

OBSERVER

Unchained Melody



MARKARIAN'S CHAIN

Markarian's Chain is a string of spiral, elliptical, and interacting galaxies that is part of the larger Virgo cluster. It contains giants M84 and M86 (upper center), as well as NGC 4477, NGC 4473, NGC 4461, NGC 4458, NGC 4438 and NGC 4435. The massive galaxy M87 is at lower right. Galaxies 4438 and 4435 just above center are interacting, which causes the irregular shape - these are sometimes known as the "Eyes" galaxies.

Image copyright 2010 Pat Gaines

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Calendar	
4.....	Easter
6.....	Last quarter moon
14.....	New moon
21.....	First quarter moon
28.....	Full moon

APRIL SKIES *by Dennis Cochran*

Our beloved Saturn is back as the main attraction of these spring nights, albeit with a skimpy ring system that has yet to fill out to its greatest glory. Many of us remember how we were roped into astronomy by the sight of Saturn. With the help of the ringed gas giant, nine times the size of Earth, we may yet attract new people to our hobby. All we need now is a little cooperation from the weather gods.

Mars, the planet of mystery and green men, is past its days of maximum brightness and is fading fast, already west of the zenith when the sun sets. The 'green man' connection was born of the illusion of canals caused by the propensity of the human brain to manufacture false patterns out of barely-seen random details. If you

hike at night you'll know what I mean. Those patterns on Mars, the canals, looked like the water projects of a civilization on an arid planet and explained where UFOs had to be coming from. Now we make our own UFOs and send them as interplanetary ambassadors to these same planets, replacing science fiction with science fact.

Jupiter is a just-before-sunrise phenomenon and probably will not be seen by any of us for awhile. At the beginning of the month, however, one can see the Venus-Mercury pairing in the early evening sky, quite close together. Speaking of UFOs, bright Venus is responsible

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PRESIDENT'S CORNER

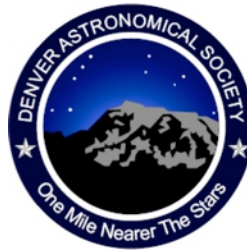
First, as the new president, I'd like to say thank you to Ron Mickle for an outstanding year as DAS President, and fellow members of E-board, Public Night volunteers, and those who serve on committees for all their contributions to the DAS. A special thanks goes to our DAS *Observer* editor Patti Kurtz and DAS website and membership manager, Darrell Dodge, who work tirelessly behind the "scenes" to keep you informed and our membership roster current.

I'd like to welcome all new members to the DAS, particularly if you've just picked up or revived a long dormant interest in amateur astronomy or astronomy in general. They say that astronomy is everyone's first science, along with dinosaurs, when we're kids in school. Then sometime along the way in our "education" we find other interests or life takes us on different paths. So, welcome back or just welcome; we share your interests and hope we can help feed your curiosity and grow.

Many of us drop astronomy as a hobby. There are various reasons cited; it's too hard, too expensive to buy telescopes, etc. But many of us in the DAS have been pursuing this as a life-long hobby or interest for many years. What is the secret to growing your interest in astronomy? There is that "one-thing" and I think it is a fairly simple answer—observing. Casually looking up at the night sky gets us interested to start with, and keeps us going for many years. We just add more to our observing as we grow into this as a hobby, avocation or profession.

It's always been fascinating to me how such a simple interest can take you in so many other directions and 'sub-areas' of other aspects of life or technology. If you develop a need or interest in building your telescope, this can lead to wood-working to build finely-crafted telescopes, grinding and figuring glass to mathematical precision, or metal working and machining, electronics and computer technology. Photography now combines CCD imaging and image processing software. Other aspects of amateur astronomy lead to the whole universe of sciences, history and current sci-tech industries related to space and space exploration. In my case, an early interest in astronomy lead to photography and my profession as a geologist. I've known several cases where someone's simple interest in just looking up at the night sky lead them down new life-paths, working at major observatories, space related industries or the NASA space program. Past-president Ron Mickle is a perfect example. He was just another desk pilot, slaving for the TSA, but has pursued a degree and is now teaching astronomy and living his dream.

