



TRANSIT

The Newsletter of



05 December 2008



Shuttle Endeavour's Launch 14 November 2008

Front Page Image - The Shuttle crew take off on a mission to the ISS – is it going to be another miracle? Remember the one about turning water into wine? They intend to change pee into potable, a worthwhile task methinks and for only a few billion dollars, makes our local plumbers look cheap!

Last meeting : 14 November 2008. “The Extremely Large Telescope” by Dr. Mark Swinbank of Durham University. Another one of our local astro lads has done well, in fact very well. Mark has already made his mark on the astronomical world (an appearance on BBC Radio 4 is good for a start). His excellent talk on developing the concept of the ELT showed that Britain has a lot to offer in quality thinkers and doers.

Next meeting : 12 December 2008, “The Large Hadron Collider” by Dr Peter Edwards of Durham University

Please note the change of venue for the next meeting :-

7.15pm for a 7.30 pm start, Grindon Parish Hall (in Thorpe Thewles, our previous meeting place).

Letter to the Editor

November 6th 2008.

Letter to the Editor,

As a follow up to John Crowther’s letter in the current edition of Transit, with reference to the WETI, I would like to point out to Mr Crowther and your readers (if there are any left after this letter of course) that April 1st was also on September 27th this year and that WETI might already be here. The following paragraphs are from my Observing Diary for that evening –

Saturday September 27th 2008 – A little after sunset I drove out to the Pylon Access Gate (PAG) between Newby and Coldpool, a place I often go to observe with my binoculars as it is just outside the ‘bright lights’ district.

Now, I must confess that during the twenty five years I have been observing very regularly, and a similar number of years before that when I used to go camping in the Cleveland Hills (yes, a total of half a century), I have never seen any Flying Saucers, Extraterrestrials or anything that I could not reasonably identify, but on this evening as I left the village of Newby, illuminated in my headlights was something very strange apparently hovering in the road.

As I approached it seemed to move onto the rough grass verge and I simply drove past. No engine cutting out or headlights dimming and certainly no missing time! Had I seen a WETI, a Crab Nebularian, even a Zeta Reticular? Or could it have fallen off Comet Gregory? Whatever, if this is what aliens might look like, then beam me up Spotty!

At the PAG I used my 10x50 binoculars to have some nice views of the Double Cluster, M 31, Collinder 399, Albireo, Kuma and nearby 17-16 Draco. I also scanned the nearby sky above Newby but no signs of any extraterrestrial aerial activity that might resemble a Nubian mother ship.

However, I felt that I had to reverse my route just to see if there was any evidence to what I had seen on my outward leg. Well, when I reached that point there was nothing untoward. I even chanced slowing down and had a cautious look around.

No marks in the road! No melted tar! Nothing! Whatever it might have been, it must have departed this world for there was zero to be seen now and, somewhat disillusioned, I had to make my way back home. However, I must say, in true 'Roswellian' parlance, that in all my twenty four thousand, two hundred and seventy two nights, "What I saw on this night... I had never seen before!"

Yours truly (well, partially truly),

From Willie Seymour-Lyte

For further details on this sighting contact the Editor – he knows where Seymour-Lyte lives!

Wanted – Would any member be interested in providing a regular "Whats up in the Night Sky This Month" article for Transit? – Editor

Do Astronomers Believe in Aliens?

From Phil Plait, The Bad Astronomer

The scoop: *Believing that intelligent extraterrestrial life -- aka aliens -- exist is one thing. Believing that they have visited Earth in our short time on the planet is another.*



When I give public talks, I can almost guarantee that during the Q&A I'll get asked: Do I believe in aliens and UFOs?

My answer usually gets a laugh: "Yes, and no."

As far as aliens go, I suspect pretty strongly that there's life in space. We know of over 300 planets orbiting other stars, *and we've only just started looking*. In

our Milky Way Galaxy alone there are probably literally *billions* of planets. Life on Earth got started pretty rapidly, relatively speaking, after the crust cooled and liquid water formed, so we know it's not tough for life to get its start... and it's entirely possible there is microbial life inside icy moons orbiting Jupiter and Saturn.

So thinking aliens exist has a pretty decent scientific basis. But them coming here is an entirely different beast.

There are tens of thousands of UFOs reported every year. That's one of the reasons a lot of people think aliens are visiting us: there's no way that there could be that many reports if *some* of them weren't real!

But that's bad reasoning. In fact, the vast majority of reported UFOs are mundane things in the sky. The planet Venus is incredibly bright; most people don't believe me when I point it out to them. They think it's a nearby airplane, or some other bright earthbound object.

Not only that, but if you're driving, it appears to follow you through the trees because it's so far away. If it's low to the horizon, turbulent air makes it flicker and change color. Does this sound familiar? How many UFO reports have you heard that say a huge object (people often mistake brightness for size) was following someone in their car, and it was rapidly changing colour? Yup. Venus.

Manmade satellites pass overhead several times an hour, and some brighten tremendously as a solar panel or mirrored surface catches the Sun. Meteors blaze across the sky, ice crystal refract sunlight and moonlight, atmospheric effects make a distant object appear distorted and weirdly-shaped. All of these have been mistaken for alien spacecraft.

So I know that most people misinterpret what they see. But there's something else too. If alien spaceships are really out there abducting us and playing chicken with our airplanes, then you'd expect that people who spend more time looking at the sky would see more of them. And who spends lots of time looking up? Amateur astronomers!!!

They are dedicated observers, out every night peering at the sky. If The Truth Is Out There, then amateur astronomers would be reporting far and away the vast majority of UFOs.

But they don't. Why not? *Because they understand the sky!* They know when a twinkling light is Venus, or a satellite, or a military flare, or a hot air balloon, and so they don't report it.

That, to me, is the killer argument that aliens aren't visiting us. If they were, the amateur astronomers would spot them.

Of course, you might say "But just because they don't see UFOs doesn't mean they aren't real. It just takes one to prove aliens are coming here!" That might be correct, but remember, *we started off thinking they're coming here because so many UFOs are reported!* Once you realize that the overwhelming majority of UFO cases are just everyday things, then that "it just takes one" argument gets a whole lot weaker.

But I'll surprise you, though: I agree. It really only does just take one. But that one better have good proof! Something better than a single eyewitness, a badly sketched object, a fuzzy photograph, or out-of-focus video (heck, with digital effects the way they are today, you can't even trust video that's crystal clear). It needs a sample of non-terrestrial metal. An actual alien. Some incontrovertible evidence that is impossible to deny.

But we never get that. Why not? I think it's because we're not being visited.

When Klaatu comes and lands on the White House lawn, I'll be willing to change my mind. But until then, well, keep watching the skies. Learn what's up there, and what isn't. You might someday spot the genuine article.

