Dumbbell Nebula Halo
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STARS & SCOPES

The Newsletter of the Rocky Mountain Astronomy Club (RMAC)
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Editor not responsible for errors, misprints, etc.

Picture top left courtesy of : http://antwrp.gsfc.nasa.gov/apod/archivepic.html
Picture top left : Dumbbell Nebula Halo
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Upcoming RMAC Events

Club Star Watch
May 22nd So. Fishing Area
June 19th, July 17th,
Aug. 14th, Sept. 18th,
Oct. 16th, Nov. 13th
To be determined.

Public Star Watch
May 15th, June 12th,
July 10th, Aug. 07th,
Sept. 11th, Oct. 09th,
Nov. 06th, Dec. 11th
At the Raptor Center &
CSUP Observatory.

Welcome and greetings from the RMAC Board & Editor.
-- NOTICE — **Regular RMAC Meetings meet in room # 242.**

Cassini Spacecraft will be arriving on 07/01/2004.

Science News 04/24/04 Vol. 165 #17 Article title: ***"Cassini spies storms on Saturn"***

Closing in on Saturn after a 7-year journey, the robotic spacecraft Cassini has discovered two storms on the ringed planet merging into a single, larger, hurricane-like disturbance. The only other time that astronomers have observed merging storms on Saturn was in 1981, when the two Voyager spacecraft flew past the planet.

Cassini first spied the storms in mid-February. They appeared as 1,000-kilometer-wide spots in Saturn's southern hemisphere. Traveling a few meters per second relative to the rotation of Saturn's gaseous interior, the storms—one moving twice as fast as the other—collided and spun around each other before merging over a 2-day period that began March 19. Cassini scientists posted the findings on the Internet on April 8 (htty://saturn jpl.nasa.gov).

Storms on Earth typically last for a week, fading after they can no longer gather energy from their surroundings. But storms on Saturn and the other giant planets, Jupiter and Uranus, can last from months to years. Merging is a characteristic feature of the atmospheric disturbances, notes Cassini mission scientist Andrew P. Ingersoll of the California Institute of Technology in Pasadena, Calif.

To see storms even before Cassini arrives at Saturn in July is an unexpected bonus, Ingersoll says. With the main mission still ahead, he adds, "the best is yet to come."

Science News 04/24/04 Vol. 165 #17 Article title: ***"A galaxy that goes the distance?"***

Aided by a cosmic magnifying glass, astronomers may have found a baby picture of the most distant galaxy known. Its faint spectra suggest that it lies about 13.2 billion light-years from Earth, exceeding the current record holder by about 300 million light-years. If that's true, the galaxy would hail from a time when the universe was a mere 470 million years old.

To find the galaxy, Daniel Schaerer of the Geneva Observatory in Sauverny, Switzerland, and his colleagues examined the central region of a relatively nearby cluster of galaxies, Abell 1835. The cluster's enormous mass acts as a gravitational lens, magnifying, brightening, and distorting images of more-distant galaxies. The astronomers used an infrared detector on the Continued on Page 2.

CSUP Observatory Open House

Open house will continue on Tuesdays nights.
About 1 hour after sunset.
Directions: Take Pueblo Blvd. to 11th street. Turn west on to 11th street. About 0.6 mile & at the top of the hill turn left into the Raptor Center Parking lot.
At the end there is a trail leading up to the Observatory. Please take a flashlight with you.
The observatory is run by volunteers & they may not be there always on time. Please be patient. The Observatory will not open during high winds (over 20 mph), rain, overcast, & snow.

Celestial Events

June 08, 2004
Watch for a transit of Venus, observers in N. America will only be able to view the end of the event at sunrise. Not visible in the Western US..

October 28, 2004
Total Lunar Eclipse, this event will have good viewing for N. America.

Regional Star Parties

May 16-23, 2004
Texas Star Party, near Ft. Davis, TX. For more information go to:
www.texasstarparty.org

June 12-19, 2004
Grand Canyon Star Party, at Yavapai Point. For more information go to:
www.tusconastronomy.org/gcsp.html

"A galaxy that goes the distance?" Continued from page 1.

European Southern Observatory's Very Large Telescope in Paranal, Chile.

Comparing images of the same region taken with two other telescopes, the researchers verified that the newly identified galaxy, dubbed Abell 1835IR1916, shows up in near-infrared images but not in visible light—an indication that the galaxy is extremely distant. Infrared-spectra reveal a specific wavelength that appears to represent the ultra-violet glow of hydrogen atoms, the researchers report in an upcoming Astronomy & Astrophysics. The team posits that the gas' ultraviolet radiation has been shifted to a longer, near-infrared wavelength by the galaxy's great distance.

Other astronomers have their doubts. Richard G. McMahon of the University of Cambridge in England says that hydrogen may not be the origin of the near-infrared wavelength observed by the team. That could undermine the argument for the galaxy residing so far from Earth.

Scientific American 05/2004 pgs. 22 to 24 Title: ***"BURNING DOWN TO ROCK"***
Gas giants might get cooked clean to their solid cores by Charles Choi

The first rocky worlds astronomers detect circling other stars could resemble Inferno more than Earth. The existence of such lava-coated planets, which may prove commonplace, will force a reconsideration of theories about planetary formation.

