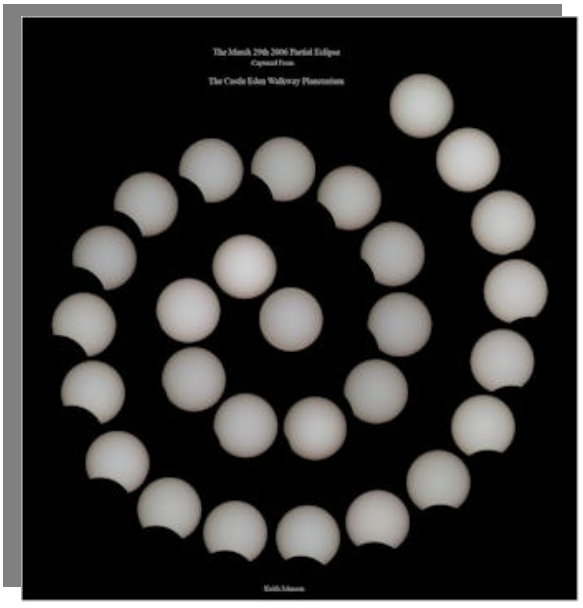
TRANSIT

The Newsletter of

Cleveland & Darlington Astronomical Society

05 May 2006



The 29 March 2006 partial eclipse by Keith Johnson
from the Wynyard Woodland Park Planetarium

Editorial

21st April meeting :

The Presidential Address by Jack Youdale.

12 May

"Strings and Things" by Lyn Smith and Hazel Collett of York A.S.

The Bolam Weather site

A superb specialist weather forecasting site passed on by Keith Johnson which shows a lot of parameters associated with astronomical seeing. The most interesting forecast relates to the presence of an overhead Jet Stream which can have a considerable effect on seeing. There is lots of other information on the site that probably only a weather expert like Don Martin can help you with but it is certainly worth a look.

http://www.meteoliguria.it/tabbolam21.asp

Letters to the Editor :

Any new observations, any comments on local or international astronomy, anything you want to share with your fellow members?

Dear Editor – sorry, nothing this month.

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Totality in Turkey

The Total Solar Eclipse of 2006 March 29

from Neil Haggath

Back in 1999, after my first successful observation of a total solar eclipse, I described it as one of the very few experiences in my life for which the overworked word "awesome" was truly appropriate. Now that I've seen my second, that same adjective still very much applies!

Once again, I travelled together with my great friend of many years, Don Martin. This was my third total eclipse trip – my record prior to it was one failure and one success – and Don's fifth, having had three successes out of four. Now, I'm happy to say, our respective scores are two out of three and four out of five.

The best place to observe this eclipse, both in terms of duration of totality and weather prospects, was somewhere deep in the Sahara Desert, in the middle of Libya. While some diehard veterans did indeed go there, that was too "dodgy" a destination for our liking, and we decided to go somewhere a bit safer – and cheaper.

By pure chance, one of the holiday resort areas on the southern coast of Turkey lay well within the track of totality, and only a few kilometres from the Centreline. So there was a rare opportunity to experience almost the maximum duration of totality which was possible in the region, without even having to leave the comfort of a luxury hotel! A tour company, Omega Holidays, had cottoned onto this idea, and took what turned out to be a huge tour group to the resort, just for a single night – flying to Turkey the day before the eclipse, and returning in the evening of the Big Day itself. The group consisted of 1600 people, split between six flights from different UK airports, and between three hotels in the resort of Side.

Don and I were among this group; we flew from Newcastle, departing at 7 a.m. on Tuesday (Yuk!!!), and arriving at Antalya Airport at 1 p.m. local time. The eclipse took place on Wednesday in the early afternoon, local time; an hour after it ended, the first coaches were leaving for the airport.

Staying at the same hotel as us were Chris Lintott and the BBC Sky at Night film crew. Chris gave an entertaining talk on Tuesday evening, and interviewed some of the observers during the buildup on Wednesday.

On the day, we found ourselves among a crowd of several hundred observers, on the upper level of the hotel's "amphitheatre"; that was also where Chris and the crew were filming.

Don had gone hi-tech for this one; he was trying out his brand new digital SLR camera, and his new Meade ETX 90 telescope (Fig. 1) – a 90-mm Schmidt-Cassegrain, which is ideal for this kind of trip, as it's small enough to carry as airline hand luggage. He also had a 300-mm telephoto lens; during totality, he swapped the camera between that, for images of the whole Sun, and the telescope, for close-ups of various features.

