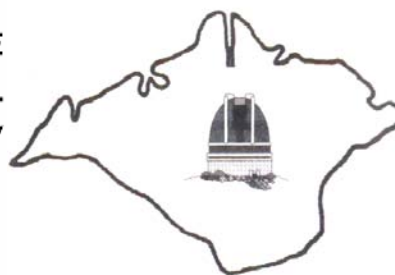


THE NEW ZENITH

THE MONTHLY
MAGAZINE OF THE
VECTIS ASTRONOMICAL
SOCIETY



VOLUME 14 No 7

AUGUST 2006

CHAIRMAN'S PRE-AGM REPORT 2006

July sees the end of our financial year, the time for elections and my report to all Members of the Society. So, here goes:

The progress we have made in the past few years in all our activities has been maintained. The Observatory has gone from strength to strength in both the equipment that has been installed and the use to which it is put. All the hard work and investment of recent years is now bearing fruit and a significant, and growing, proportion of the membership is enjoying one of the best amateur facilities in the country. The commissioning of the 5 inch solar telescope means that the Observatory can now be used for both night and day astronomy.

Those Members who attend the monthly meetings have had a season of outstanding interest on a wide range of topics in the lecture programme and virtually everybody in the Society has had the privilege of reading a first class monthly magazine which continues to amaze me by maintaining such a consistently high standard in both content and presentation.

The administration and structure of the Society is also sound. The membership remains high, the financial position is strong with expenditure strictly controlled to match income. We also have a newly modernised web site.

Now, if you think this report is complacent you are right,- but we have a lot to be complacent about. Thanks to the consistent efforts of the Committee and other Members we have reached a very desirable standard in every aspect of our activities. There is no reason to believe that this will not continue to be the case.

However , if you think that we should not be so complacent and that changes are needed, then you now have an excellent opportunity to do something about it. At the AGM all the Officer and Committee posts are open for election. If you wish to change things you can begin by getting elected. Alternatively, if you wish to take an active role in keeping the show on the road you may also try to get elected. The procedure is relatively simple and nomination forms are freely available.

In the paraphrased words of a famous World War One army recruitment poster :

“YOUR SOCIETY NEEDS YOU!”

Tom Watson

FROM THE EDITOR

Dear Readers

Well! This is something new!! 12 pages and all crammed with lots to read and things to do. While I was away, the magazine was ably edited by Bill Johnston and what a good job he made of it. I had better watch out or I could be looking for somewhere else to rest the editorial posterior...

Members should note John Smith's appeal asking for subs to be paid promptly. Reminder letters cost postage, stationery and John's time to send out each month and I know for certain that he could do with not having this extra burden put upon him.

The Garlic Festival will run once more but not as we knew it. This time it is going to be a commercially organised affair that may or may not need our efforts in providing marshals for the two days. As this is a profit-making business now, we shall be seeking a fair and reasonable payback for VAS for any assistance we provide. That said, it will still be a fun time and anyone able to help should contact Richard Flux with times available.

Finally, Guy Moore has certainly pulled out the stops with his cracking contributions this month. I for one have always been baffled over the Moon problem described. Now I have read the answer, I am a little more sure why I was baffled! Cheers!



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NEXT MONTH'S LECTURE August 25th

**Annual General Meeting
Early start at 7:00 pm
Followed by the Famous
Dr John Mason!**

**Anyone's guess as to his
subject, but guaranteed to
entertain. Not to be
missed.
In the Parish Hall
Town Lane
Newport**

August 2006 Subscriptions

Will the following members please note that their subscriptions are now due. As usual, all cheques should be made payable to the Vectis Astronomical Society and sent to my Winford address.

As the costs of postage continue to rise it would be appreciated if Members paid their annual fees due as soon as listed here and so reduce the need for reminder letters.

