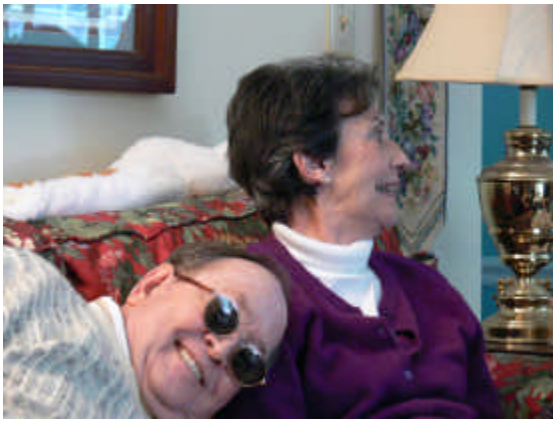




(Continued from page 1)



had "The Little Hubble" with him.

The other fond memory I have of him is what an eater he was. At the Christmas Parties or the Club Picnics or any other function with free food... that boy could pack it away! I don't think the food ever stopped moving from the minute he walked through the door to moment he left. If you want to find Jim... just follow the crumbs. I will miss you Jim.

**Ron Zink**

Jim and Gina had become members of the Sierra Club where he brought the same demeanor that he had with the Stargazers.

We soon found something quite meaningful for his talents. It was to build and demonstrate, to environmental clubs, how homes could be built to be energy efficient, if not completely independent.



Sadly, he was not able to complete the project.

When told of his passing, RuthAnn Purchase, project coordinator and founder of Greenbridge CDC, became quite reflective. "He was one of the most gentle, kind, and caring men I have ever known. His smile and voice were exceeded only by his hugs, I would like his picture". "you never asked for mine", I quipped. "But you're no Jim Acker", she replied.

**Vaughn Nickerson**

What can I say that hasn't already been said ? I have a lot of fond memories of Jim. One that comes to mind is the 2 of us sitting on the tail gate, having a beer at Mason Dixon star party & swapping stories, watching the fire flies. I will miss him. Rest in peace, Jim.

**Pj Riley**

Jim always had a smile, even in the midst of his problems. He always greeted me with a "How you doing?, young fella!" Always inquired about my wife: "How's our girl?" He always had that glint in his eyes, like he just got away with taking a cookie from the jar, without Gina noticing. Always a Southern Gentleman.

### From the President....

*Tom Pomponio*

I would like to thank all who participated in our successful No-Frills star party. We had a break from the warm and hazy weather for that weekend. Except for one night of clouds and the usual dew it was nice to have some clear cool fall nights. For a no frills party we sure do have some of the best soup supplied by generous volunteers. I think our impromptu fish fry has become a regular event.

Congratulations to CJ Wood for achieving the Astronomical League's Planetary Nebula Club Award. I think he was the busiest one there at the No-Frills racking up new objects.

Coming up at our November 6<sup>th</sup> meeting we will have a round up of planetarium software and Jerry Truitt will tell us how the human eyes work. We will continue our series on the history of space flight with the story of the first American satellites Explorer and Echo. Also don't forget our Christmas party at the Mallard Lodge December 8<sup>th</sup>. A reminder that our Mid-Atlantic Mirror Making Seminar is being put together for March 21<sup>st</sup> -23<sup>rd</sup>. Make sure to sign up on our web site before December 15<sup>th</sup> to secure your slot.

#### The Delmarva Stargazers Announces a Writing Contest.

The DMSG will raffle away astronomy gifts to members who submit articles to the Star Gazer News.

How to enter:

- 1 Open to DMSG members.
- 2 Members may submit original articles at least 500 words (1/2 page) for publication in the Star Gazer News.
- 3 Articles **must** be authored by the member.
- 4 Pictures can be included, but they do not count towards word count (1 picture = 1000 words).
- 5 Must be astronomy related. Each article = one chance in the raffle. The drawing will be made at the star parties based on the previous 6 issues – need not attend to win (but it would be nice to see you there). *The editor of the Star Gazer News qualifies articles submitted.*

**How to Join the Delmarva Stargazers:** Anyone with an interest in any aspect of astronomy is welcome

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY, STATE & ZIP \_\_\_\_\_

E-MAIL ADDRESS (If any) \_\_\_\_\_

Do you need the newsletter snail mailed to you (Y/N)? \_\_\_\_\_

Please attach a check for \$15 made payable to Delmarva Stargazers and mail to Kathy Sheldon, 20985 Fleatown Rd, Lincoln, DE 19960. Call club President Jerry Truitt at 410-885-3327 for more information.