I, on the hand – ever the techno-Luddite – was still using old-fashioned film, with an SLR camera and a 600-mm zoom lens combination. While Don's set-up was state of the art, mine could best be described as "Astronomy according to Heath Robinson" (Fig. 2)!

Fig. 1

Fig. 2

Among the hi-tech equipment toted by some of the other observers were a couple of Coronado PSTs – dedicated solar telescopes with H-α filters. We got to look through one of these before the eclipse began, and saw that there were two large prominences erupting from the Sun's limb, and several smaller ones.

The path of totality was 171 km wide, and our observing location was only about 5 km from the Centreline. This meant that we would get a duration of totality only a second less than that at the Centreline – 3 minutes 45 seconds, to be precise. The Sun's altitude at mid-eclipse would be 54°, so the photography would be literally a pain in the neck!

Within 30 seconds of the predicted time of First Contact, the "bite" became discernible, when looking through my 600-mm lens, protected by a mylar filter. After about a minute, it was discernible to the naked eye, with mylar glasses.

At Second Contact, the last Baily's Bead formed a truly beautiful Diamond Ring. This is surely the most beautiful and breathtaking spectacle in all of nature (Fig. 3) – and this time, we got to see it twice! It was accompanied by countless "Oohs" and "Ahs", from novices and veterans alike.

During totality, the corona was about as bright as a Full Moon; I could easily read the dials on my camera by its light. As Chris Lintott had predicted, it was a classic example of a "near Solar Minimum" corona (Fig. 4) – elongated in the direction parallel to the Sun's equator, with "linear" streamers, as opposed to the more circular corona, with radiating streamers, typically seen at eclipses near Solar Maximum, such as in 1999.

Fig. 3

Fig 4

Third Contact was signified by another magnificent Diamond Ring – and then the few minutes of frantic activity was over. Many people began to pack up their equipment soon afterwards, as the second partial phase is always an anticlimax; others, including Don and me, elected to stay right until Fourth Contact, until the show was truly over.

As usual, there was a noticeable temperature drop during totality. Don had been taking temperature readings. At First Contact, it was 19°C, rising to 21°C by Fourth Contact – quite comfortable shirtsleeves weather. During totality, it dropped to 15°C, and it felt distinctly chilly.

While the visual observation was a complete success, I'm afraid the same can't be said about my photography! There was quite a strong breeze, which wasn't good for my equipment on my not-very-sturdy tripod. My shorter exposures, of the inner corona, came out reasonably well, but all the longer ones – 1/30 second upwards – which were needed to capture the outer corona, were completely ruined by camera shake.

Don's photos are a different matter altogether, and put mine to shame. The two reproduced above are his; mine are honestly not worthy of appearing alongside them!

Once again, the old cliché about eclipses being addictive was proved right. A few metres from Don and me was a gentleman who had not yet seen one, he had failed in Cornwall in 1999, and had decided to try again this time, simply because it was easy and cheap to get to. Before the event began, he told us that he just wanted to see one total eclipse, and then that would do for him. We told him that we would change his mind. He insisted, "No, I just want to see one."

"By a minute after Third Contact," I said, "You will have changed your mind…" And guess what… within a couple of minutes of Third Contact, he was asking, "When is the next one?"

There's only one thing left to say: Roll on 21 July 2009!

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" All that work for nowt!"

from Ray Worthy

My home is in Hartlepool on the north east coast of England, Lat. 54 N. if you want to be pedantic. Long, long ago, I was in college, studying to be a teacher. The college was in Weymouth which is a beautiful port and holiday resort. It was a whole top coat warmer than my home area. The sea was warmer and more blue. WeymouthC was a centre for sailing and I was introduced into their nautical fraternity. I cashed in some industrial shares and bought a small sailing dinghy. This was an entirely new experience for me, a whole new world full of enchantment and I happily spent many hours on the sunny bosom the Channel, even heaving to and swatting up for exams in the bottom of the boat, if you can believe that. The boat was only ten and a half feet long, technically, a clinker built Lymington pram with a dipping lugsail and I loved it.