Thank you

John W Smith, 27 Forest Road, Winford, Sandown, IoW. PO36 0JY

134	Mr P. Bradshaw	£17
186	Mr R. Short	£17
188	Mrs R. Pears	£13
214	Mr P. Gower-Johnson	£17
225	Mr H. Rushton	£13
256	Mr R. Danzig	£17
285	Mr H. Buckett	£13
291	Mr A. Rowe	£7
299	Mr A. Matthews	£17
328	Mr K. Robinson	£17
331	Mr P. Wilson	£13
342	Mr G. H. Azarmer	£13
351	Mr M.P.Parker	£17

Continued in left hand-column

362	Dr. A. Byron	£13
377	Dr. E. Henderson	£13
380	Mr H. Morton	£17
407	Mr R. Taylor	£13
408	Mr D. Percival	£17
409	Mr R. Bundell	£17
410	Mr D. Elliott	£17
411	Mr M. Horrocks	£7

Cassini-Huygens



Dr. Andrew Coates, UCL

In 1655 Huygens observed that the strange shape of Saturn was due to rings of material orbiting the equator and discovered the moon Titan. In 1675 Cassini discovered additional moons of Saturn and the major division in the ring system. He suggested that the rings were not a solid structure but this was not proven until Maxwell showed them to be made up of innumerable small particles. The space mission to investigate the Saturn system in detail was named in honour of the two early observers.

During the flybys in the 1970's the Voyager spacecraft had observed Titan which was known to have a thick atmosphere. Voyager was unable to see through the haze but, using IR imaging techniques, a surface temperature of about -180°C was measured. This is close to the triple point of methane indicating a similar scenario to Earth could exist with methane seas. The atmosphere was found to contain 95% Nitrogen plus methane and various hydrocarbons – similar to Earth's early atmosphere. The Hubble telescope has been able to penetrate the haze and the pictures suggest some surface features that could be interpreted as methane seas.

Some of the questions that the Cassini-Huygens mission hoped to address include:-

Why does Saturn radiate 80% more energy than it receives?

What is Saturn's internal structure?

How do equatorial winds reach 2/3 of the speed of sound?

How did the rings form and how long have they been there?

Does Titan have hydrocarbon lakes?

What weather and internal structure is there on Titan?

How have the icy satellites of Saturn evolved?

How do the satellites affect the size of Saturn's magnetosphere?

The Cassini-Huygens mission was launched on 15th October 1997 and arrived at Saturn on 1st July 2004 after gaining gravity assists from Venus (twice), Earth and Jupiter. Initial experiments during the approach to the Saturn system monitored the aurorae and correlated the activity with variations in the solar wind. A flyby of the moon Phoebe on 11th June 2004 observed the retrograde motion of this object that is probably a captured comet.

The CAPS electron spectrometer (a Mullard Space Science Laboratory experiment) was used to measure: Electrons from the solar wind and the magnetosphere, Plasma boundaries and radiation belts (cf. Earth's van Allen belts),

Strong O+ line indicating large amounts of water, Occultations by the rings correlating with ring divisions,

Atmosphere above the rings,

Trails in the F-ring associated with the shepherd moon, Prometheus.

Profiles of the wind speed with latitude appear to have changed since the Voyager mission indicating a possible seasonal variation.

The Huygens probe was released on 25th December 2004 and successfully landed on Titan on 14th January 2005. IR, UV and radar imaging had been used from the Cassini orbiter to look at the surface prior to landing. The pictures show evidence of cryovolcanism as on Venus and some craters but generally a young surface indicating weather and volcanic effects. The lander returned 3 hours 37 minutes 16 seconds of data and showed dry (methane) river beds and lakes.

Observation of the moon Enceladus, in addition to images of craters and striations, has shown atmospheric plumes streaming into Saturn's magnetic field. These appear to be water ice geysers ejecting some 300kg/s. The material merges with Saturn's E-ring and is probably the source of that ring.

Cassini will continue to explore the Saturn system until 2008. In that time the orbit will be continually refined to allow most of the major moons to be investigated.

Reported by Roger Young

Alien Visitors?

Thursday nights at the observatory have seen a lot of new faces in the last few months and we recently had a surprise visit from the President of the Aberdeen Astronomical society Mr Darren Moody, who adjudged our site and facilities to be "fantastic", we were able to get scopes out for a short time and Darren was able to get some advantage from our more southerly position, we have an open invitation for members to drop in on him if they find themselves around the Aberdeen area.



August Skies

John W Smith

The Planets

Mercury presents a good showing at the start and middle of the month, but a good clear, low flat horizon is necessary.

Venus is starting its journey towards the Sun and may be viewed quite close to Mercury in the morning sky.

Mars moves quickly through the constellation of Leo but being rather small in angular size and faint will make it quite difficult to observe, particularly as it is quite close to the Sun.

Jupiter is fading and appearing smaller in angular size as it moves away from the Earth.