But even if you don't, you get to discover what's really up there... and there's treasure aplenty in the sky to be had, even by us folks stuck here on planet Earth

The Far Side of the Moon

from Michael Roe

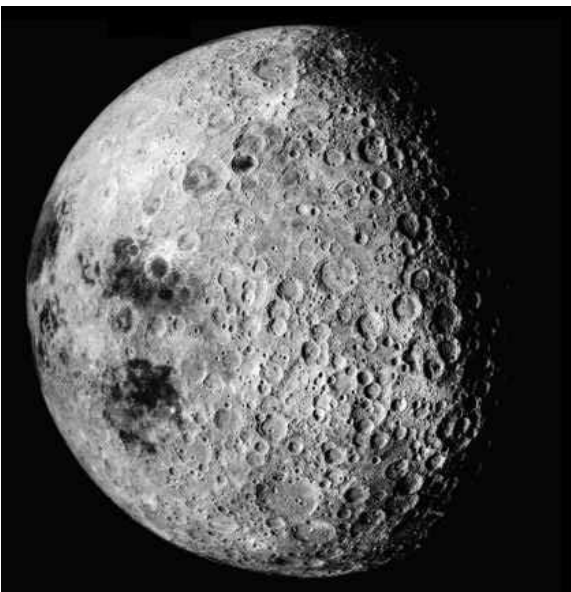
For most of human history the Far Side of the Moon has been a great mystery, an unknown place. I expect that many observers of the Moon down the centuries before the invention of the telescope realised that its pattern of dark splotches remained the same, sometimes hidden by the dark portion of its phases.

It is strange that some ancient people thought the Moon a perfect immaculate sphere although any fool can see the dark splotches!

Soon after early telescopes were used to observe the Moon a slight wobbling or libration was seen giving glimpses of the far side, just slivers of it on the Moon's edge all around it. The libration areas were carefully observed and mapped for over 300 years. From this Patrick Moore predicted that there would be fewer Mare areas (the dark splotches!) on the Far Side. He was right.

One important thing is this, the Far Side of the Moon is not the Dark Side of the Moon. The Far Side receives as much Sun light as the side facing the Earth and, in fact, is rather brighter. Only a few polar craters on the Moon are forever dark!

In 1959 the speculation was over, a Russian space probe Lunik 3, sent back grainy images of the Far Side of the Moon, it was revealed at last! These images revealed a bright disk with two dark areas, the small one named Tsiolkovskiy, the larger one The Sea of Moscow.



Since then other spacecraft have photographed the Moon's Far Side. The Apollo manned spacecraft took photographs of very good quality of areas near the lunar equator. But the best overall photographs were from the Lunar Orbiter spacecraft in 1966-68.

So, by now we have fairly good maps of the Far Side of the Moon. This is what has been revealed by all this spacecraft activity.

First, a great bright expanse of cratered lunar terrain with a few dark spots and ray craters. The two main

ones, The Sea of Moscow and the smaller, darker Tsiolkovskiy, are large craters or walled basins flooded with dark lava.

A much larger feature is the South Polar Aitken Basin, a huge roughly circular area of darker material about 1,400 miles across, rather smaller and better preserved than the Procellarum Basin. This feature has darker, smaller basins on it, Apollo and Mare Ingenii which formed later. It has three sets of large double craters and, straddling the Far and Near hemispheres near the South Pole, are the Liebnitz Mountains. Strangely enough the rest of the South Pole Aitken Basin rim has few if any real mountains, just many craters, similar to the Procellarum Basin but without much lava flows.

Other large multi-ring basins on the Moon's Far Side are Hertzprung and Korolev and near the South Pole is Schrodinger, possibly the last large basin to be formed on the entire Moon. Other small basins 150 – 200 miles in diameter include D.Alembert, Mendeleev, Gagarin, Birkoff and Plank.

The whole surface of the Far Side of the Moon seems to have been pelted by asteroids in its early history but no mid-size basins such as Imbrium or Serenitatis exist. Why should this be? The crust is believed to be thicker on the Far Side preventing much lava seeping up onto the surface. But there is still a mystery. If Imbrium or Serenitatis had never produced lava they would still be obvious mountain-edged formations with a few craters scattered over them. So, why do the great basins occupy the Moon's Near Side with none larger than Herzprung on the Far Side, apart from the South Pole Aitken Basin? I suspect we may never know the answer to this lunar mystery.

I believe there are other older basins on the Far Side, deeply buried in craters and barely visible. Still, the Moon's Far and Near Sides are different but so is the Earth! Mostly ocean on one side and mostly land on the other.

The Orientale Basin is the most spectacular sight on the Lunar Far Side. It shares features on the Near Side such as the Liebnitz Mountains and has its own mountain rings, mare regions and debris sprays surrounding it. It is the latest large lunar basin with mare lava flows to have formed.

Lastly there are young rayed craters – Jackson, Crookes and a very young crater Giordano Bruno.

This is a taste of the Far Side of the Moon, unfortunately not visible in any telescope excepting a glimpse of the libration zones.

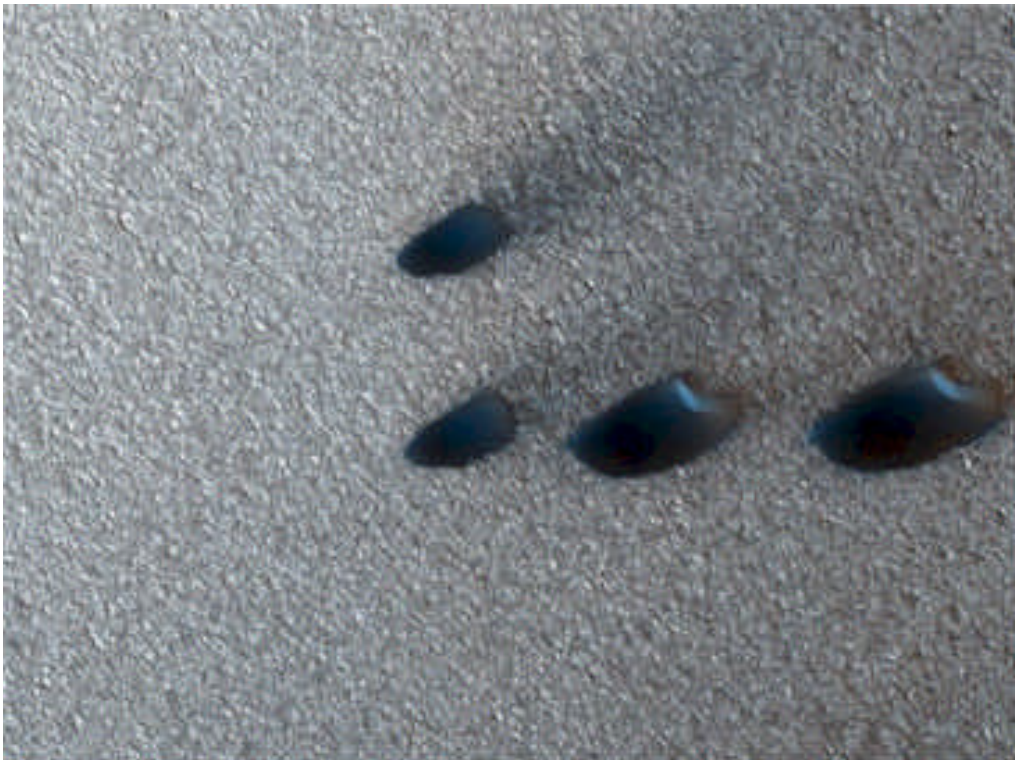
Luckily recent space probes have orbited the Moon sending back images of the Far Side, the American probe, The Lunar Reconnaissance Orbiter, due to be launched in 2009 should send back better images of this amazing little world.