# Delmarva No-Frills XII 2007

*Kent Blackwell*

I arrived mid-day to the XII annual Delmarva No-Frills XII Stargaze, and was received a gracious greeting by about a dozen of my friends from the Back Bay Amateur Astronomers in the Tidewater, Virginia area. Also welcoming me were Roy & Dee Diffrient from Monkon, MD and C.J. Wood from Ridgeley, MD. This entourage would be our little star party group amongst others for the remainder of the week and weekend. Wednesday's forecast was not good, indeed, nor was Thursday's. As I so often say, never, ever put so much faith in weather forecast. One well-meaning man even visited my trailer armed with several printouts of a half-dozen weather forecasts. Take your pick; they all predicted different forecasts, but none predicted clear skies. As darkness fell it was supposed to be raining, according to the above-mentioned predictions. They were all wrong, because for three hours the sky was beautifully clear!

I was combing the sky with my 25" wondering what to view first when Delmarva Stargazers member Don Surles wandered by and suggest we take a gander at the lenticular galaxy NGC 7457 in Pegasus. This bright galaxy showed some inner detail but wasn't overly impressive. Then Don said, "Ok, try NGC 7814", a very bright galaxy with a nearly stellar core and faint extensions, with mottling visible on the eastern extension.

I glanced over, as C.J. Wood was desperate scanning the skies looking for illusive planetary nebulae, including IC 2165 and the large Eridanus face-on galaxy NGC 1232. C.J. continued his quest to track down Abell planetary nebulae, a major undertaking for sure! His 15-year old friend Hunter Alton was combing the skies with his relatively new 10" Dobsonian telescope. Hunter found NGC 1528, a large open cluster containing 30-50 bright stars that curve in a nice, circular pattern. His next target, NGC 1545 was not so impressive, but we all chuckled at the disappointment of a cluster containing only three stars!

By midnight clouds rolled in so everyone in the observing field packed his or her gear away. Within an hour or so the rain the weathermen had predicted began, raining quite hard, but only briefly. With little hope of seeing clearing skies I retired for the evening.

Thursday was quite cloudy most of the day but the skies did clear ever now and then. I accompanied Dee Diffrient and my friend Robert Hitt for a shopping spree in nearby Queenstown, MD. By nightfall it was evident the sky was not going to clear but that suited me just fine since clear skies were to prevail for the following two evening. For diner, Dee Diffrient prepared her usual elaborate, gourmet meal. Thanks to the Delmarva Stargazers for allowing us to dine in the large tent you purchased for this year's event. After dinner the rain began and continued quite heavy for the duration of the evening.

Friday everyone awakened to crystal clear blue skies. Since the Sun was absent of sunspot activity I pointed my 100mm f/8 scope to Venus, now appearing about first-quarter phase. Next up was Mars, and even in broad daylight it was ruddy red in color and amazingly bright. Consulting my planisphere it was decided a good target might be the star Castor in Gemini. Not only was this double star visible as a tiny blue-white dot set amongst the deep blue sky but also so was its close companion.

Although the wind was quite strong in the day by evening it had subsided. On one hand it's good that the wind stopped but on the other hand because of a lack of a breeze the dew proved quite menacing. If your optics weren't fitted with some kind of dew prevention heaters you were going to be out of luck for the rest of the night.

First up for me was the remarkable Draco edge-on galaxy NGC 5710, a galaxy nearly the equal of spring's NGC 4565 in Canes Venatici. After searching for a few lesser know planetary nebulae I took a break and walked the field to see what others were viewing. In exchange for a peek through their scopes I offered them donuts. Not a bad deal, indeed! Ted Forte's showed me one of his favorite objects; the planetary nebula NGC 7008 in Cygnus that Ted nicknamed "The Fetus Nebula". Chuck Jagow was tinkering with his new Meade MySky handheld device as well as imaging M 42 through his telescope. Steve Hamilton was sighting globular clusters and planetary nebulae with his new Meade 16" Lightbridge Dobsonian while Roy Diffrient chased down illusive planetary nebulae at the threshold of his 18" telescope, as well as the Cassiopeia diffuse nebula Sharpless 2-157 that lies in the same field of view as the pretty open cluster NGC 7510. Cliff Hedgepeth managed to fit M 31, M 32 and NGC 205 in the field of view of his new 42mm eyepiece using his 12.5" Orion IntelliScope. Cliff also continued his quest for open clusters in the Dolidze catalog. There are about forty-seven, and Cliff completed his quest of finding them all. Finally, Ray Moody from the Richmond, VA glanced at The Saturn Nebula as well as the planetary nebula NGC 1514 in Taurus.

The last two objects I observed with my scope before retiring for the evening was NGC 2393 (The Eskimo Nebula) in Gemini and the ever-popular M 42, The Great Orion Nebula. The brighter portions were emerald green, and the faint extension exhibited a pinkish color. It was the best I've ever seen it!