When the time came for me to return home to the north east, I realised that I could not part with my boat, so I arranged with British Rail to transport it to Oxford. I dropped the dinghy into the upper Thames and from there, sailed it, rowed it and motored it through England's network of canals and rivers. It took me three weeks. However, when I installed it in the port of Hartlepool where I now live, I found that my beautiful little dinghy was totally unsuited to the rigours of the North Sea. Icy gales suddenly sprang up from nowhere, churning up waves which tossed my little craft like a piece of cork. I thought that my salvation had arrived when a friend who owned a three masted schooner wanted me to teach him the principles of celestial navigation.

He had all the equipment but needed someone to teach him how to use it. I thought I was well and truly tucked in for the future, with me lounging on the deck whilst other crew members scurried up and down the masts, pulling ropes and things. The schooner was much safer than my small dinghy. The trouble was that after successfully learning the celestial stuff, (He already knew most of the other stuff.) my friend passed his master's certificate. He too had his dream and it did not include the North Sea. He too found the rigours of the North Sea somewhat daunting and took his schooner south to Gibraltar where he chartered it out for a living.

For the record, in case any reader goes off with the impression that I am a navigating genius, I have to state that whilst out to sea and deliberately out of sight of land, I CHEATED. On the North Sea lives could be endangered, so I contrived a back-up insurance. You must remember that, at that time, satellite navigational aids existed only in the mind of Arthur C. Clarke. The North Sea is surrounded on three sides with land and at various places on the different shores there were radio beacons operating on a long wave band. I found they were accessible to a small cheap radio of mine. By turning the radio around, I could maximise the signal so I improved the aerial around a rod and fixed the set on a swivel which was attached to a flat board. This apparatus, I placed on the deck and aligned it fore and aft. With two or three bearings from various well chosen beacons, come hail rain or fog, I had a pretty good idea where I was. My friend could do his astronomical exercises till the cows came home, but I knew where I was.

As they say up here, " All that work for nowt!"

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NASA'S NEW MARS ORBITER RETURNS TEST IMAGES

From NASA

The first test images of Mars from NASA's newest spacecraft provide a tantalizing preview of what the orbiter will reveal when its main science mission begins next fall.

Three cameras on NASA's Mars Reconnaissance Orbiter were pointed at Mars at 11:36 p.m. EST, Thursday, while the spacecraft collected 40 minutes of engineering test data. The three cameras are the High Resolution Imaging Science Experiment, Context Camera and Mars Color Imager.

"These high resolution images of Mars are thrilling, and unique given the early morning time-of-day. The final orbit of Mars Reconnaissance Orbiter will be over Mars in the mid-afternoon, like Mars Global Surveyor and Mars Odyssey," said Alfred McEwen, of the University of Arizona, Tucson, the principal investigator for the orbiter's High Resolution Imaging Science Experiment camera.

"These images provide the first opportunity to test camera settings and the spacecraft's ability to point the camera with Mars filling the instruments' field of view," said Steve Saunders, the mission's program scientist at NASA Headquarters. "The information learned will be used to prepare for the primary mission next fall." The main purpose of these images is to enable the camera team to develop calibration and image-processing procedures such as the precise corrections needed for color imaging and for high-resolution surface measurements from stereo pairs of images.

To get desired groundspeeds and lighting conditions for the images, researchers programmed the cameras to shoot while the spacecraft was flying about 1,547 miles or more above Mars, nine times the range planned for the primary science mission. Even so, the highest resolution of about 8 feet per pixel - an object 8 feet in diameter would appear as a dot - is comparable to some of the best resolution previously achieved from Mars orbit.

Further processing of the images during the next week or two is expected to combine narrow swaths into broader views and show colour in some portions.

The Mars Reconnaissance Orbiter has been flying in elongated orbits around Mars since it entered orbit on March 10. Every 35 hours, it has swung from about 27,000 miles away from the planet to within about 264 miles of Mars' surface.

Mission operations teams at NASA's Jet Propulsion Laboratory, Pasadena, Calif., and at Lockheed Martin Space Systems, Denver, continue preparing for aerobraking. That process will use about 550 careful dips into the atmosphere during the next seven months to shrink the orbit to a near-circular shape less than 200 miles above the ground.

More than 25 gigabits of imaging data, enough to nearly fill five CD-ROMs, were received through NASA's Deep Space Network station at Canberra, Australia, and sent to JPL. They were made available to the camera teams at the University of Arizona Lunar and Planetary Laboratory and Malin Space Science Systems, San Diego, Calif.