The Transit Quiz

from Rod Cuff

Where in the Universe? A pictorial challenge. Do you recognise this surface?

Those who Google this picture will be deemed Wimps, those who know the answer already will be deemed Machos and those who search for an answer in Wikipaedia will be pitied and probably excommunicated.



The questions

1. Where and what are:
 - (a) Prometheus, Pandora and Pan?
 - (b) Alcyone, Atlas and Asterope?
 - (c) Alnitak, Alnilam and Mintaka?
2. Who is Hanny van Arkel, and what's her connection with Galaxy Zoo?
3. Where is:
 - (a) the European Northern Observatory?
 - (b) the European Southern Observatory?

4. What country launched the Chandrayaan-1 probe recently, and what's it probing? How will Chandrayaan-2 differ?

5. In 1690, John Flamsteed, the first Astronomer Royal, observed a previously unknown object and called it 34 Tauri. What do we call it today?

6. What are the three stars in:

(a) the Summer Triangle?

(b) the Winter Triangle?

Answers in next month's Transit.

A Night to Remember

From the CaDAS Newsletter No 15, June 1997

From the Observatory :

Our members David Weldrake and Darren Bushnall observed for a marathon session with the eight inch f15 refractor on the night of 23rd March 1997. Here are the objects they studied.

M42 Orion Nebula
NGC 2392 Eskimo planetary nebulae , Gemini
M3 globular in Canes Venatici
M51 Sb galaxy in Can Ven
M59 E3 galaxy in Virgo
M60 E1 galaxy in Virgo
NGC 4647 Sc galaxy in Virgo
M58 Sb galaxy in Virgo
NGC4564 E6 galaxy in Virgo
NGC 4567 Sb galaxy in Virgo
NGC 4568 Sb galaxy in Virgo
M98 galaxy in Coma Berenices
M99 galaxy in Coma Berenices
NGC 4565 Sb galaxy in Coma Berenices
NGC 4438 Sa galaxy in Virgo
NGC 4487 Sc galaxy in Virgo
M84 E1 galaxy Virgo
M86 E3 galaxy in Virgo
M53 Globular globular in Coma Berenices
M81 Sb galaxy in Ursa Major
M82 irregular galaxy in Ursa Major
NGC 4596 So galaxy in Virgo
NGC 4608 So galaxy in Virgo

M87 E0 galaxy in Virgo
M65 Sb galaxy in Leo
M66 Sb galaxy in Leo
NGC 2903 Sc galaxy in Leo
NGC 3190 Sb galaxy in Leo
NGC 3193 E0 galaxy in Leo
M64 "Black Eye" galaxy in Coma Berenices
Rosette Nebula in Monoceros
Comet Hale-Bopp
Mars

A brilliant night on the telescope by two young brilliant CaDAS members (Editor)

The LHC and Miracles

from John Crowther

At a recent service in Hereford Cathedral the sermon from the new Canon Chancellor, Chris Pullins, opened with a mention of the Large Hadron Collider (LHC) near Geneva which was going to tell us about "life, the Universe and everything" (his words). And if it did he was out of a job!

Sometimes there is very little difference to many people between science and good old-fashioned miracles.

One thing is very striking. When scientists speak of reaching back to the Big Bang, 13.6 billion years ago, they never, or seldom say, the Big Bang of what?

Actually we are talking about a microscopic proto-particle (we presume) of unimaginable density. If you could hold it in a teaspoon it would have weighed trillions of tons. But where did it come from? How did it get there? No scientist can tell you; though an Australian has proposed it is the remains of of a previous universe that had contracted under gravity to that pin-point. But it begs the question, where did the proto-particle that produced this supposed former universe come from? As it says in King Lear, "Nothing comes from nothing" So I suggest to you that in fact science may come from miracles:

Miracle 1: The proto-particle was there. Then comes the Big Bang or Explosion from which the Universe was born. To the religious amongst us this was the moment the Creator said "Let their be light".

Miracle 2: That so much material came from such a minute particle. There are an estimated 200 billion stars in an estimated 200 billion galaxies like our Milky Way in the Universe.

In the words of Stephen Hawking, the universe is “fine-tuned” i.e.

Miracle 3: Had the force of the Big Bang been only marginally less than it was, our universe would have already collapsed back onto itself. We would not be here.

Miracle 4: If the electrical charge in electrons had just been fractionally less than it was the stars could not have burned hydrogen into helium or would have just exploded. We would not be here.

Miracle 5: The Earth is in the so-called Goldilocks orbit, that is, its not too far from the Sun to be too cold and not too close to the Sun to be too hot, in fact it is just right for life to have started and to continue until today.

This is not an anthropomorphic view of the Universe. The five miracles are statements of fact. Is all this is just fortuitous as the scientists tell us? Are we just lucky to be here? Or do we see the hand of a Creator in all of this?

Whatever the LHC finds out about the origin of the Universe some will believe in the scientists, some will believe in the Creator and some will believe in both – there is plenty of room in the Universe for all our beliefs.

With thanks to Allan Wordsworth for the use of some of his material.

Observations of M27

From Rob Peeling and Keith Johnson

On Sunday, 26th October 2008, Keith Johnson and myself were amongst those who came along to Wynyard Planetarium to help install the new dome. There was plenty of opportunity to chat, and naturally enough people were mostly talking about astronomy. Keith told me a little about how he had recently started to turn his talent to imaging deep sky objects. I suggested that it might be interesting to team up and compare his images with my visual observations of the same objects.