But it all starts and continues with observing the night sky. The DAS is all about opportunities to get out



**DAS PRESIDENT,
RON PEARSON**

Photo courtesy Jack Eastman

Continued on Page 4

Society Directory

- President:**
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- | | |
|----------------------------------|-----------------|
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| Frank Mancini | Steve Solon |
| Keith Pool | Dan Wray |
| Ron Mickle, Past President | |
| President Emeritus, Larry Brooks | |

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Denver, Colorado 80210

The Executive Board conducts the business of the DAS at 7:30 p.m. at Chamberlin Observatory. Please see the Schedule of Events for meeting dates. All members are welcome.

www.denverastro.org

APRIL SKIES (CONTINUED FROM PAGE 1)



WESTERN VEIL NEBULA (NGC 6960)

The Western Veil Nebula is a fragment of the larger Veil Nebula complex. The nebula is in the constellation Cygnus, making it a good summer-time object. The Veil Nebula can be seen with modest telescopes under dark skies. A UHC or OIII filter is effective at improving contrast. As the nebula expands, it sweeps up interstellar dust, revealing more faint background stars in the eastern (left) side of the image. North is up in the image. Image details: Modified Canon XS camera, ISO 800, 5 x 300 seconds, 7-inch f/4 Mak-Newt, CGE mount, processed in Adobe Camera Raw and Photoshop CS4, July 2009.

Image copyright 2010 Alan Erickson

for many of those alleged sightings. She is just too bright to believe; some cultures ranked her with the sun and moon as a non-stellar object.

Saturday the 24th, the night of our Open House, with three-fourths of the Moon's face illuminated, the terminator will be in a good position for shadowing the craters Tycho and Clavius, located just left of center below the Moon's equator, with Clavius straight

south from Tycho (remember that in your scope this arrangement may be reversed and upside down). *Astronomy* magazine reminds us on page 41 that they are examples of a young and an old crater. The larger Clavius is old enough to have younger craters scattered across its floor. Tycho, the younger and smaller, has a prominent central peak.

Last year we spoke of the "bowl" of Virgo, the home of the Virgo galaxy cluster, located just southeast of the rear-end triangle of Leo. And last month we mentioned that one would observe the cluster during a Messier Marathon in order to pick out the M-objects among the many galaxies nestled in the bowl, including its central giant elliptical galaxies, M84, 86 & 87. This year we have Saturn caught in the bowl like a plump berry in our cereal, over near the beta star of Virgo in the bowl's southwestern depths. Saturn will be almost directly south of Denebola, the star at the tip of Leo's rear triangle. With these riches one could spend all night carefully cruising this region of the sky. I believe it was *Sky & Tel's* March issue, which I never received, that had an interestingly-illustrated article about the details of the Virgo Cluster; I saw it briefly at a bookstore. Did anyone else miss their March *S&T*?

Finally, the "Fourth Bad Thing That Can Happen to You Whilst Observing:" Rats. If you feel something run up your back to the top of your head, stop to look around (perhaps leaving a little souvenir) and then run down again, it was probably a rat (or maybe a cacomistle). The latter is larger than a rat, so it would be like having a living coonskin cap on your head (I will, unlike David Letterman, refrain from making Donald Trump jokes at this point). This rat attack actually happened to my mother. Okay, it was a mouse that jumped out

of the pantry onto her head, but it's almost the same. Night-skulking rats may also get tangled in your hair. So remember, if you feel something around your ankles, that's vermin and snakes, while something on your head is a rat. While you're shoo-ing the rats off your head, their friends, the pack rats, may be running off with your newest eyepiece.

HOME-GROWN DAS AT THE APRIL GENERAL MEETING

Some folks do it.

Some have tried it and given up.

Some would like to learn, but need someone to show them how.

No, we're talking about astro-imaging here. Tsk tsk.

Be sure to mark April 30th on your calendar and join DAS imager Steve Solon at Olin Hall, where he'll present "Picture This: A CCD Imaging Primer", a thorough walk-through of the tasks involved in capturing stellar images and turning them into whatever might suit your fancy, scientific data or beautiful imagery.