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Lunar Lost & Found: The Search for Old Spacecraft

from Leonard Davey

One look at Earth's Moon is all it takes. It has been mussed up by scads of incoming celestial objects that produced lots of craters. But our Moon has also been on the receiving end of artificial impacts over the last few decades. Moon probes and leftover rocket stages have contributed to the crater population—albeit too small to see from our planet. Robotic lunar landers from the United States and the former Soviet Union dot the Moon too. Add in hardware castaways from human adventurers who made their way to the Moon from 1969 through 1972 as part of NASA's Apollo program, and you've got a lot of junk on the Moon. Pinpointing old spacecraft and artificial impact craters is not only a curatorial courtesy, but also can generate important science.

Precise locales

Starting in the 1960s, the "space race" between the Soviet Union and the United States was on full-speed. And the Moon was a place to demonstrate one-upmanship. NASA's Ranger, Surveyor and Lunar Orbiter spacecraft set the stage for the piloted Apollo landers. For the Soviet Union, it was the robotic Luna-series that plowed into the desolate landscape, as well as soft-landed, roved around, and even shot samples back to Earth across cis-lunar space. NASA's Lunar Reconnaissance Orbiter (LRO), to be sent moonward in 2008, will be able to spot some of this Space Age flotsam. LRO's camera system has enough resolving power for the task. But there is uncertainty in targeting LRO's imaging hardware to scout out the precise locales of all that gear that has plopped down on the aged Moon.

Tighter coordinates

"I've devoted almost all my time in the last five years to my Atlas of Lunar Exploration, which is in the final stages now," Stooke told *SPACE.com*. Part of his research is focused on tracking down the whereabouts of decades-old mooncraft and identifying craters caused by human-made objects. One might think the locations would be well-charted. But spacecraft were "lost" because they were never found initially, Stooke said. There are those craft that came to rest on the lunar surface, with their positions known to within

about 6 or 12 miles (10 or 20 kilometers), figured out by tracking a spacecraft's signals during descent. However, if future astronauts want to do a pinpoint landing near a piece of equipment, or wheel over to examine an old lander, they'll need much tighter coordinates. In some instances, the imagery taken by landed spacecraft from the surface is a big help. "That is also important for establishing the geological context of surface observations. So whenever something lands...people try to locate it precisely," Stooke pointed out. "The well established method for doing this is by comparing horizon relief features—hills or crater rims—on panoramas with the same features on orbital images. If you can match them you can locate the lander precisely."

Surveying for Surveyor

This method was basically invented, Stooke explained, by Ewen Whitaker of the Lunar and Planetary Laboratory at the University of Arizona in Tucson. He used it with Surveyor 1 and subsequent Surveyor craft that set down on the Moon between 1966 and 1968. "But it does depend on being able to match features," Stooke added. "In very flat areas there may be nothing to match." Surveyor 5 is such a case. "If you have only low resolution orbital images you may not be able to make a match either—that applies partly to Surveyor 5 as well, but especially to all the Soviet landers," Stooke said. "No Soviet spacecraft has ever been located precisely in this way because they didn't land in areas of good orbital photography." Even with photos taken from the Moon's surface, questions can remain. For example, is the Soviet Luna 9 landing area on the Moon back in 1966 in mare or highland terrain? "The argument has continued since it landed," Stooke said. Part of the interest is purely historical. "It would be nice to know where Luna 9 is, the first successful lander," Stooke said. "We may want to set up a register of historic sites, not to be disturbed by future missions or hardware impacts. To do that we need accurate locations."

Search for Lunokhod

One nifty exercise that's now being considered is attempting to bounce a laser beam off a lost-on-the-Moon Soviet rover: Lunokhod 1. That eight-wheel robotic lunar buggy is outfitted with laser "retroreflectors" and rolled about within the Moon's Sea of Rains for nearly a year after landing in November 1970. Lunokhod 1 may still have value as a laser ranging target. That's if it can be located precisely. The Soviet machinery is sitting silent at the most northerly of all landings on the Moon to date, "and would be a vital part of understanding the Moon's exact rotation for geophysical purposes," Stooke said. However, the robot's position is uncertain by at least 3 miles (5 kilometers), and stabs at getting laser returns all failed since early in the Lunokhod 1's mission. "We don't know if it is still clean or oriented suitably...if not there's no hope. But if it is, we still need a good position," Stooke said.