Saturn reaches opposition on the 7th so will not be visible.

Uranus nears opposition but may be visible around the 21st of the month.

Neptune is at opposition on the 11th so will not be visible.

Meteor Showers

There are five showers that peak this month. See the associated map for asterisks indicating the radiant points.

- *1 2nd August the alpha *Capricornids* give rates of around 5 per hour.
- *2 6th August the iota *Aquarids* give a rate of some 10 per hour.
- *3 7th August the delta *Aquarids* peak at around 10 per hour.
- *4 The highlight of the month are the *Perseids* with a rate of 80 per hour on the 12th/13th. A gibbous Moon will detract from the showing.
- *5 28th August the alpha *Aurigids* are favourable with a rate of 10 per hour.

Moon Phases

New	1st Quarter	Full	Last Quarter
23 rd	2 nd & 31 st	9 th	6 th

Deep Sky Objects for small telescopes and binoculars

M15 NGC7078. A superb globular cluster in Pegasus that lies about 35,000 light years away. It is fairly compact but binoculars will resolve some individual stars.

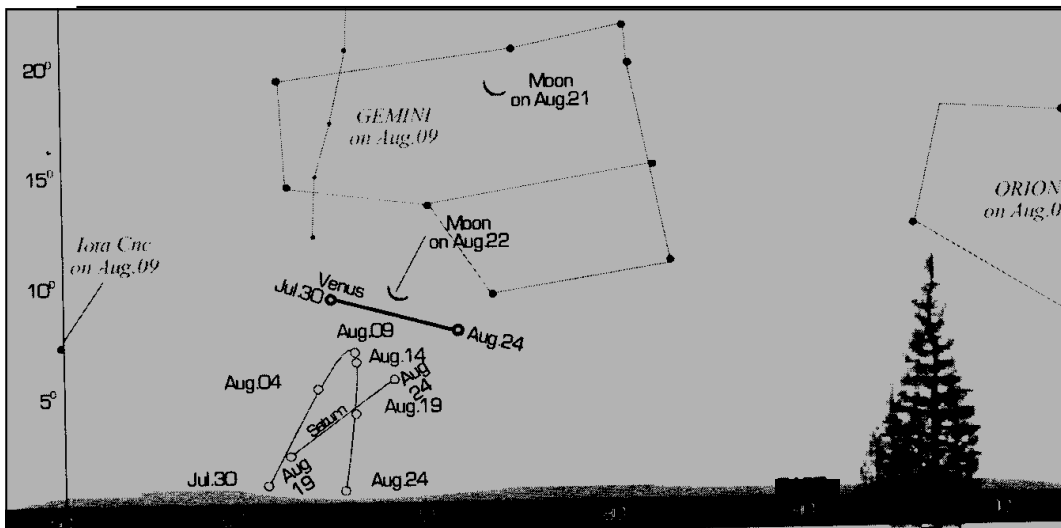
M29 NGC6913. This open cluster in Cygnus contains around 20 stars. It lies in the band of the Milky Way so it may not be easy to separate from the multitude of stars in that area of the sky.

M39 NGC7092. Another open cluster in Cygnus but lies to the north of the Northern Cross. This cluster contains some 25 stars.

M57 NGC6720. This planetary nebula lies about 5000 light years away. It is popularly known as the "Ring Nebula" due to its appearance as a doughnut in space. I prefer to think of it as "The Mint with Hole"! The central star is of the 14th magnitude is best seen with a larger instrument.

Coordinates

OBJECT	RA	DEC	MAG	SIZE (ARC MINS)
M15	21h 29m	+12deg 10m	6	6.5
M29	20h 23m	+38deg 27m	8	6
M39	21h 32m	+48deg 21m	6	30
M57	18h 53m	+33deg 01m	9	83 x 59 Arc secs