Steve (photo at right) is a long-time member of the DAS, a former president, vice-president, scope operator, lecturer and moderately painful (but graciously tolerated) thorn-in-the-side of the Executive Board. He has conducted classes in astronomy and imaging at Arapahoe Community College and south-Denver-area high schools, and shown countless young folks the magic in the sky that comes with sunset.

A prolific writer of astronomy articles and stories for children, Steve has worn many hats during his tenure of adult(?)hood: musician, teacher, producer, broadcaster. His wry wit and sometimes-spicy sense of humor have eased the learning tensions of amateur astronomers, young and older, during speeches and lectures, creating an atmosphere where scientific information becomes not only understandable, but pleasantly enjoyable.

Steve is a transplanted Coloradoan, moving here with his family from Connecticut in the early seventies. After a ten-year "vacation" in Los Angeles in the mid-eighties, where he was a studio musician and touring drummer, he and his wife Leslie returned to Colorado in 1993, joining the DAS shortly thereafter.

Astronomy has been a part of Steve's life since the 4th grade; he grew up as part of the *Lost in Space/Star Trek/Apollo 11* generation. An early love and appreciation of astro-photos from Mt. Palomar

sealed his fate (he blames the ending credits of the original *Outer Limits* TV show for his space image hypnosis).

Whatever your imaging interest, plan to attend the DAS General Meeting on Friday, April 30th for "Picture This: A CCD Imaging Primer," and find out just how astounding (and understandable) the art of digital imaging really is.

In mid-March, significant maintenance repairs were made to the Chamberlin Clark-Saegmuller 20-inch telescope mount. Director Dr. Stencel, has asked Chris Ray and Fred Orthleib of the Antique Telescope Society to visit Chamberlin to assess the condition of the 116 year-old telescope and provide guidance on possible avenues for more extensive historic restoration. Both Chris Ray and Fred Orthleib have restored a number of historic observatory telescopes and instruments. They will make a brief presentation on their findings to the DAS membership at that meeting.



PRESIDENT'S CORNER (CONTINUED FROM PAGE 2)

together to observe, to share and teach new ways to observe, and discover objects or events to observe. The Edmund G. Kline Dark Site is a great place to do that year-round. Chamberlin Observatory is the ultimate urban-observatory, where we enjoy monthly observing from the city, with great views of the Moon and planets, and a sky that makes you appreciate the Dark Site and the need for dark skies all the more.

If you have young kids, don't use them as an excuse for not observing. Get them out with you at our Open Houses and Summer Star Parties. Camping with them under the stars is a great way to keep them off the video games and into 'real-life' and nature.

If you are contemplating buying a telescope, an Open House at Chamberlin is the perfect place to look through all shapes

and sizes of scopes, talk to the owners and get to know us and our telescopes.

I like to have resources such as books and magazines to guide me in my pursuits in astronomy. I highly recommend subscribing to one or both of the main astro-magazines available, *Astronomy* and *Sky and Telescope*. As a member of the DAS, you get a discount on their subscriptions. Sometimes I like to have a set or series of objects to observe; it keeps me focused and on track, and these magazines have observer pages that get you going with help finding those 'faint fuzzies' or interesting double-stars. There are tons of free on-line sources and discussion groups, as well, including our own *denverastro.org* and *denverastro* Yahoo group. Our national organization, the Astronomical League, has many observing programs that can push you

into the 'deep-end' of the pool of the universe but still keep you from drowning. For inspiration as well as a good cloudy evening's read, I recommend everyone, just starting out or hard-core observer, read *Starlight Nights* by Leslie Peltier, and *Deep-Sky Wonders* by Walter Scott (Scotty) Houston. I think both can be found through Sky Publishing and/or Amazon. *Starlight Nights* in particular is about one journey from looking up at the sky to making contributions to science with simple telescopes and persistence. Both books are non-technical and beautifully written. Observing is the "one-thing" in this life of amateur astronomy; with or without a telescope, it renews us, recharges us and keeps us wanting to see more. I hope to see (or at least hear you) out there in the dark.—
Ron Pearson.

TAKE IT FROM THE BEGINNING

by Steve Solon

One of the misunderstandings that amateur astronomers have about the public-at-large is that they all know their way around the sky; where the Big Dipper is, where the sun and moon rise, etc.