Tantalizing target

"The recovery of Lunokhod 1 is on my wish list," said Jim Williams of the Jet Propulsion Laboratory (JPL) in Pasadena, California. He and fellow investigators are part of a Lunar

Laser Ranging (LLR) data analysis group at JPL. Williams told *SPACE.com* that there are four laser retroreflector arrays on the Moon that get ranged: the Apollo 11, 14, and 15 sites plus the other Russian moonbuggy, Lunokhod 2. "As a result of the ranging, we know those positions to better than one-meter accuracy" or roughly three feet, he said. The arrays of 14 prisms on Lunokhods 1 and 2 were built by the French. The Lunokhod 2 retroreflector has been ranged, so the design works, Williams noted. The Lunokhod would rove during daylight, but was parked at night so that the array was oriented properly for Earth-to-Moon laser ranging. Lunokhod 1 is a tantalizing target, Williams said. "A few laser observations were reported early in the mobile Lunokhod 1's journey and later after it stopped moving, but those observations have never been publicly distributed or processed with a data analysis program of modern accuracy," Williams explained. "It is unclear whether the effectiveness of the Lunokhod 1 array has been compromised or whether position uncertainty and weak signal conspired to prevent its acquisition by standard ranging stations...but a modern search is in order."

Apache Point Observatory

The sole U.S. LLR station in the early 1970s tried to range Lunokhod 1, Williams said, but did not find it. "The task is more difficult than it sounds," Williams said. "The return signal should be very weak and only a limited spread of distance and angle could be searched...for a sequence of shots. The position may have been too poor or the Lunokhod 1 retroreflector may be obscured somehow." There is a new LLR station now undergoing checkout at Apache Point Observatory in New Mexico.

"Once the new station is operational and returning data, then a Lunokhod 1 search will be practical," Williams said. This new equipment at the facility will be a good instrument for the search, he added, but will still require a major effort.

Location uncertainties

Meanwhile, Stooke is on the lunar lookout trail. Early Apollo Moon landing craft and the moonwalkers themselves scuffed up areas of the lunar surface. These disturbances are visible in orbital imagery taken by later Apollo missions. A number of discarded Apollo rocket stages and lunar module ascent stages were tracked to narrow the search area. So those which fell in areas subsequently imaged were identified fairly easily, Stooke reported in his LPSC paper. Ranger 6's impact area may now have been found in Clementine images taken by that U.S. Defense Department Moon-orbiting spacecraft in 1994, Stooke stated. On the other hand, many impact craters made by orbiters at the end of their missions—or by failed landers—will be difficult to find because of location uncertainties. NASA Lunar Orbiter impact sites, for example, are uncertain by hundreds of kilometers and would be very difficult to distinguish from natural fresh impacts. On the other hand, craters formed by camera-carrying Ranger probes were found easily because images taken during their plunge toward the lunar terrain allowed impact sites to be predicted. Two of the three successful kamikaze-like Ranger missions imaged their impact points for comparison with later images. Hiten, a Japanese lunar orbiter, should be located easily using Earth-based tracking data and observation of the impact, Stooke said.

Protection of sites

In his lunar work, Stooke noted that several challenges remain. Can the site of Russia's Luna 2 impact be located? If it is, will visual observers be vindicated after years of doubt? Can Luna 9 or Surveyor 5 be located at last? Can the craters caused by the hits of spent rocket stages from the Apollo 15, 16 and 17 missions be found?

"The scientific value of this work includes placing lander data in better context, refining seismic results from Apollo [rocket stage] impacts, or planning future visits to old sites for study of old hardware, as Apollo 12 did for Surveyor 3," Stooke says. "If in the future it is decided to confer special designations or protection on these sites, finding them is essential.

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CASSINI FINDS "MISSING LINK" MOONLET EVIDENCE IN SATURN'S RINGS

from NASA

Scientists with NASA's Cassini mission have found evidence that a new class of small moonlets resides within Saturn's rings. There may be as many as 10 million of these objects within one of Saturn's rings alone.

The moonlets' existence could help answer the question of whether Saturn's rings were formed through the break-up of a larger body or are the remnants of the disk of material from which Saturn and its moons formed.