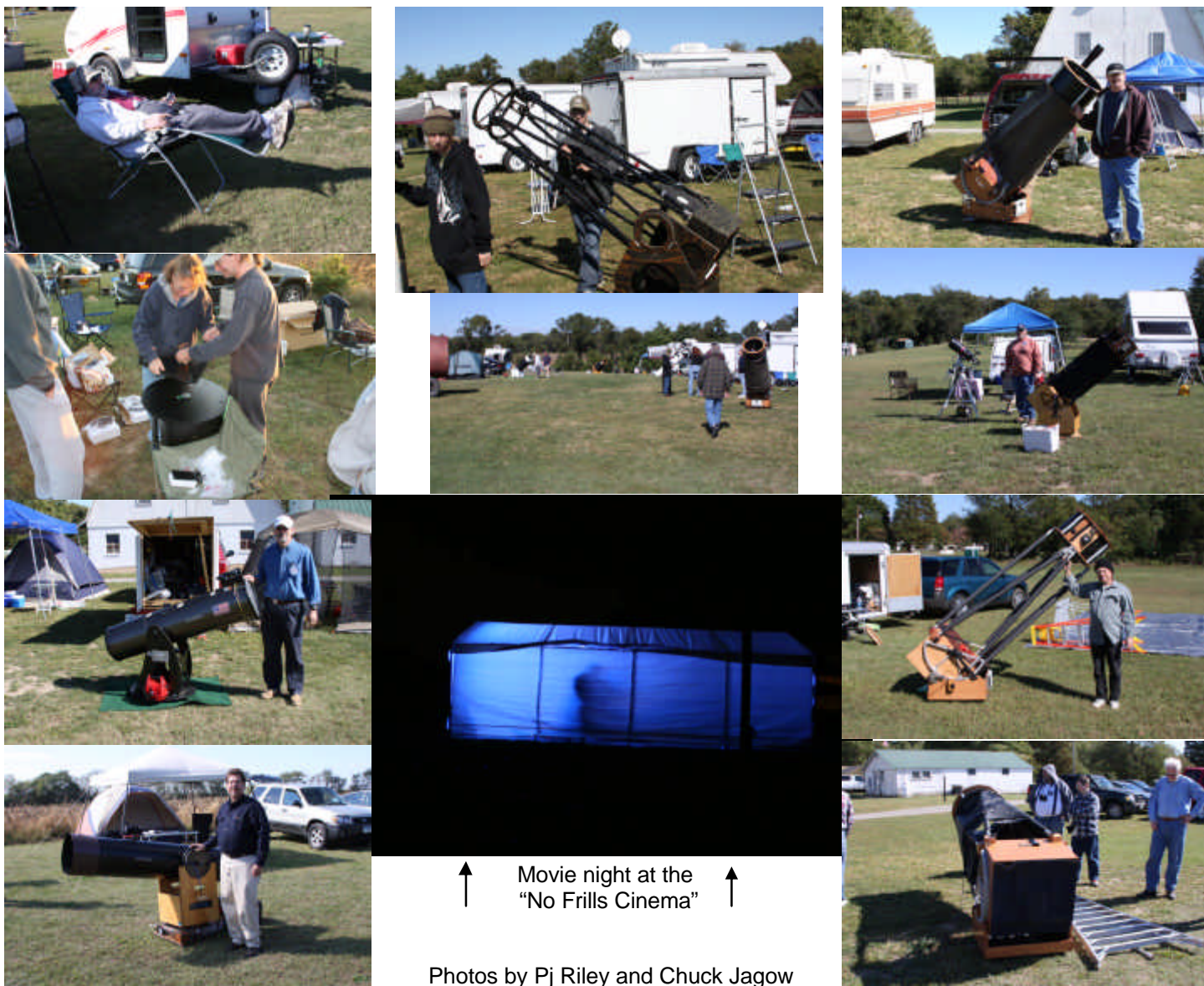
Saturday proved to be as equally beautiful as Friday. Although everyone was quite tired from being up so late the night before we still looked forward to another full evening of stargazing. As the sun set a one-day-old crescent moon hugged the western horizon with mighty Jupiter following not too far behind. Sighting Jupiter I determined that the atmospheric seeing was not going to be exceptional, but at least transparency was excellent. I stayed up late enough that evening to get a glimpse of Orion rising above the silo that sits in the observing field. By then it was time to go to bed.

Thank you, Dee Diffrient for, once again, feeding us so well and a gracious thanks to the Delmarva Stargazers for organizing another terrific star party. Even when clouds hamper the viewing it's still fun to see everyone again, and to simply sit around and talk shop. It's a bit of a drive from Virginia Beach, VA but I wouldn't miss it for anything.

## Your 2007-2008 Officers

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## No Frills 2007



## Televue Ethos 13mm Eyepiece

*Dave Wells*

I got a chance to put my new Televue Ethos 13mm eyepiece to the test at the No Frills XII star party. This eyepiece has an advertised apparent field of view of 100 degrees. In my T-Scope 14" f/4.7 scope which has a focal length of 1672 mm the eyepiece gives a magnification of 139x and with it's field stop of 22.3 mm delivers a true field of view of 45 arc minutes. The eyepiece weighs 19 oz. and had no appreciable effect on the balance of my scope.

