:35:23	25	NE	04:37:17	10	E
27 Feb	0.3	06:07:27	10	WNW	06:10:05	29	SW	06:12:40	10	SSE
28 Feb	-0.9	05:02:20	84	N	05:02:24	86	NE	05:05:19	10	SE
01 Mar	0.5	05:29:25	23	WSW	05:29:49	24	SW	05:32:16	10	SSE