Careful analysis of high-resolution images taken by Cassini's cameras revealed four faint, propeller-shaped double-streaks. These features were found in an otherwise bland part of the mid-A ring, a bright section in Saturn's main rings. Cassini imaging scientists reporting in this week's edition of the journal Nature believe the "propellers" provide the first direct observation of how moonlets of this size affect nearby particles. Cassini took the images as it slipped into Saturn's orbit on July 1, 2004.

"These moonlets are likely to be chunks of the ancient body whose break-up produced Saturn's glorious rings," said Joseph Burns of Cornell University, Ithaca, N.Y. Burns is a co-author of the report.

Previous measurements, including those made by NASA's Voyager spacecraft in the early 1980s, have shown that Saturn's rings contain mostly small water-ice particles ranging from less than one-half inch across to the size of a small house. Scientists knew about two larger
embedded ring moons such as 19-mile-wide Pan and 4-mile-wide Daphnis. The latest

findings mark the first evidence of objects of approximately 300 feet in diameter.

From the number of moonlets spotted in the very small fraction of the A ring seen in the images, scientists estimated the total number of moonlets to be about 10 million.

"The discovery of these intermediate-sized bodies tells us that Pan and Daphnis are probably just the largest members of the ring population, rather than interlopers from somewhere else," said Matthew Tiscareno, an imaging team research associate at Cornell and lead author of the Nature paper.

Moons as large as Pan and Daphnis clear large gaps in the ring particles as they orbit Saturn. In contrast, smaller moonlets are not strong enough to clear out the ring, resulting in a partial gap centered on the moonlet and shaped like an airplane propeller. Such features created by moonlets were predicted by computer models, which give scientists confidence in their latest findings.
"We acquired this spectacular, one-of-a-kind set of images immediately after getting into orbit for the express purpose of seeing fine details in the rings that we had not seen previously," said Carolyn Porco, Cassini imaging team leader and co-author. "This will open up
a new dimension in our exploration of Saturn's rings and moons, their origin and evolution."

The detection of moonlets embedded in a ring of smaller particles may provide an opportunity to observe the processes by which planets form in disks of material around young stars, including our own early solar system.

The structures we observe with Cassini are strikingly similar to those seen in many numerical models of the early stages of planetary formation, even though the scales are dramatically different," said co-author Carl Murray, an imaging team member at Queen Mary, University of London. "Cassini is giving us a unique insight into the origin of planets."

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The Tiny School

from Ray Worthy

Any experienced teacher or planetarium operator will tell you that one of the most important aspects of programme preparation is getting the intellectual level of the programme matched with the mental development of the class. I have seen several instances where the matching was either poor or non-existent and there was absolutely no rapport between the operator and the class.

Whenever I found myself in the dome with an unknown class, I started off with a quick and simple quiz, so that the pupils could show off with their knowledge. I gradually made the questions more searching. sometimes I ended up by saying.
"You know it all. Why am I here?" The response was usually a satisfied giggle. This relaxed the class and a brilliant session ensued. All this preparation , of course , presupposed that the class was homogeneous and that the general development level was similar.

Now, consider this situation; a primary school situated in the Vale of York. The area was rural and the village was small , so small that the local education authority and the village council were constantly warring about the proposed school closure. One consequence of this small size was that the class was a " Family Unit" and instead of
all being roughly the same age, the pupils were of mixed ages and had reached different stages of development.

I decided to aim at the level of the youngest and invited the older ones to chip in from time to time and try to keep everyone on board.

The teacher wanted a programme which included a show about the planets, so I gave them my number one lecture. I went through how the stars were formed from their nebulae and explained that probably most stars would have a family of planets. Then, in some detail, I went through the planets , one by one with a quick addendum
about their moons; something most of you will have done time after time. The intelligence level of the pupils was quite high and they paid close attention to everything I said. Towards the end of the planet series, we came to the amazing picture of one of Neptune's Moons, Triton. I explained that the temperature was so low that if it went much lower it would reach a point where it could no lower. The kids had never heard of the concept of Absolute Zero.

The slide showed the frozen surface and the pole covered with a frozen pinkish ice and black smoke coming away from various points on the ice cap.

"Where are the clouds ", asked one, and I had to explain that the temperature was so low that all the material which could make what we would consider normal clouds was frozen into solid matter.