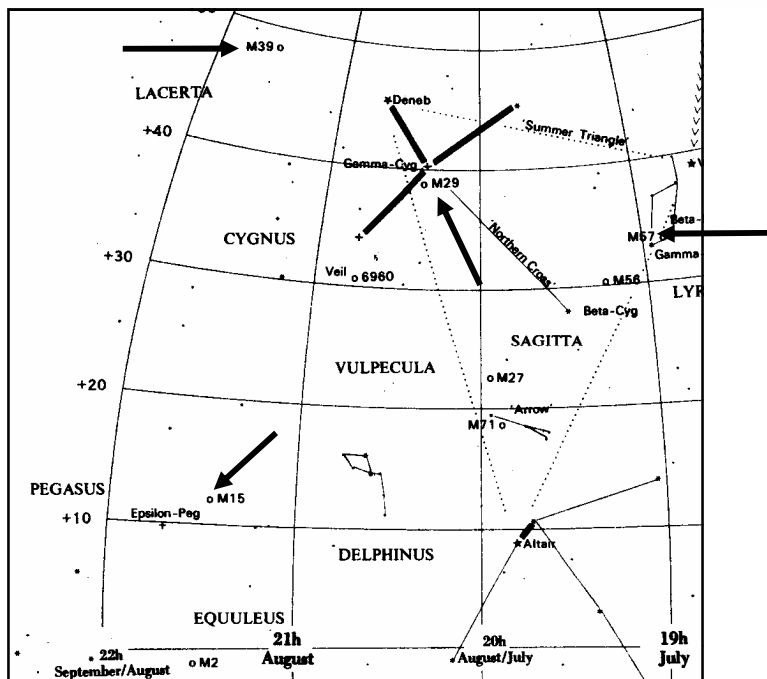
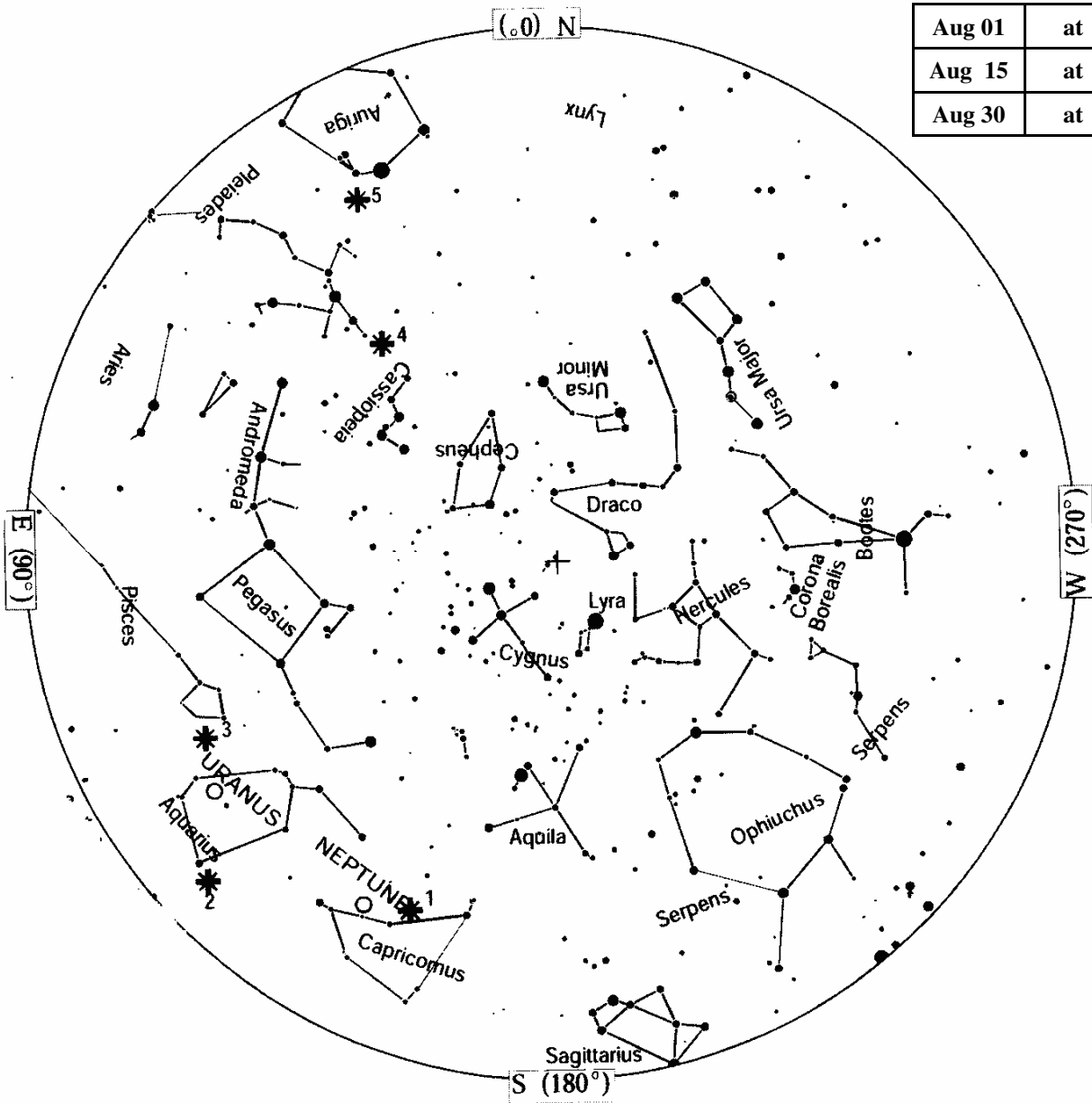