This article is the first result from that conversation. As Keith had imaged M27 on the 5th October, he suggested I might make a visual observation of M27 to compare to his image. That very Sunday night was clear so I was able to do so straightaway. The following day, Keith emailed his image to me. The timing had worked beautifully to ensure that my notes at the eyepiece could not be influenced by Keith’s earlier work.

Historical Observations of M27

M27, the Dumbbell Nebula, is the brightest planetary nebula and a favourite object for all astronomers. It was discovered by Charles Messier himself. Translated from the original French, here is Messier's own description of his discovery.

On July 12, 1764, I have worked on the research of the nebulae, and I have discovered one in the constellation Vulpecula, between the two forepaws, & very near the star of fifth magnitude, the fourteenth of that constellation, according to the catalogue of Flamsteed: One sees it well in an ordinary refractor of three feet & a half [focal length]. I have examined it with a Gregorian telescope which magnified 104 times: it appears in an oval shape; it doesn't contain any star; its diameter is about 4 minutes of arc. I have compared that nebula with the neighbouring star which I have mentioned above [14 Vul]; its right ascension has been concluded at 297d 21' 41", & its declination 22d 4' 0" north.

"Catalogue of Nebulae and Star Clusters, which one discovers between the fixed Stars, over the horizon of Paris. Observed at the Observatory of the Navy, with different instruments. By M. Messier. February 16, 1771" Memoirs of the French Academy of Sciences for 1771, pp. 433-461 + Pl. VIII (published in 1774).

This was Messier's first published version of his catalogue, which at that time only reached M45, the Pleiades.

18 years after Messier's discovery, William Herschel, the discoverer of Uranus made the following observation:

1782, Sept. 30. My sister discovered this nebula this evening in sweeping for comets; on comparing its place with Messier's nebulae we find it is his 27. It is very curious with a compound piece; the shape of it though oval as M. [Messier] calls it, is rather divided in two; it is situated among a number of small [faint] stars, but with this compound piece no star is visible in it. I can only make it bear 278. It vanishes with higher powers on account of its feeble light. With 278 the division between the two patches is stronger, because the intermediate faint light vanishes more.

William Herschel, Unpublished Observations of Messier's Nebulae and Clusters. Scientific Papers, Vol. 2, p. 653

It's William's son John who was responsible for giving the object its present popular name of the Dumbbell Nebula. It was William that came up with the name of planetary nebulae for this class of deep sky objects. Indeed the many, small planetary nebulae he discovered would have looked much like Uranus did when he first observed it – nobody was ever better qualified to use this name for them!

Observations of M27 in October 2008

- **Keith Johnson, 5th October 2008**

My first attempt at long exposure photography using auto guiding had to be no other than M27, which was perfectly placed just crossing the meridian.

Equipment:

80mm ED Skywatcher Pro. f/7.6 refractor, EQ6 Pro. Mount, Canon 300D DSLR, Auto guiding camera – Mintron 12V1-EX, Astronomic CLS light pollution filter.



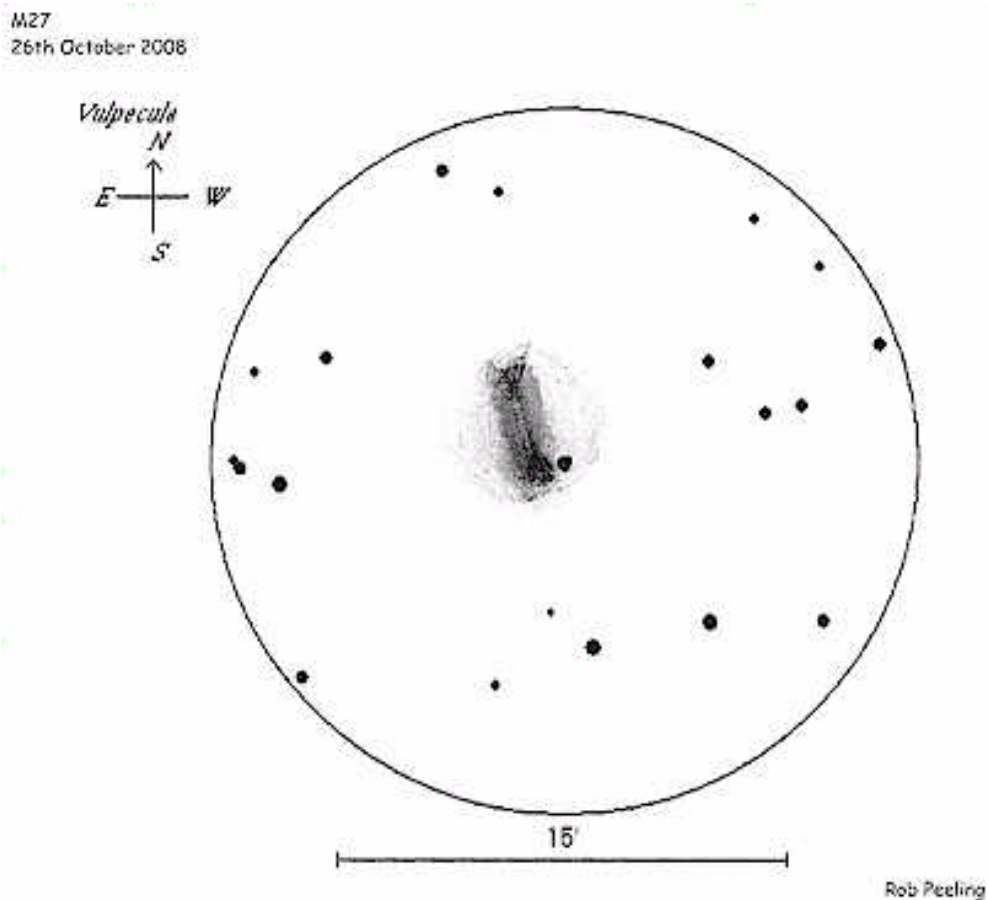
- **Rob Peeling, 26th October 2008**

Using 12" f/5 Dobsonian at home in Eaglescliffe, Stockton-on-Tees. Sky was generally clear with a few thin clouds. There was no moon and a slight breeze.

Observing M27 from 20:59 to 21:39 UT

Using a 15mm lens (x100) with no filter, M27 appears blocky with a roughly north-south orientation. The southern end is tilted slightly west. Closer inspection shows brighter lobes in each end of the block with the southern (adjacent to a eleventh magnitude star) being the brighter lobe. Adding a UHC filter enhanced the contrast in the view. Adding a 2X Barlow (x200) to the same lens makes more details visible. The object started to look reminiscent of the classic apple-core description quoted in many books. The extent of the circular

portion around the core is shown up using the UHC filter. This circular area is in fact visible without the filter but the UHC filter makes it more obvious by increasing the contrast and the visible extent becomes greater. Trying a 25mm lens with the 2X Barlow (x120) results in an aesthetically more pleasing view. Using the UHC filter, stars are visible down to about magnitude 13. When trying a 10mm lens with the 2X Barlow (x300), the central star was flicked into view a couple of times – visible <10% of time. With this lens the apple-core effect was enhanced. 2 rough sketches were made during this observation and worked up to the final version below.