There was an eight year old girl on the floor next to me. She had taken an avid interest all the way through ,constantly asking pertinent questions. At this point however, her already high interest was cranked up a few gears.

" What is that stuff ?" she asked.
"What particular stuff do you mean,"
”That icing stuff"
"Well " said I, " It is a stuff which on Earth would be a gas; a gas which you could burn so that you fry your sausages on it."

" Yes, but what is it? "
She had four years before she would go to the big school and do chemistry.
"Well, amongst other stuff, it is a gas we call methane."
" Yes, but what IS it ?" she insisted. " What is methane."

I was stumped. How do you explain what methane is so that she could understand and be satisfied.
"Well ," I said again, deep in thought. " It is sometimes called Natural Gas ." Was she satisfied? No, she was not.
" What's natural gas?" she persisted.
Now, I am stuck. Where do I go from here?
(In for a penny ,in for a pound), I waded in.

" You know how little Johnny at the back of the class makes a rude noise with his bottom ? " , I asked. The class was by now sitting up and paying very close attention. This was their territory. You did not have to be an Einstein for this.
"Yes", She said, " We have a little Johnny and he is always
making rude noises ."
" Well then , that's natural gas. It comes from animals and plants."

She was truly puzzled but the class was buzzing.
"But what's that got to do with the icing on that moon? " she demanded.
What am I getting into here? I asked my self. Where are we going?
So bravely, I answered, " If little Johnny was sitting on that moon, it would be so cold that the gas which comes out would freeze and make that pink icing. "

That should do it I thought ", but I was sadly mistaken.
The class dissolved into hilarious laughter, but the poor girl burst into a genuine flood of tears that so that I and her teacher became very concerned.

" What is the matter Love," I asked, "What have I said to upset you?"

No answer came for quite some time whilst the class was rolling around the floor in merriment. "What is it Love?" Why are you crying?"
The answer came through, punctuated by her sobs,

" It's my berfday tomorrow and I am having pink icing on me cake!"

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Transit Tailpieces

Custom Telescopes UK.

Glen Oliver, a long-time member of the Society, can supply telescopes and accessories of all kinds. He operates from Hartlepool and has a website,
http://homepage.ntlworld.com/glen.oliver/custom.htm
e-mail glen.oliver@ntlworld.com.

Support local businessmen! Glen tells me that he now has an Astronomy and Space books page on his website

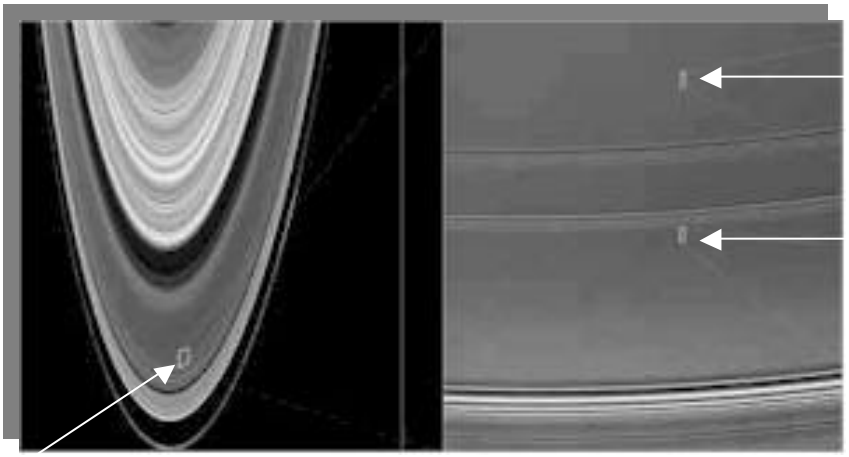
Transit Adverts If you wish to let members know what you want to sell or what you are looking for, please send an advert for the magazine.

CaDAS Website Don't forget to visit our very own website at www.**wynyard-planetarium**.net.

For sale – Helios 240mm reflector with tripod, eyepieces, Barlow etc. Sensible offers considered. Please contact Graham Johnson at the Carlton Outdoor Centre on 01642 712229

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 25th of each month.

Ray Worthy, contributing some of his memories of a varied life



Saturn’s newly discovered moonlets within the rings

Congratulations to NASA with their MRO insertion - now find us Beagle 2!