Since 1991 observers have discovered some 120 exoplanets—worlds outside our solar system. All but three appear, by their great size and low density, to be gas giants. Roughly a sixth are "hot jupiters" surprisingly near their stars, all closer than Mercury is to our sun.

Some hot Jupiters live just too close to their stars for comfort. Last year the Hubble Space Telescope provided the first evidence of an evaporating atmosphere, from an exoplanet, HD 209458b, that circles its star at a distance of less than ½o the distance between the sun and Earth. The star roasts the exoplanet and rips at it with its gravity. The result: the exoplanet blows away at least 10,000 tons of gas a second, which streaks off in a vast plume 200,000 kilometers long. Astronomer Alfred Vidal-Madjar of the Institute of Astrophysics in Paris and his team dubbed the world "Osiris," after the Egyptian god torn to pieces by his evil brother Set.

In contemplating the fate of Osiris, Vidal-Madjar and his team calculated how long it and other giants might live. At roughly 220 times Earth's mass, Osiris boasts a gravitational pull strong enough to hold its atmosphere until its star dies. But the researchers speculate the hellish rate of evaporation might completely scour all gas off smaller hot Jupiters or those closer to their stars than Osiris.

This could lead to a new class of planets—a dead giant's hard, bare heart. The astronomers named such worlds "chthonians," after primeval Greek deities of the underworld. In findings to appear in Astronomy and Astrophysics, astronomer Alain Lecavelier des Etangs of the Institute of Astrophysics and his co-workers figure that the four exoplanets discovered so far may one day become chthonians.

Though remnants of far larger worlds, chthonians would still weigh in at roughly 10 to 15 times Earth's mass and six to eight times Earth's diameter. With searing temperatures of roughly 1,000 degrees Celsius at their surfaces, they would look "like lava planets," Lecavelier des Etangs imagines. If chthonian exoplanets exist, "it is probable that they will be the first rocky planets to be detected around other stars," Vidal-Madjar remarks. (Three planets, two about three to four times Earth's mass and the third twice the mass of the moon, were discovered in the 1990s and most likely are solid, but they all orbit a pulsar.)

Spotting chthonians would help answer questions regarding planetary formation, explains astronomer Adam Bur-rows of the University of Arizona. Researchers think that worlds are born from disks of gas and dust encircling stars. The most popular idea proposes that solid cores amass from protoplanetary disks and behave like seeds, attracting gas to grow into giant planets. Continued on Page 3.

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Binocular & Small Telescope Objects

Late Spring

M 49, 58, 59, 60, 61, 84, 86, 87, 89, 90, 104 in Virgo
M 46 in Hydra
M 53, 64, 85, 88, 91, 98, 99, 100 in Coma Berenices

"BURNING DOWN TO ROCK" Continued from page 2.

The alternative theory suggests that giant planets may not possess hard cores. Instead they may have fluid centers, after having condensed directly from protoplanetary disks without forming solid hearts. Scientists have not conclusively identified whether the centers of giants in our own solar system are solid. Detecting chthonians could prove one scenario of planetary formation right.

The European Southern Observatory telescope in Chile has an outside chance of finding them next year: a new instrument there could detect planets as low as about 15 times Earth's mass by looking for the gravitational tugs each has on its star. The best chance to spot chthonians will come from the first space probes sensitive enough to see Earth-size planets: the French satellite COROT, scheduled for launch in 2006, and NASA's Kepler, around 2007. These missions might uncover several tens of chthonians, probably by spotting them when they pass in front of their stars, dimming them.

Burrows thinks that chthonian exoplanets may not turn out to be all rock. If a chthonian's star does not strip off its atmosphere, ices found in a giant's core might survive underneath. Lecavelier des Etangs says that chthonians might even support life, although it would almost certainly be "very different from what we know on Earth."

Science News 04/17/2004, Vol. 165 #16 Article title: ***"Sizing up a black hole"***

Astronomers are closing in on the dimensions of the supermassive black hole at our galaxy's center. By observing a strong source of radio waves emanating from the Milky Way's core, researchers have calculated that the black hole occupies a volume that would fit inside Earth's orbit around the sun.

Material spiraling into the central black hole emits intense radiation, including radio waves. Unlike visible light, radio waves can penetrate dust at the Milky Way's core, providing a window on the black hole's maelstrom of activity. That window, however, is not entirely trans-parent. Radio waves scatter off of electrons in the gas that lies between the black hole and Earth. The scattering, which is weaker at shorter radio wave-lengths, blurs the image of the radio-wave source, known as Sagittarius A*, that surrounds the black hole.

By modeling the effect of that blurring and by observing Sagittarius A* at a range of wavelengths, Geoffrey Bower of the University of California, Berkeley and his col-leagues pinned down an upper limit on the size of the radio-emitting source. In so doing, the team has placed the "tightest constraint [ever obtained] on the size of the central black hole" powering Sagittarius A*, says Bower. His group describes its findings in an upcoming Science.