Comparing Observations

Keith's image clearly shows a brighter bar running almost exactly north-south which clearly correspond to my "block". The brighter patches in each end of the bar that I saw are also seen in Keith's image. The southern patch is indeed brighter. I saw the overall nebula as circular but at a similar magnification Charles Messier thought it to be more oval & William Herschel seems to have agreed. William Herschel obviously saw the same brighter patches that I saw.

The greater depth of Keith's image reveals gas breaking out of the circular area to the east and west making the overall shape more elliptical. If we could change our viewing angle to see directly into the break-out regions would M27 look more like M57, the Ring Nebula? Keith's image gives the impression that the central bar might be a band or torus of denser material right around the nebula. This would be consistent with the current view that most planetary nebula are much the same general shape and the differences in appearance to terrestrial observers are mostly down to viewing angle and differing densities.

Keith's image clearly picks out the central star, which I only glimpsed and neither of the 18th Century observers was able to see it with the best available equipment of their day.

Obviously Keith's digital image contains far more faint detail and presents it in a scientifically more useful manner than the visual observing notes and sketches I employ. However the experience of examining the object myself with Mark 1 eyeball has allowed me to better understand and enjoy the detail in Keith's work as well as explore the connection with what our historical heroes could actually see with their equipment 240 years ago.

Revised NGC/IC Catalog Data (Wolfgang Steinicke, Feb 2001)

Names and designations

M 27
NGC 6853
PK 60+3.1
Popular name: Dumbbell Nebula

Type of object: Planetary nebula

Constellation: Vulpecula

Catalog position for epoch J2000.0

Right ascension: 19h 59m 36.3s
Declination: +22° 43' 16"

Magnitude: 7.4
Size: 8.0' X 5.7'
Central star magnitude: 13.9

Wonder and Awe Under Perfect Skies

from Andy and David Fleming

It is one of life's subtle ironies that thanks to our industry and high technology that in other ways brings so many benefits to our everyday lives, one of the greatest of all natural wonders, has been lost to the majority of our country's population. We're talking, of course about a velvet-black night sky dotted with countless stars, nebulae, and galaxies.

Truth be told, it is not our technology that denies us this most beautiful of natural spectacles, but our shameful and profligate waste of our natural resources and energy. Namely, of course, it is light pollution, coupled with industrial pollutants, vehicle emissions and particulates.

It is a severe problem in the Tees Valley, where industry at Teesmouth illuminates our horizons with the glare of a thousand artificial sodium vapour suns. If you're lucky, and located in a dark, secluded corner of our conurbation, you can just about succeed with the "Ursa Minor test" and pick out all of the stars in that constellation down to Magnitude 5 with the naked eye (albeit with averted vision). We won't be unduly negative about our abode however – there are still wonders aplenty to be seen from our back garden including double stars, the planets, galaxies and planetary nebulae and of course the stunning and lovely Great Nebula in the Sword of Orion. But they are washed out, shadows of themselves even through a telescope, reminiscent of a television set with the contrast dramatically reduced. They are awe-inspiring, but we have doubtless been robbed of much of the awe.

An initial tour of the gorgeous black skies of a location such as the North Yorkshire Moors National Park therefore creates a soaring sense of wonder and awe – an uplifting surge of sheer excitement that will never be forgotten. Of course, an enjoyable tour of anything requires a good and learned tour guide with a well-planned itinerary, and in this respect we were lucky enough to share this memorable late October evening with one of CADAS's most astronomically literate members, Rob Peeling.

Our rendezvous with Rob was to be Snilesworth Moor, close to Osmotherly, just off the A19, where the ancient Drover's road south to Sutton Bank parts company with the metalled road to Ryedale and Helmsley.

Sure enough, Rob was already at our destination at the appointed meeting time of 8.00pm. We were beneath the mighty Black Hambledon Moor, Rob's superb 12" Dobsonian already in position and online to the heavens. We had chosen the coldest night so far this autumn for our tour of the local Cosmos – a chilling minus three degrees according to the car's external thermometer. Of course, it was so cold precisely because the sky was totally cloudless, and the seeing exceptional.

We shook hands with Rob, and within seconds, as our eyes started to adapt to the pitch blackness, untold celestial wonders aplenty started to encroach on our naked eye view. The total blackness was punctuated only by very distant lights in the northern part of the Vale of York, and a couple of red aircraft warning beacons on the Bilsdale West Moor television tower, one of the most exposed structures in the land, and about eight miles distant to the north east.

As we looked skywards with our naked eyes, just as promised in countless astronomy textbooks, was the stupendously stunning Milky Way, our home galaxy, it's disk full of a myriad of stars traversing their way east-west right through the hearts of the constellations of Lacerta, Cygnus, Perseus and Cassiopeia.

Dr Restall's question concerning the furthest the unaided human eye can see on a clear day (or night) could be tested. Could we really see two million light years to the Andromeda Galaxy (M31) with our eyes alone? And if so would it be spectacular? At home, it's so easy (due to other stars being bleached out by light pollution) to find our old friend, the orange/yellow Magnitude 2 guide star Mirach (beta Andromedae), we first used to track down M31 a couple of years ago. But under these superb skies there were just so many stars that Mirach was lost. However, once beta Andromedae was found, amazingly, we didn't need mu and nu Andromedae, because intrusively visible above Mirach, and offset to the right a little was an elongated smudge of beautiful pale light, perhaps half a degree or more in diameter. Here was M31, not a point, but the central bulge of our sister spiral galaxy, amazingly seen *looking like a galaxy*, with the naked eye.

If this wasn't enough, even more unbelievably, virtually equidistant below and slightly to the left of beta Andromedae near alpha Triangulum was another much fainter smudge.

With goosebumps and a lump in our throats, and a quick confirmation from Rob, we realised that remarkably we were viewing the diffuse Triangulum Galaxy (M33/NGC598). We hurriedly looked at these two magnificent galaxies through binoculars – M31 being elongated by well over the width of a couple of degrees and M33, virtually face on looking absolutely stunning.