The truth is, most folks don't understand the basics of the star-filled heavens; why things move the way they do, how small objects really are and how to use a telescope to find them.

Beginning on Friday, May 21st, the DAS will launch a new pilot program called "The New Astronomers Den," a simple, yet effective way of introducing the public to the

basics of observing. At the onset, the program will feature hands-on instruction in simple telescope usage and tours of small areas of the night sky to familiarize the attendees with star-hopping and constellation recognition. Telescopes and binoculars will be provided, however, the public will be invited to bring any instruments they might have if they simply want to learn how to operate them.

A separate area of the south lawn will be designated as the "den" during Open Houses at Chamberlin, but to account for the possibility of bad weather, we will con-

duct this program on the Friday evening before Open House, as well. Access to Chamberlin Observatory will not be available on those Friday nights.

We'll run this program during the summer months to assess its worth, and then proceed as popularity deems. We hope the public that we serve will take advantage of the opportunity to learn just how amateur astronomy is done on the most basic levels, thereby increasing their appreciation and enjoyment of that which we in the DAS have loved for so long.



DON'T LOOK, SHE'LL TURN YOU TO STONE!

The Medusa nebula, PK 205+14.1 (Abell 21), is an ancient planetary nebula in Gemini. This image was taken with an ST-2000XM CCD camera on an 18-inch f/4.5 Newtonian at the EGK DSS on February 17, 2010 UT. Joe imaged 60/20/20/20 minute HaLRGB filtered exposures. Equatorial 2000: RA: 07h 29m 05s Dec: +13°14'05".

Image copyright 2010 Joe Gafford

SOLAR OBSERVING AT DENVER MUSEUM OF NATURE & SCIENCE "SPACE DAY."

Saturday May 8th: The DMNS has asked us to participate in their Space Day events with up to 12 Solar viewing telescopes. If you have a telescope with proper H-alpha or white light solar filters and can participate, send an email to

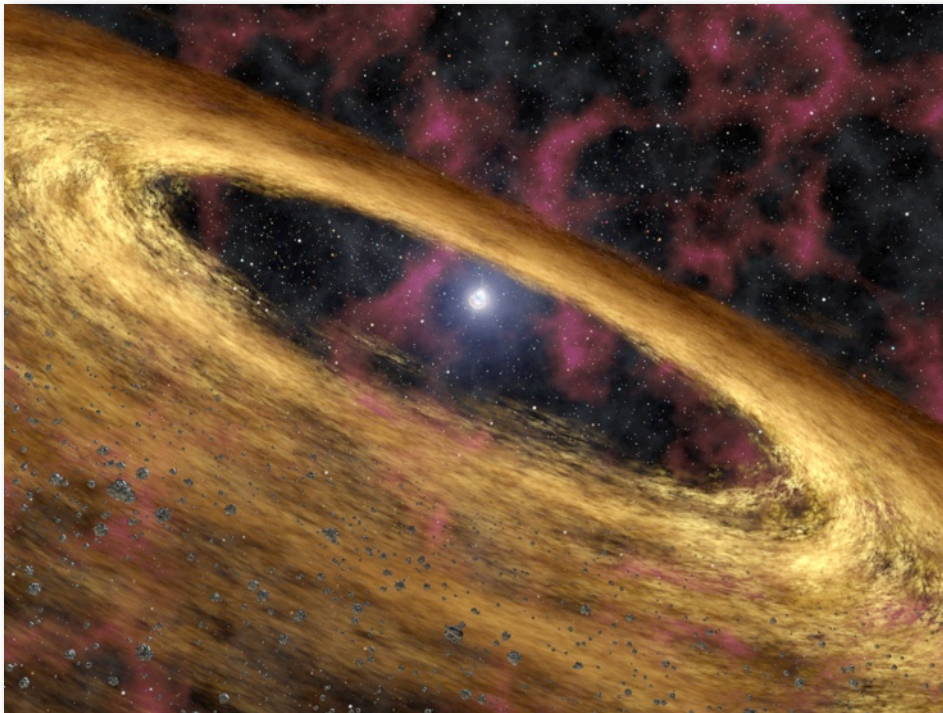
DAS president Ron Pearson at president@denverastro.org. Procedures will be similar to our Astronomy Day participation at DMNS. DMNS will provide lunch tickets for participants.