The eyepiece has eye relief of 15 mm which I found quite comfortable in use. I visited several old favorites and was amazed at the views provided. The contrast in all cases was was great with dark black background. M13 was a blaze of individually resolved stars, M27 (Dumbell) was almost 3D with the nebula hanging in space and M1 was an easy object to see. Stars were pinpoints right to the edge of the image with no evidence of comma. A quick visit to Albireo revealed this double in it's lovely blue and yellow colors.

All-in-all I was very pleased with the performance of this eyepiece and feel that once again Televue has advanced the art of designing astronomical optics.

**The Solar System in November-** Mercury ☿ reaches greatest elongation (19°) on the 8<sup>th</sup>. Venus ♀ shines bright in the early mornin' sky. Look for Luna on the mornin' of the 5<sup>th</sup>, and you'll spot Venus nearby. Mars ♂ transits around 3AM. Jupiter ♃ sets in the evening. Saturn ♄ rises after around midnight. Uranus ♅ is still in Aquarius, and can be seen naked eye if you know where to look. Neptune ♆ is in Capricornus. You can find the minor planet Pluto ♇ to the right of Scutum, but it sets early (8-9PM). If you're looking for Terra ☁, check under your feet. Daylight Savings Time ends on the 4<sup>th</sup>.

# Draco, the Dragon

Don Surles

How many times have you peered into northern sky, seen a small "keystone" similar to the Hercules keystone and wondered about the constellation that contains it? Or maybe you thought the Hercules keystone was smaller than you remembered it...then you actually see the Hercules keystone and now you are back to the original quandary. That smaller keystone is actually the head of Draco the Dragon. Finding the remainder of Draco's body will take you around the polar area of our sky. Draco's body actually coils over toward Cepheus and then curves back to slither between the Little and Big Dippers. Most amateur astronomers, aka, stargazers, spend very little time in Draco because it is "not too bright" and doesn't contain an abundance of outstanding objects for viewing.

But, after you tire of the brilliant objects found in Sagittarius, Scutum, Orion, etc...swing your scope over to the north, get out your favorite atlas or other stargazing resource (digital settings circles if you must), and look for the jewels of Draco. For Dob owners you will find the object stays in the eyepiece longer since you are looking in a part of the sky where movement is much slower than in the southern areas. You will also find the seeing is probably better and that your shorter focal length eyepieces work better. Take your time...the objects are interesting and won't disappoint you.

The stars of Draco do not follow the normal naming convention where the brightest is Alpha, 2<sup>nd</sup> brightest is Beta, 3<sup>rd</sup> is Gamma...you have been warned. Here is an example: Some of the observable objects in Draco are: **NGC 6552**, a dim galaxy about 14<sup>th</sup> magnitude; **NGC 6543**, the Cat's Eye Nebula, an 8-9<sup>th</sup> mag planetary

**M102**, a galaxy about 9-10<sup>th</sup> mag, probably confused with M101 by Messier; also known today as NGC 5866.

Here is a good list of bright double stars to be found in Draco...

And now the mythology...or some of it since there is an abundance of myths associated with the dragon. One common theme runs through all the myths...the dragon is killed by some human or human/god hero. In fact there are lots of northern hemisphere constellations named after a person or creature that died violently.

Our story begins with the wedding of Hera to Zeus. She was given a golden apple tree as a wedding present...that apparently produced apples of gold. Well, gods may be able to eat apples of gold but they would probably be ruff on a human's dental structure. Hera was delighted with the tree and planted it on the slopes of Mount Atlas where it grew and produced an abundance of golden apples. The golden apples and the tree had to be guarded to prevent the disappearance of both. So, Hera chose the daughters of Atlas, the Hesperides, (there were three or four of them) to guard the tree and apples. Apparently Hera didn't do a background check before employing the Hesperides; and as a result the golden apples seemed to disappear. So, she chose a more formidable creature to guard her tree. Enter the Dragon named Ladon. According to legend, Ladon was the offspring of the monster Typhon and Echidna, a creature half woman

and half serpent. Use your imagination as to which half was woman...Typhon must have been imbibing in the wildwood flowers when he hooked up with Echidna. Remember the story of waking up, after a wild night on the town, in a strange bed, with an ugly woman, she's wearing your shirt, lying on your arm, and you contemplate the decision to either risk waking her when you slide your arm from under her head or just naving your arm off. Coyote ugly! Poor old Typhon. Anyway, Ladon was said to have a hundred heads and could speak in different voices. So, Hera put Ladon at the base of the apple tree to discourage anyone from muxing with her apples.