It was time to assemble our telescope, an 8.5 inch f5 Newtonian, on long-term loan from extremely kind CADAS member Alex Menarry. Our equipment also included a 9mm Orthoscopic eyepiece, a 28mm Plossl and a x2 Barlow, which combined give a decent portfolio of viewing. As previous to this amazing night out in our National Park, we had been graced with several reasonably clear evenings, and as this wonderful telescope had seen frequent use at home, I was concerned that wind-blown dirt and particulates had entered the instrument and been deposited on the primary mirror from our trusty Silver Birch, and Apple Tree at the rear of our garden. Indeed there was considerable dirt on the mirror, and to rectify this problem I had painstakingly removed and cleaned the mirror with

de-ionised water and cotton wool. We would soon discover that this work, subsequent re-collimation and eyepiece cleaning had paid dividends.

We first visited a couple of stunning planetary nebulae - the Dumbbell (M27) that we had so proudly found at home after Rob's clear and concise instructions. Then it was off to the Ring Nebula in Lyra (M57), and the Blue Snowball. We took a peek at the beautiful double star Albireo in Cygnus – wonderfully resolved into its striking blue and yellow constituents.

Next, Rob set us a challenge, using his instructions, we were to locate successfully the faint Ghost of Mirach Galaxy. Our next port-of-call was the beautiful face-on spiral galaxy M33 in Triangulum that we had earlier seen with our unaided eyes and then our binoculars. It's beautiful spiral structure was well apparent – so too were it's bright star forming regions in its outer spiral arms. Not too far away we viewed M110/NGC205 – one of M31's satellite galaxies. Next it was off to Bode's Nebulae, incorrect nomenclature of course – they are the beautiful Magnitude 6.9 spiral galaxy M81/NGC3031 and of course the Magnitude 8.4 virtually edge on "Cigar Galaxy" M82/NGC3034. These two gems are relatively easy to locate, even though they were fairly low down in the north by star-hopping using Dubhe (alpha Ursa Majoris) and Polaris and then from Rob's "The Cheese" asterism of three stars slightly to the left and down from these galaxies in your field of view.

It was time for a personal detour to the lovely Double Cluster NGC869 in Perseus, visible from our location with the unaided eye, beautiful through binoculars and jaw-dropping through our telescope. A myriad of stars to inebriate one's retina.

Other splendours we observed included Globular Clusters M15/NGC7078, M103/NGC581 near Ruchbah in Cassiopeia, the Crab Nebula (M1/NGC1952) the remnant of the supernova witnessed by ancient Chinese astronomers in 1054AD, and easy to locate in a dark sky near zeta Tauri. As we observed it's structure one thought about the rapidly rotating tiny neutron star at its centre whose almost artificial atomic-clock-regular spinning jets of radiation were first discovered at Cambridge University in 1967 by Jocelyn Bell and labelled LGM (Little Green Men) on her print-out. It was, of course the first pulsar to be identified.

As time passed we saw bloated red Betelgeuse and Meissa rise, followed by the whole enchilada of the winter constellation of Orion the Hunter, always reminding one of approaching Christmas. It was difficult to restrain our impatience at waiting to observe the beauty in the hunter's sword, but of course, it was well worth the wait. The Great Nebula M42, was awesome, that huge reflection nebula of gas and dust reminding us all of how every star and planet, including the Sun, the Earth and indeed all living things, including ourselves for that matter, came to be. Indeed this whole area of the sky from Alnilam, Alnitak and Mintaka

through to M42 and M43 is a wondrous sight to behold with nebulosity galore – hot, young stars, such as those in the Trapezium –illuminating and exciting the atoms, molecules and clouds of gas and dust from which they were born.

We saw many more objects that wonderful evening, but for brevity's sake we will end on an even higher note for ourselves – three objects that had previously eluded us at our stage of observing, but to which we were effectively guided by Rob. Firstly, the beautifully intricate filaments of the supernova remnant, the Veil Nebula (NGC 6960). Bearing witness to the final collapse and obliteration of a massive star, far larger than our Sun, this beautiful stellar death shroud bears witness to the fact that out of one of the Cosmos's most destructive events outstanding beauty arises. Of course, much more than visual beauty has been created. The progenitor star of NGC 6960 expelled into the Cosmos the ingredients to make new stars when it detonated. It also expelled heavier elements that one day, millions of years from now will create planets and rocky worlds, and possibly sentient beings, who like us have imagination, intelligence and consciousness and who can observe and endeavour to understand the Cosmos from which they were made.

Our last two targets were very much in our nearby cosmic vicinity – the two mighty gas giant worlds of Uranus and Neptune. Under such conditions, and with a superb guide, Uranus was an easy target to find, it's beautiful blue/green orb being an easy giveaway. Blue Neptune with its oceans of methane and hydrogen was considerably more difficult to find due to it's low declination in the south west as it was not long from setting. Rob made a considerable attempt to find the large satellite of this last outpost of the Sun's entourage of planets, the pink-snow covered Triton, but to no avail. Hardly a disappointment considering the plethora of other wonders we enjoyed that evening, which also included several meteors emanating from their radiant in Taurus.

At 11pm, despite multiple layers of clothing, but with the thermometer still falling and it becoming intensely cold, it was with heavy hearts that we disassembled our telescopes and headed back to Teesside.

In conclusion, in all of our serious observing it was our best ever evening under the stars, and a thoroughly awe inspired 12 year old and his dad would like to say a big "thank you" to Rob. It would not have been possible without his superb knowledge of the skies and his dedication to astronomy. We'd also like to thank Alex for the continued use of his excellent telescope.

To those readers who have never experienced a truly dark sky, and who are sceptical of the difference it makes to observing the heavens, forget a Sunday day out to the Moors, wrap up warm and treat yourself to a night out with the stars instead. With naked eyes, binoculars, or a telescope, literally – there's nothing on the Earth that can beat it!!!

This time, Phoenix Won't Arise From the Ashes

It looks like the Phoenix Mars lander is dead. Scientists have not heard anything from it for over a week now, and they have acknowledged the inevitable: the scrappy lander is out of power, and unable to do any more experiments, and incapable of reporting them anyway. They have declared the mission operations phase of Phoenix to be complete.

-

Designed to only last 90 days, it actually kept going for about twice that long. It landed in late May 2008, and the last signal was detected in early November. The primary science mission was to look for ice beneath the surface of Mars and to examine the soil directly. It had a scoop that picked up samples of the "soil" and dropped them into an oven. Baking them released chemicals that could be analyzed.

As it sat near the Martian north polar cap, Phoenix did in fact find ice just below the surface (not too surprising, really, but nice to confirm). It found the soil was alkaline, and also detected perchlorates. These are oxidizers, and if concentrated enough can kill terrestrial biological organisms. However, oxidizers are also needed for life; I've often wondered if you could have a sophisticated biochemistry using them on other planets. Clays and calcium carbonates found by Phoenix also indicate that water was once present at the site. The science it did was very cool, but one of the more interesting stories was the detection of falling snow in the atmosphere of Mars. Somehow, Earthlike weather on Mars brought this story home.