NASA'S SPACE PLACE

DEADLY PLANETS

A Space Place Partner Article

by Patrick L. Barry and Dr. Tony Phillips

**"TERRA" FIRMA, BUT DON'T GO THERE!**

Artist's concept of a pulsar and surrounding disk of rubble called a "fallback" disk, out of which new planets could form.

About 900 light years from here is a rocky planet not much bigger than Earth. It goes around its star once every hundred days, a trifle fast, but not too different from a standard Earth-year. At least two and possibly three other planets circle the same star, forming a complete solar system.

Interested? Don't be. Going there would be the last thing you ever do.

The star is a pulsar, PSR 1257+12, the seething-hot core of a supernova that exploded millions of years ago. Its planets are bathed not in gentle, life-giving sunshine but instead a blistering torrent of X-rays and high-energy particles.

"It would be like trying to live next to Chernobyl," says Charles Beichman, a scientist at JPL and director of the Michelson Science Center at Caltech.

Our own Sun emits small amounts of pulsar-like X-rays and high energy particles, but the amount of such radiation coming from a pulsar is "orders of magnitude more," he says. Even for a planet orbiting as far out as the Earth, this radiation could blow away the planet's atmosphere, and even vaporize sand right off the planet's surface.

Astronomer Alex Wolszczan discovered planets around PSR 1257+12 in the 1990s using Puerto Rico's giant Arecibo radio telescope. At first, no one believed worlds could form around pul-

sars—it was too bizarre. Supernovae were supposed to destroy planets, not create them. Where did these worlds come from?

NASA's Spitzer Space Telescope may have found the solution. In 2005, a group of astronomers led by Deepto Chakrabarty of MIT pointed the infrared telescope toward pulsar 4U 0142+61. Data revealed a disk of gas and dust surrounding the central star, probably wreckage from the supernova. It was just the sort of disk that could coalesce to form planets!

As deadly as pulsar planets are, they might also be hauntingly beautiful. The vaporized matter rising from the planets' surfaces could be ionized by the incoming radiation, creating colorful auroras across the sky. And though the pulsar would only appear as a tiny dot in the sky (the pulsar itself is only 20-40 km across), it would be enshrouded in a hazy glow of light emitted by radiation particles as they curve in the pulsar's strong magnetic field.

Wasted beauty? Maybe. Beichman points out the positive: "It's an awful place to try and form planets, but if you can do it there, you can do it anywhere."

Find more news and images from Spitzer at <http://www.spitzer.caltech.edu/>. In addition,

The Space Place Web site features several games related to Spitzer and infrared astronomy, as well as a storybook about a girl who dreamed of finding another Earth. Go to <http://tiny.cc/lucy208>.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

WELCOME New Members

Harrison B. Albert	John Lee
Johnathan Aspinwall	Kathryn Lee Miller
Tom Dadisman	Amanda Parry
Michelle Ellington	Benjamin Permuter
Paul Forward	Benjamin Quintanilla
Lynnette Hoerner	Ariel Sandberg
Robert C. Hursch	Catherine Sawyer
Paul Jackson	Florian Walchak
Bonnie Kais	John C. Warren
James W. King	Freida Woodward
Michael Kruza	George W. Wolf
Desiree Lammers-Self	

SEEKING LEADS AND SUGGESTIONS FOR TRAVELING EXHIBITION

by Roger Manley

The NASA Lunar Science Institute is in the process of creating a traveling exhibition of art and artifacts involving lunar imagery, photography, film, folklore, exploration history, archaeoastronomy, and multicultural stories related to the moon. The exhibition, tentatively given the working title of *MYSTERIES OF THE MOON*, will be accessible to the general public, and may include things like drawings, paintings, poetry, music, weaving, ceramics, etchings, outsider art, sculpture, film clips, scientific instruments, vintage and contemporary photos, hands-on displays, old relief maps, religious and ethnographic materials, models, hoaxes, magic lantern slides and backyard attempts at Moon launches, interwoven with factual materials presenting serious scientific questions regarding the Moon.