Fast forward to Hercules...the eleventh labor of Hercules was the task of stealing the golden apples. Negotiating with the Hesperides and Ladon was probably not successful because Hercules slew the dragon with one of his poisoned arrows...remember the golden hind he killed on an earlier labor had blood that was poison and he dipped his arrows in the hind's blood. You'll also remember that his last wife used the same blood to soak Hercules' underwear and that when Hercules removed the garment it tore flesh

(Continued on page 6)

English	Greek	Sounds like....	Brightness		
A	α	alpha	a	"father"	3
B	β	beta	b		2
Γ	γ	gamma	g		1
Δ	δ	delta	d		4
E	ε	epsilon	e	"end"	
Z	ζ	zeta	z		
H	η	eta	ē	"hey"	5
Θ	θ	theta	th	"think"	
I	ι	iota	i	"it"	
K	κ	kappa	k		
Λ	λ	lambda	l		
M	μ	mu	m		
N	ν	nu	n		
Ξ	ξ	xi	ks	"box"	
Ο	ο	omicron	o	"off"	
Π	π	pi	p		
P	ρ	rho	r		
Σ	σ, ς	sigma	s	"say"	
T	τ	tau	t		
Υ	υ	upsilon	u	"put"	
Φ	φ	phi	f		
X	χ	chi	ch	"Bach"	
Ψ	ψ	psi	ps		
Ω	ω	omega	ō	"grow"	

## Saguaro Astronomy Club Catalog)

Only Objects <= 8.0 magnitude

Name	R.A. (hh mm.m)	Dec. (deg mm)	Mag 5	6-Sep	PA 7	Tirion	Uranometria
STF 1362	09 38.0	73 05	7.2, 7.2	4.7	127	2	8
STT 242	12 00.1	70 39	7.9, 8.0	32.2	154	2	25
STF 25	13 13.6	67 17	6.8, 7.0	178.8	296	2	26
STT 123	13 27.1	64 43	6.7, 7.0	68.9	147	2	26
STT 138	15 20.1	60 22	7.4, 7.6	150.5	199	2	28/ 50
STF 30	16 36.3	52 55	5.6, 5.6	90.3	194	3	52
STF 30	16 36.3	52 55	6.6, 5.6	90	195	3	52
STF 2078	16 36.3	52 55	5.6, 6.6	3.2	107	3	52
STF 2118	16 56.4	65 01	6.9, 7.4	1.1	70	3	29
STF 2130	17 05.4	54 28	5.8, 5.8	2.1	42	3	52
STF 2180	17 29.0	50 52	7.7, 7.9	3.1	261	3	52/ 53/ 81
STF 35	17 32.1	55 10	5.0, 5.0	61.9	312	3	53
STF 2241	17 41.9	72 09	4.9, 6.1	30.3	15	3	30-Dec
STT 163	17 56.4	62 36	7.2, 7.7	57.2	42	3	30
STF 2273	17 59.2	64 08	7.5, 7.8	21.4	285	3	30
STF 2308	18 00.1	79 59	5.8, 6.2	19.1	232	3	12
STF 2323	18 24.0	58 48	4.9, 7.9	3.8	351	3	53
STF 2323	18 24.0	58 48	4.9, 7.3	88.9	21	3	53
STF 2323	18 24.0	58 48	7.9, 7.3	85.6	22	3	53
STF 2348	18 33.9	52 18	6.0, 8.0	26	272	3	54
STF 2368	18 38.9	52 20	7.6, 7.8	1.9	322	3	54
STF 2420	18 51.2	59 22	4.9, 7.9	34.6	324	3	54
STF 2452	18 53.5	75 47	6.6, 7.4	5.6	218	3	12
STF 2549	19 31.2	63 18	7.4, 8.0	50.7	275	3	31
STF 2603	19 48.1	70 16	4.0, 7.6	3.1	16	3	31/ 32
75 DRA	20 28.2	81 25	5.6, 6.9	197.7	283	3	13

## Magazine Subscriptions

As a paid member of DMSG, you can sign up -or- renew your S&T or Astronomy magazines through the club for a discount over private rate. S&T, reg. \$42.95, is \$32.95 thru DMSG, Astronomy, reg. \$44, is \$34 thru DMSG. See Tony Codella for details.

(Continued from page 5)

from his bones. Lesson here is not mess with a hind! But, poor old Ladon with his hundred heads (must have come from his mother's side of the family...Echidna) was dead, the apples were gone, and Hercules was ready for the twelfth labor. The story continues that Jason and the Argonauts came upon Ladon's body shortly after Hercules departed. The dragon lay at the base of the apple tree, it's tail still twitching, and dead flies that came into contact with the poison from it's festering wounds. But Hera considered Ladon a faithful servant and rewarded his faithfulness by putting his coiled body into the northern sky as the constellation Draco. She spiffied him up a bit and only put one head on him; you will recognize the head as a small version of the Keystone of Hercules. Some of the old sky atlases actually have a foot of Hercules planted on the head of Draco.