Weather brought down Phoenix as well. It wasn't designed to last forever. It used solar panels, and winter was setting in. The lowering Sun and bitter cold made things difficult, but in late October a sand storm may have done the final deed. But the mission was a success. It was a tricky landing, a difficult mission, and the science was delicate. But it delivered, and now we know more about Mars than we did before. Still, the search continues. Why did Mars die? What happened to its atmosphere, where is all the water we know was there, why did it evolve so differently than Terra Mater? And what implications do these have for our own home planet?

Phoenix itself is almost certainly dead (we might get a tiny bit more out of it if conditions are just right, though probably not), but we will continue to explore, to reach out to our sister world. Someday I'd like to see the view from an astronaut's helmet camera. That won't be for decades, for sure, and until then we'll continue to send our robot proxies there. With Phoenix we've literally only scratched the surface of the Red Planet.

The Vanishing Sunspot Mystery: What Does it Mean for Earth's Climate? - A Galaxy Insight

posted by Rebecca Sato



Dark spots, some as large as 50,000 miles in diameter, typically move across the surface of the sun, contracting and expanding as they go. These strange and powerful phenomena are known as sunspots, but now they are all gone. Not even solar physicists know why it's happening and what this odd solar silence might be indicating for our future. The last time this happened was 400 years ago

-- and it signaled a solar event known as a "Maunder Minimum," along with the start of what we now call the "Little Ice Age."

Although periods of inactivity are normal for the sun, this current period has gone on much longer than usual and scientists are starting to worry—at least a little bit.

Recently 100 scientists from Europe, Asia, Latin America, Africa and North America gathered to discuss the issue at an international solar conference at Montana State University. Today's sun is as inactive as it was two years ago, and solar physicists don't have a clue as to why.

"It continues to be dead," said Saku Tsuneta with the National Astronomical Observatory of Japan, program manager for the Hinode solar mission, noting that it is at least a little bit worrisome for scientists.

Dana Longcope, a solar physicist at MSU, said the sun usually operates on an 11-year cycle with maximum activity occurring in the middle of the cycle. The last cycle reached its peak in 2001 and is believed to be just ending now, Longcope said. The next cycle is just beginning and is expected to reach its peak sometime around 2012. But so far nothing is happening.

"It's a dead face," Tsuneta said of the sun's appearance.

Tsuneta said solar physicists aren't weather forecasters and they can't predict the future. They do have the ability to observe, however, and they have observed a longer-than-normal period of solar inactivity. In the past, they observed that the sun once went 50 years without producing sunspots. That period coincided with a little ice age on Earth that lasted from 1650 to 1700. Coincidence? Some scientists say it was, but many worry that it wasn't.

Geophysicist Phil Chapman, the first Australian to become an astronaut with NASA, said pictures from the US Solar and Heliospheric Observatory also show that there are currently no spots on the sun. He also noted that the world cooled quickly between January last year and January this year, by about 0.7C.

"This is the fastest temperature change in the instrumental record, and it puts us back to where we were in 1930," Dr Chapman noted in *The Australian* recently.

If the world does face another mini Ice Age, it could come without warning. Evidence for abrupt climate change is readily found in ice cores taken from Greenland and Antarctica. One of the best known examples of such an event is the Younger Dryas cooling, which occurred about 12,000 years ago, named after the arctic wildflower found in northern European sediments. This event began and ended rather abruptly, and for its entire 1000 year duration the North Atlantic region was about 5°C colder. Could something like this happen again? There's no way to tell, and because the changes can happen all within one decade—we might not even see it coming.

The Younger Dryas occurred at a time when orbital forcing should have continued to drive climate to the present warm state. The unexplained phenomenon has been the topic of much intense scientific debate, as well as other millennial scale events.

Now this 11-year low in Sunspot activity has raised fears among a small but growing number of scientists that rather than getting warmer, the Earth could possibly be about to return to another cooling period. The idea is especially intriguing considering that most of the world is in preparation for global warming.

Canadian scientist Kenneth Tapping of the National Research Council has also noted that solar activity has entered into an unusually inactive phase, but what that means—if anything—is still anyone's guess. Another solar scientist, Oleg Sorokhtin, a fellow of the Russian Academy of Natural Sciences, however, is certain that it's an indication of a coming cooling period.

Sorokhtin believes that a lack of sunspots does indicate a coming cooling period based on certain past trends and early records. In fact, he calls manmade climate change "a drop in the bucket" compared to the fierce and abrupt cold that can potentially be brought on by inactive solar phases.

Sorokhtin's advice: "Stock up on fur coats"...just in case.

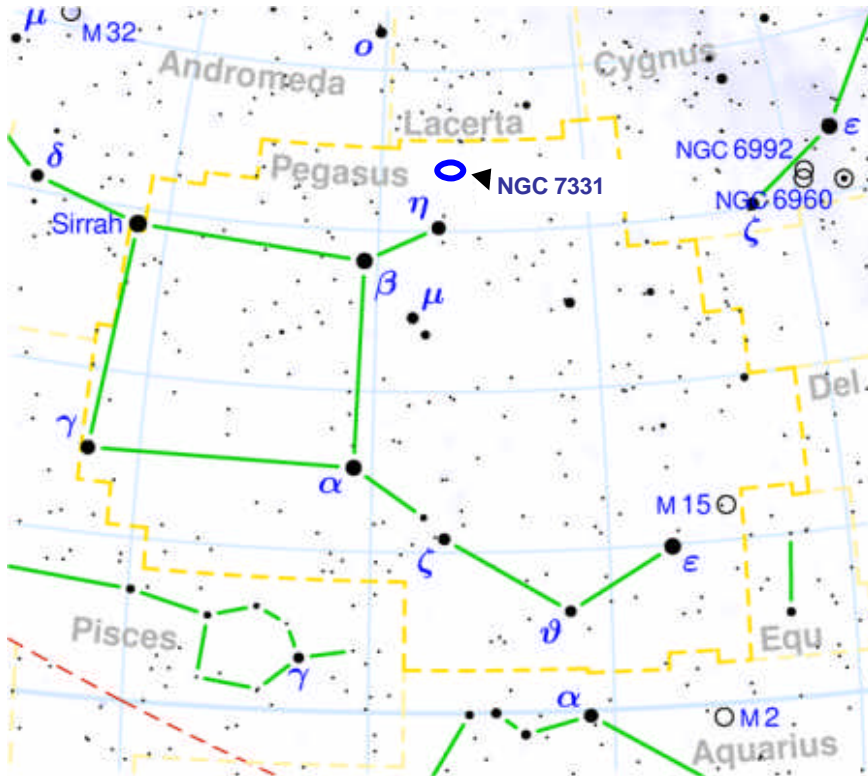
The "Little Andromeda" Galaxy

from the One-Minute Astronomer

Not far from the Andromeda Galaxy, you'll find the fine but overlooked spiral galaxy NGC 7331. Unlike Andromeda, which spans so much sky its hard to take in at once in a telescope, the delicate spiral arms of NGC 7331 fit nicely into a single field of view at moderate magnification. And if you have a good-sized scope, just to the southwest you might glimpse in a single field of view a fascinating quintet of galaxies some 300 million light years from Earth.