Mercury in the Morning Sky

There are many bright stars around to aid in locating Mercury, with Gemini prominent directly above. Venus is also just above Mercury during the apparition but faint Saturn will be a difficult object.

The crescent Moon approaches late on in the apparition when Mercury is less favourable.

Aug 01	at	24:00
Aug 15	at	23:00
Aug 30	at	22:00



The Moon, the Scarecrow and some Slices of Cheese.

Guy Moore

I am a scarecrow, I live somewhere on Earth, I don't know where, or where north is. I live on slices of Dutch Edam cheese dropped by crows, sometimes a thin wedge of a few degrees, sometimes if I am lucky it can be forty degrees or more, the precise number of degrees has something to do with the appearance of the Moon...

At sunset, I come alive, I look at the Moon and think - if I am facing the half-Moon at sunset then the Sun must be 90 degrees to my right. But if I draw the bisector of the Moon's crescent, I get a horizontal line that must remain at the same level above the horizon and therefore cannot pass through the Sun on the horizon - or so I might think. If the Moon is further to the left, then the three-quarter Moon points upwards above the Sun - but how can this be if light travels in straight lines? When I face a quarter Moon and the sunset is in front of my right arm, the crescent seems to point slightly above the Sun (see Fig.1).

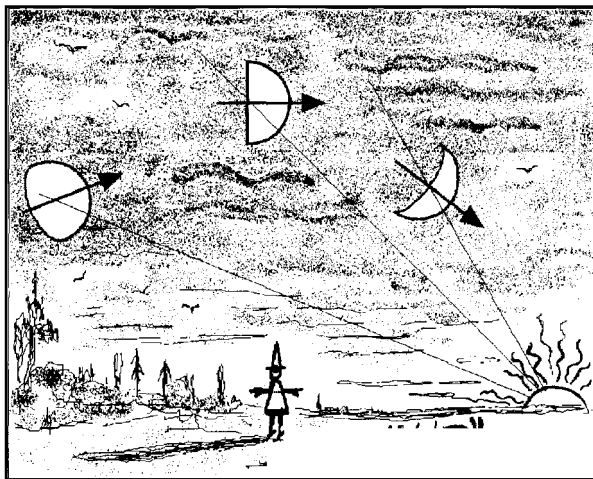


Fig 1 "Shouldn't the arrows point directly to the Sun?"

Physicists have argued **furiously** about this 'illusory' effect. Artists, despite their remarkable theories of perspective, keep at a safe distance. But the scarecrow had plenty of time to think about this problem, as follows:

A large hawk arrives, the sort that rambles report seeing on the IOW, ten-foot wing-span, and observes the scarecrow beneath, embedded in strange geometrical constructions. But whoops! - another piece of neatly cut cheese has fallen! It has two plane surfaces and a 'line of intersection' AB between the planes - see Fig. 2(a). The angle α ('alpha')

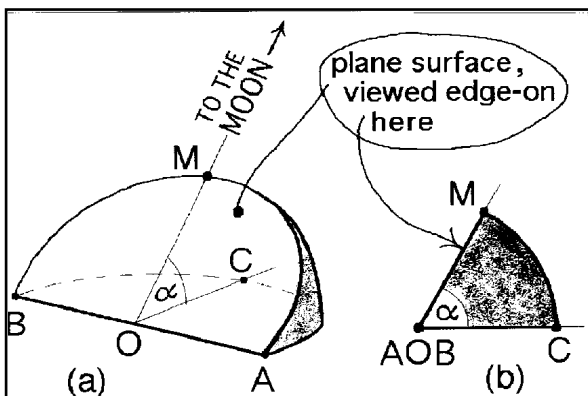


Fig.2 Dutch Edam cheese wedge

between the planes is such that line OM points directly at the Moon, with the bottom plane horizontal. In Fig.2(b) you are looking directly along the line of intersection AB between the two planes, so A (and O) and B appear as one point.