So, on your next astronomy outing, search for Draco and Hercules, and think about the myth.

## The Red (Hot?) Planet

Patrick L. Barry

Don't let Mars's cold, quiet demeanor fool you. For much of its history, the Red Planet has been a fiery world.



Dozens of volcanoes that dot the planet's surface stand as monuments to the eruptions that once reddened Mars's skies with plumes of glowing lava. But the planet has settled down in its old age, and these volcanoes have been dormant for hundreds of millions of years.

Or have they? Some evidence indicates that lava may have flowed on Mars much more recently. Images of the Martian surface taken by orbiting probes show regions of solidified lava with surprisingly few impact craters, suggesting that the volcanic rock is perhaps only a million years old.

If so, could molten lava still occasionally flow on the surface of Mars today?

With the help of some artificial intelligence software, a heat-sensing instrument currently orbiting Mars aboard NASA's Mars Odyssey spacecraft could be just the tool for finding active lava flows.

"Discovering such flows would be a phenomenally exciting scientific finding," says Steve Chien, supervisor of the Artificial Intelligence Group at JPL. For example, volcanic activity could provide a source of heat, thus making it more likely that Martian microbes might be living in the frosty soil.

The instrument, called THEMIS (for Thermal Emission Imaging System), can "see" the heat emissions of the Martian surface in high resolution—each pixel in a THEMIS image represents only 100 meters on the ground. But THEMIS produces about five times more data than it can transmit back to Earth.

Scientists usually know ahead of time which THEMIS data they want to keep, but they can't plan ahead for unexpected events like lava flows. So Chien and his colleagues are customizing artificial intelligence software called ScienceCraft to empower THEMIS to identify important data on its own.

This decision-making ability of the ScienceCraft software was first tested in Earth orbit aboard a satellite called Earth Observing-1 by NASA's New Millennium Program. Earth Observing-1 had already completed its primary mission, and the ScienceCraft experiment was part of the New Millennium Program's Space Technology 6 mission.

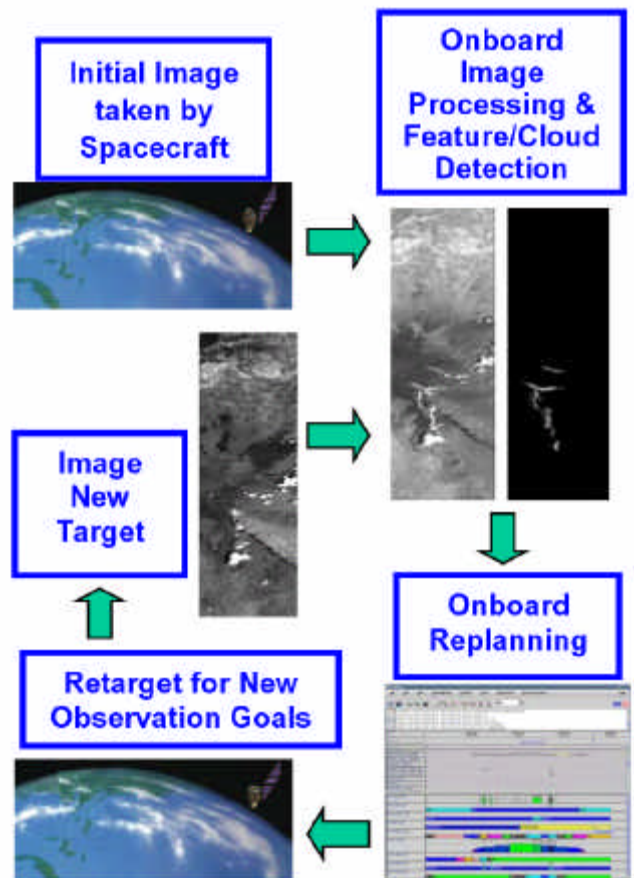
On Odyssey, ScienceCraft will look for anomalous hot-spots on the cold, night side of Mars and flag that data as important. "Then the satellite can look at it more closely on the next orbit," Chien explains.

Finding lava is considered a long shot, but since THEMIS is on all the time, "it makes sense to look," Chien says. Or better yet, have ScienceCraft look for you—it's the intelligent thing to do.

To learn more about the Autonomous ScienceCraft software and see an animation of how it works, visit <http://ase.jpl.nasa.gov>.