The Basics

- Although its size, structure, and appearance are much like M31 in Andromeda, NGC 7331 is more than 20x farther away... about 47 million light years... so it appears much smaller. In a dark sky the elongated spiral of NGC 7331 fits nicely into your field of view even at high magnification



- Like most NGC objects, William Herschel was the first to glimpse this galaxy. He believed he saw individual stars and structure. The spiral nature of NGC 7331 was first discerned by Lord Rosse with his giant reflector.
- At 10th magnitude or so, you will see NGC 7331 with a 4-inch scope, but you'll need at least an 6-8-inch scope and dark skies to reveal much structure. To see detail in this Sab-type spiral, breath deep and take your time.
- You'll find NGC 7331 just under the front leg of Pegasus, about 4 degrees northwest of eta Pegasi. Check your star map at RA22h37m, Dec +34d25m.

A Deeper Look

This galaxy is some 130,000 light years across with roughly 300 billion suns of mass: much larger than the Milky Way.

- Like many large galaxies, NGC 7331 has a high-energy X-ray source at its core, likely caused by matter falling at high speed into a central black hole. And there are rings of newer stars near the nucleus of the galaxy caused by a burst of stars formation long after the galaxy formed.
- If you've got a 12" or larger scope, you may see a group of fainter galaxies lying nearby NGC 7331. This visual grouping is informally called the Deer Lick Group,

of which NGC 7335 is the brightest at magnitude 13.3 or so. Like I said, you need a big scope!



- Here's a lovely image of NGC 7331 and other Deerlick galaxies. Of course, it will not look like this through your telescope, or any other telescope. A lot of serious post-processing was done to make this image.

Bonus Object

Perhaps the most famous collection of galaxies in this region of the sky is Stephan's Quintet, a faint set of five galaxies, four of which interact with each other at a distance of some 300 million light years. You'll need a big telescope to see this group, which lies only 1/2 degree to the southwest of NGC 7331. Here's a splendid widefield picture of the whole region, including NGC 7331.

Personal View

At the beginning of the movie "It's A Wonderful Life", there is a scene featuring a conversation between two angels speaking in heaven. It turns out that the angels are represented by a photograph of two of the galaxies of Stephan's quintet, NGC 7320 and NGC 7318. Who say astronomy doesn't impart useful knowledge?

Bright Meteor Seen Over Western Canada

Written by Nancy Atkinson

A bright fireball lit up the sky over parts of Canada and was probably a meteor which may have hit the ground in central Alberta. Reports from all over western



Canada said the bright flashes occurred at 5:30 pm MST on Nov. 20. The bolide split the evening sky and fragmented during a series of booming explosions. The image above is from a video taken by Andy Bartlett, who recorded the event from a 10th-floor apartment in Edmonton, Alberta with his Canon A510.

Images of the meteor. Credit: SpaceWeather.com

A bright fireball lit up the sky over parts of Canada and was probably a meteor which may have hit the ground in central Alberta. Reports from all over western Canada said the bright flashes occurred at 5:30 pm MST on Nov. 20. The bolide split the evening sky and fragmented during a series of booming explosions. The image above is from a video taken by Andy Bartlett, who recorded the event from a 10th-floor apartment in Edmonton, Alberta with his Canon A510.



Fragments of a meteorite were found in a small pond at Buzzard Coulee, Sask. on Friday. (Geoff Howe/CP)

Fragments of the big meteorite that lit up the Canadian skies across the provinces of Alberta and Saskatchewan last week have been found. On Nov. 27, planetary scientist Dr. Alan Hildebrand from

the University of Calgary and graduate student Ellen Milley brought reporters to a site where they have found numerous meteorite fragments from the bolide. The area where the meteorite fragments were found is called Buzzard Coulee, about 40 kilometers from the town of Lloydminster, on the Alberta-Saskatchewan border. There, around a frozen pond, numerous small rocks and pebbles could be seen that the scientists said were from the meteorite. No large chunks were

spotted, however, reporters said.

The exact site of the findings hasn't yet been disclosed, but is said to be south of the community of Lloydminster on the Alberta-Saskatchewan border. Thousands of people saw the meteor streak across the sky and explode on November 20.

“Son of God, or Sun of God? The Real Meaning of Christmas!”

Preview of an article by Neil Haggath

Author's note: Our esteemed Editor has joked that some of my articles should carry a health warning. Well, this time, I'll give you the warning myself...

This is possibly the most contentious piece I've ever written. Some readers who are Christians may be offended; once again, they are not obliged to read it! I would hope, however, that all of our members are fair-minded and reasonable people, and will not begrudge me the right to express my views, just because they may differ from their own.

Editor's Note : *For those wishing to read his article in full could I direct you to his e-mail address neil.haggath@ntlworld.com, Neil will then send you a copy. Those without Internet access please contact the Editor for a printed copy.*

Check out Neil' Angry Man' Haggath's *award-winning personal website where he also has some excellent articles in the scientific vein. Please note you may need an asbestos Firewall!*

“Science and reason will prevail over senseless gibberish!”

The aim of this site is to demolish and discredit, by the use of scientific facts and rational analysis, some of the ridiculous, irrational rubbish which pervades today's society, and poisons the minds of the gullible - Neil Haggath

www.spaceandsanity.com

Articles : Please send contributions for the newsletter to Bob Mullen,

18 Chandlers Ridge, Nunthorpe, Middlesbrough, TS7 0JL, 01642 324939
(b2mullen@hotmail.com) Copy deadline date is the 20th of each month.).

Contents –December 2008

Do Astronomers Believe in Aliens	.....	page 4
The Far Side of the Moon, Michael Roe	.....	page 6
The Transit Quiz	.....	page 8
A Night to Remember	.....	page 9
The LHC and Miracles, John Crowther	.....	page 10
Observations of M27, Rob Peeling and Keith Johnson	.....	page 11
Wonder & Awe Under Perfect Skies, Andy and David Fleming	.....	page 16
This Time the Phoenix Won't Arise from the Ashes	.....	page 20
The Vanishing Sunspot Mystery	.....	page 21
The "Little Andromeda" Galaxy	.....	page 23
Bright Meteor Seen Over Western Canada	.....	page 26