The overarching goal is to rekindle public interest in pursuing lunar research by reminding audiences of the myriad ways that the Moon has long held a major place in human imagination, while informing them about the many real mysteries that remain to be explored. The exhibition tour will begin in 2012 and currently includes Brown, M.I.T., the University of Colorado/Boulder, the College of Charleston, North Carolina State University and the Smithsonian. Other venues may be added later.

At this point, Exhibition Curator Roger Manley and his colleagues (Halsey Institute director Mark Sloan and NLSI Co-Investigator Cassandra Runyon) are extending a call for leads and suggestions for any potential items to consider. Digital photos of actual artifacts, sites, or art objects (with measurements) are most helpful, but photocopied clippings, book references or websites, email addresses, and



any other materials to help locate intriguing or visually stimulating materials are all extremely useful. Even the vaguest of clues, dimly recollected, may prove valuable to tracking down rare or evocative items to include. Any items that appear in the exhibition or accompanying catalogue will be fully credited and acknowledged.

Emails sent to RMANLEY@me.com are the quickest way to communicate, but postcards, clippings, or photos may also be sent to: Roger Manley, 1110 Burch Avenue, Durham NC 27701 USA. Your participation is encouraged—we look forward to hearing from you.

ABOUT THE DAS

Membership in the Denver Astronomical Society is open to anyone wishing to join. The DAS provides trained volunteers who host educational and public outreach events at the **University of Denver's Historic Chamberlin Observatory**, which the DAS helped place on the National Register of Historic Places. First light at Chamberlin in 1894 was a public



night of viewing, a tradition the DAS has helped maintain since its founding in 1952.

The DAS is a long-time member in good standing of the **Astronomical League** and the **International Dark Sky Association**. The DAS' mission is to provide its members a forum for increasing and sharing their knowledge of astronomy, to promote astronomical education to the public, and to preserve Historic Chamberlin Observatory and its telescope in cooperation with the University of Denver.

The DAS is 501 (c)(3) tax-exempt corporation and has established three tax-deductible funds: the Van Nattan-Hansen Scholarship Fund, the Public Outreach Fund and the Edmund G. Kline Dark Site Fund. To contribute, please see the bottom of the membership form for details (found on the DAS website: thedas.org).

More information about the DAS, its activities and the special tax-deductible funds is available on the DAS website at www.denverastro.org.

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6579 SO. BROADWAY
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WEST side of South
Broadway)

(303) 789-1089
www.sandsoptika.com

DAS SCHEDULE

APRIL

- 9 E-Board meeting at Chamberlin Observatory (Begins at 7:30 P.M.)
- 16-18 EGK Dark Sky weekend (another Messier Marathon?)
- 24 Open House at Chamberlin Observatory (Begins at 7:00 P.M.)
- 30 General Meeting at D.U.'s Olin Hall (Begins at 7:30 P.M.)

MAY

- 7 E-Board meeting at Chamberlin Observatory (Begins at 7:30 P.M.)
- 8 Solar observing at the DMNS—volunteers requested
- 14-16 EGK Dark Sky weekend
- 17-22 Texas Star Party
- 22 Open House at Chamberlin Observatory (Begins at 7:00 P.M.)
- 28 General Meeting at D.U.'s Olin Hall (Begins at 7:30 P.M.)

Public nights are held at Chamberlin Observatory every Tuesday and Thursday evenings

beginning at the following times:

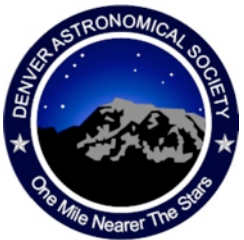
March 9 - April 14 at 8:00 p.m.

April 15 - September 1 at 8:30 p.m.

September 2 - March 8 at 7:00 p.m.

Costs to non-members are: \$3.00 adults, \$2.00 children.

Please make reservations via our website (www.denverastro.org) or call (303) 871-5172.



The Denver Astronomical Society
c/o Chamberlin Observatory
2930 E. Warren Ave.
Denver, Colorado 80210