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

*Just as changing cloud patterns on Earth were identified using Earth Observing-1's Advanced Land Imager along with ScienceCraft software, the THEMIS instrument with ScienceCraft on the Mars Odyssey spacecraft can avoid transmitting useless images.*



SkyMap 9 Nov 2007 10PM



Tuckahoe State Park, MD

**SYMBOLS**

- Multiple star
- Variable star
- Comet
- Galaxy
- Bright nebula
- Dark nebula
- Globular cluster
- Open cluster
- Planetary nebula
- Quasar
- Radio source
- X-ray source
- Other object

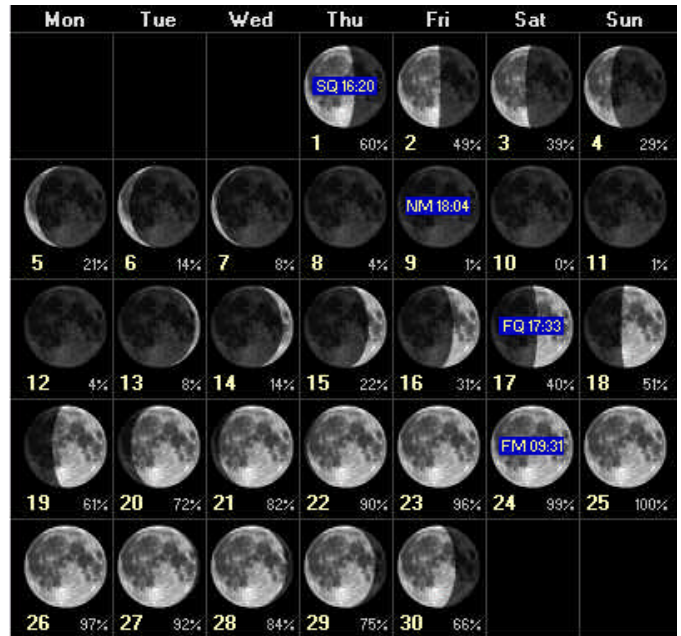
**STARS**

- <1
- 1.5
- 2
- 2.5
- 3
- 3.5
- 4
- 4.5
- >5

Local Time: 22:00:00 9-Nov-2007  
 Location: 38° 58' 0" N 75° 56' 0" W  
 UTC: 02:00:00 10-Nov-2007  
 RA: 0h11m42s Dec: +23° 57' Field: 180.0°  
 Sidereal Time: 00:11:42  
 Julian Day: 2454414.5893

Sun and Moon Data for November 2007  
 Tuckahoe MD  
 38.97°N 75.93°W 5hrW  
 Daylight Time Civil Twilight

Date	Twilight	Rise	Sun Transit	Set	Twilight	Rise	Moon Transit	Set	%
11/1/2007	7:03a	7:31a	12:47p	6:03p	6:31p	*****	6:47a	2:13p	52
11/2/2007	7:04a	7:32a	12:47p	6:02p	6:30p	12:20a	7:37a	2:43p	42
11/3/2007	7:05a	7:33a	12:47p	6:01p	6:29p	1:26a	8:23a	3:08p	32
11/4/2007	7:06a	7:34a	12:47p	6:00p	6:28p	2:29a	9:05a	3:30p	23
11/5/2007	7:07a	7:35a	12:47p	5:59p	6:27p	3:29a	9:45a	3:51p	16
11/6/2007	7:08a	7:36a	12:47p	5:58p	6:26p	4:28a	10:25a	4:11p	9
11/7/2007	7:09a	7:37a	12:47p	5:57p	6:25p	5:28a	11:05a	4:33p	5
11/8/2007	7:10a	7:38a	12:47p	5:56p	6:24p	6:27a	11:46a	4:57p	2
11/9/2007	7:11a	7:40a	12:48p	5:55p	6:23p	7:28a	12:30p	5:25p	0
11/10/2007	7:12a	7:41a	12:48p	5:54p	6:22p	8:30a	1:16p	5:57p	1
11/11/2007	7:14a	7:42a	12:48p	5:53p	6:22p	9:31a	2:05p	6:37p	3
11/12/2007	7:15a	7:43a	12:48p	5:52p	6:21p	10:29a	2:57p	7:24p	7
11/13/2007	7:16a	7:44a	12:48p	5:52p	6:20p	11:21a	3:49p	8:18p	12
11/14/2007	7:17a	7:45a	12:48p	5:51p	6:19p	12:08p	4:41p	9:19p	19
11/15/2007	7:18a	7:46a	12:48p	5:50p	6:18p	12:47p	5:32p	10:24p	27
11/16/2007	7:19a	7:47a	12:48p	5:49p	6:18p	1:20p	6:22p	11:31p	37
11/17/2007	7:20a	7:48a	12:49p	5:49p	6:17p	1:49p	7:09p	*****	47
11/18/2007	7:21a	7:50a	12:49p	5:48p	6:17p	2:16p	7:56p	12:38a	58
11/19/2007	7:22a	7:51a	12:49p	5:47p	6:16p	2:41p	8:43p	1:47a	68
11/20/2007	7:23a	7:52a	12:49p	5:47p	6:15p	3:06p	9:32p	2:57a	78
11/21/2007	7:24a	7:53a	12:50p	5:46p	6:15p	3:33p	10:23p	4:10a	87
11/22/2007	7:25a	7:54a	12:50p	5:45p	6:14p	4:05p	11:19p	5:26a	94
11/23/2007	7:26a	7:55a	12:50p	5:45p	6:14p	4:43p	*****	6:46a	98
11/24/2007	7:27a	7:56a	12:50p	5:44p	6:13p	5:31p	12:20a	8:08a	100
11/25/2007	7:28a	7:57a	12:51p	5:44p	6:13p	6:30p	1:25a	9:25a	98
11/26/2007	7:29a	7:58a	12:51p	5:44p	6:13p	7:39p	2:32a	10:32a	94
11/27/2007	7:30a	7:59a	12:51p	5:43p	6:12p	8:52p	3:36a	11:27a	87
11/28/2007	7:31a	8:00a	12:52p	5:43p	6:12p	10:05p	4:36a	12:09p	78
11/29/2007	7:32a	8:01a	12:52p	5:42p	6:12p	11:14p	5:30a	12:43p	69
11/30/2007	7:33a	8:02a	12:52p	5:42p	6:12p	*****	6:18a	1:10p	59