— Directions —

— RMAC Meetings —

Take Hwy. 47 to CSUP, Pueblo, CO. In the technology building, room 244 at 6:00 pm for Board meetings and 7:00 pm for club meetings. The technology building is next to the radio station.

— Raptor Center —

Directions: Take Pueblo Blvd. to 11th street. Turn west on to 11th street. About 0.6 mile & at the top of the hill turn left into the Raptor Center Parking lot.

Please take a flashlight with you.

— So. Fishing Area —

From Pueblo Blvd., turn west on Hwy. 96 (toward Wetmore)and travel about 10.6 miles. Sign lake pueblo state park on right Make a right turn. Stay on the paved road for 1.6 miles and take it till it ends.

— Graneros Gorge —

From Pueblo, take I25 south to exit 71 Graneros Road. (Next exit past Colo. City.) Go over interstate & make left (north) on the frontage road. Pavement ends, make right over cattle guard onto dirt (&bumpy) road stay right, go 1 mile, road ends in a cul-de-sac.

Observing Request

If anyone is interested in trying some astrophotography or would just like to get out and do some viewing, please contact Klaus Priebe at 719-240-0020 or e-mail me at kpphoto7@hotmail.com . Thanks! Klaus

RMAC Board Highlights

The April 2004, RMAC Board meeting did business as usual. The Board is still looking at different options for possible "Liability Ins" coverage. This will protect the club if there is an accident at a RMAC Club function. There was talk of possibly joining the Astronomical League and/or an associated Club/League, this option may give the club a better price on Liability Ins. As usual, the Public Star Watches will be at the Raptor Center Parking Lot and at the CSUP Observatory. Start time at least an hour after sunset. Viewing gets better after the twilight. The next Club Star Watch will be at the South Fishing Area on May 22nd.

The program for May 10, 2004 will be a talk about "Comets" by Bill Brown. The talk will also discuss the two comets appearing this month.

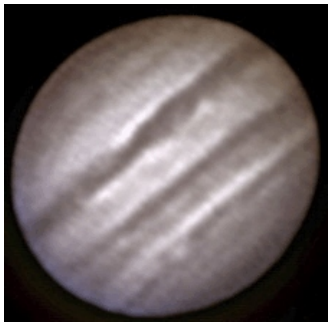
PLANET & OTHER OBJECT HIGHLIGHTS. *(Information from Astronomy Magazine)*

Venus, Mars & Saturn all are close to each other and will get closer this month. Venus will be bright in the sky at a mag of – 4.5 in the evening. Venus's phase shrinks from 29% to a crescent by the end of the month. Venus's disk will become larger as the end of the month, becoming 56" across with a 3% lit disk. Venus will transit the Sun next month on 06/08/2004. The western US will not see this event. Mars is fading away at a mag of 1.7. Jupiter shines at a mag of –2.3, with good viewing all night. Saturn is at a mag of 0.1, with Titan shining at a mag of 8.3. The Cassini Spacecraft will be arriving on 07/01/2004, giving us a great deal of new information of the planet, it's rings and is moons. Uranus and Neptune are visible early in the morning. In May, Mars, Venus & saturn will line up in conjuction.

Around the 27th , Comet C/2002 T7 is visible low in the southwest after sunset. Comet C/2001Q4 (NEAT) will be in the West, after sunset and about 15 above the horizon and will get higher all month.

Below are three photos from two RMAC members, Stephan Abraas & Klaus Priebe.

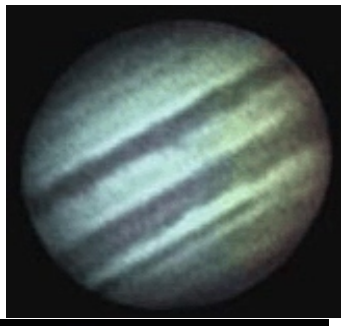
Stephan Abraas :



As you know CCD photography is wildly gaining more attention in the astronomy world but I just wanted to show people what the possibilities are using a simple video camera with your telescope.

Both pictures were made using a simple video camera and recording through eyepiece projection for about 20 seconds. Those 20 seconds of images were then through the computer combined into one single image and as you can see the results are not bad at all.

Equipment used was a 150 MM refractor with 8M M Televue eyepiece and a regular sony camcorder.



I've been using video astrophotography for a few years now with some really good results.

Feel free to have anybody interested in learning more about this contact me at :

Stargate Observatory

Stephan Abraas 610 Burrage Ave Canon City, CO 81212

stephan610@ris. net

Klaus Priebe:

Photographed Jupiter with one of its' moon's shadow on Jupiter. Three moons are visible.

A Call for Newsletter Submissions

If you would like to contribute an article, observing report, astro-photo, etc. to be published in the Stars and Scopes Newsletter, then submit them to Michael Verry , 1580 N. Cheshire Dr., Pueblo West CO 81007 or e-mail them to rmaceditor1@juno.com . When sending photos, please send them in JPG format and as large as possible. Please note that I can scan photographs, negatives and slides. I can return your photo/slide/negative at a RMAC meeting or event or contact me & we can work something out. If you would like to see something in the newsletter or would something changed, submit your request.