## Moondark for November: Observations of Autumn

Doug Miller

Nowadays, [the Sun rises as I drive to work](#), and daylight has become an ever-decreasing commodity. We're well past the [Equinox](#) at this point, and the weather has finally turned cooler, no longer lingering far behind that [astronomical milestone](#). Maybe it's the angle of the sunshine that seems to concentrate it, or the chill in the air, but the change of seasons heightens the senses. Especially at nightfall, every sound, smell and color all seem much more intense this time of year.

Lightning bugs have been replaced by [crickets](#), and their serenade is always my first impression of the night when I walk out the doorway. For the most part, songbirds have already flown south, so their [dawn chorus](#) is gone, now supplanted by [Canada geese](#) honking on their commute from the marshlands in the evening and morning twilight. Fall sounds are louder and travel farther in the still air: leaves blowing among the trees nearby, dogs barking down the street or a truck passing on a highway miles away.

It smells like fall too, earthy and damp, like the fields where the [snow geese](#) spend their day. Breeze from the shoreline brings the decidedly [rotten-egg aroma of the nearby salt marsh](#) especially on frosty mornings. Temperatures swing wildly from day to night and week to week: summer is having trouble letting go.

Colors are richer as well, and not just the brilliant blue of the clear sky. Green has mostly been replaced by yellows and browns on the ground, while [red and oranges develop](#) in the trees. Conifers emerge among leafless branches. Twilight begins and ends as a [tangerine glow grading into the nighttime in shades of deep blue and gray](#). A hint of color can be seen under the [autumn full Moon](#), noticeably brighter and higher than it ever was in summertime.

The humidity of summer which permeates everything has parted in two. Half has condensed to dew, which plays [optical trickery with the morning sunlight](#) and makes leaves stick to your shoes. What remains suspended as ground fog adds a depth to the atmosphere; houses and trees just down the street appear a good deal farther away. The other half of summer's dampness has gone straight upward to the sky and crystallized as wispy cirrus. Is that a [sun-dog](#) beside the filtered Sun?

The familiar sky sets: the [Summer Triangle](#) arrows downward toward due west, while Scorpius and Sagittarius are scarcely visible in the twilight above the southern horizon—Jupiter shows where these constellations are. Stars overhead are not bright, but they are united by a [watery theme](#) and dominated by three constellations of the zodiac. [Capricornus the Sea Goat](#), [Aquarius the Water Bearer](#), and [Pisces the Fishes](#). These are joined by other aquatic constellations: the [Southern Fish Pisces Austrinus](#), the [Dolphin Delphinus](#), the [Whale Cetus](#) and the [River Eridanus](#), which flows mostly right below the horizon. Early risers are greeted by Winter's bright sky to the east composed of first magnitude stars from Taurus, Auriga, Canis Major and Minor, Orion and Gemini. This year these beacons are joined by Mars forming a Red Triangle set within the [Winter Hexagon](#). Though much lower to the east, Venus out shines all other stars and planets.

Even if Autumn's sky pales in comparison, it does hold a gem or two that the clear, autumn skies show well. Nearly directly overhead, the [Andromeda Galaxy](#) can be glimpsed with the unaided eye, but binoculars or any telescope will show spiral arms and dark lanes. These are in fact just like those you can see in [Cygnus](#) over your shoulder to the west. While not quite twins of our Milky Way home, the galactic spirals of [Andromeda](#) or the nearby [Pinwheel](#) are pretty much what we look like to anyone in the rest of the Universe. Certainly worth a moment of reflection during the lengthening nights of Autumn. And maybe a smile back at the galaxy—just in case anyone is looking down on us ...

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