Three points define a plane, so the plane surface of the cheese ABM, when viewed along the line AB, fig.2(b), appears as a straight line sloping upwards from the scarecrow at O. Any plane surface of any shape looks like a straight line when viewed edge-on. When the scarecrow looks up line OM, in Fig.3(a), he or she sees point M in the middle of the Moon, and the plane AMB (which can be extended infinitely in all directions) appears as a horizontal line crossing the Moon (not drawn in yet), see Fig.3 (b). (Really the eyes are at O, not the feet.)



Fig 3b

Now on this particular day, it is a 3/4 Moon, so at sunset, the Sun is behind the scarecrow's right arm, see Fig.3(c) where a line is drawn from the scarecrow to the Sun. Where this line cuts the full circle of the imaginary cheese perimeter, point S is marked, and points O, S and M, define a plane and **within this plane** (it must be extended!) **light travels from the Sun to the Moon.**

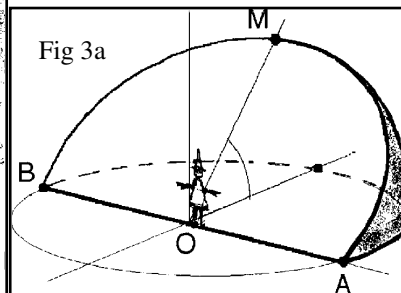


Fig 3a

When the scarecrow looks up line OM, this plane appears as an inclined line labelled "What's this line?" in Fig.3(d). Have a good think about this - but oops! - another slice of cheese has fallen,

just the correct angle to fit between points S and A, see Fig.4(a), and very slightly smaller radius to help the diagram. The scarecrow's right hand is touching the upper plane surface of this cheese and this is the same plane as OSM of Fig.3(c). When looking towards the Moon, Fig.4(b), this plane is inclined upwards, but since light travels from the Sun to the Moon (somewhere) **in this plane**, then the Moon has been 'pushed' over onto its back! Or so it seems and so it looks **but so it really is!**

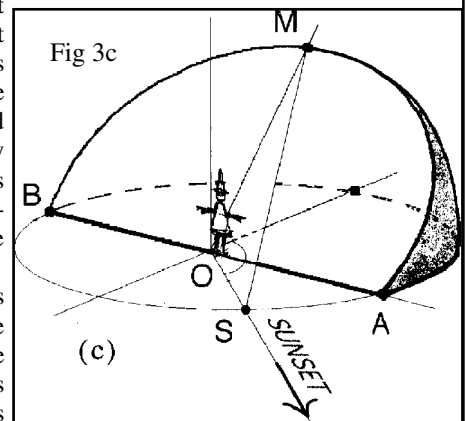


Fig 3c

is! Or so it seems and so it looks **but so it really is!**

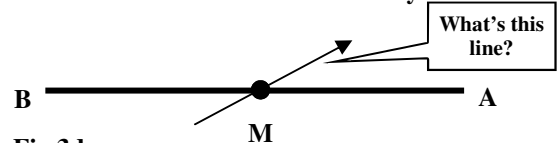


Fig 3d

By inserting x, y, and z axes and inserting the coordinates of various points, the angle of the Moon's crescent relative to the horizon has been calculated and used to write a program (clever scarecrow!) that plots

how the Moon looks for any position in the sky at sunset in Fig.5. When the Moon is vertically tre due to your height) and as you turn around to reach the Sun, **you are rotating**. This mythical imaginary, sideways line out there, **which is the wrong line**, must now be curved in order to reach the Sun, giving rise to crazy notions, like light travels across the sky in great circles (poppycock!). More about Perspective and the Sun's rays another time! Meantime, I burnt my bread rolls whilst writing this, but the cheese tasted fine - vacuum-packed vegetarian slices come in 200 gram packets - a good angle for demonstrations, but don't. take the wrapping off until you have finished grubbing about with all this geometry! (line up AR with the edge of a table for cheese number 1, have a ruler flat on the table, the edge passing through 0, under the cheese, pointing to 'hypothetical sunset'; alter the ruler until cheese 2 can be fitted between

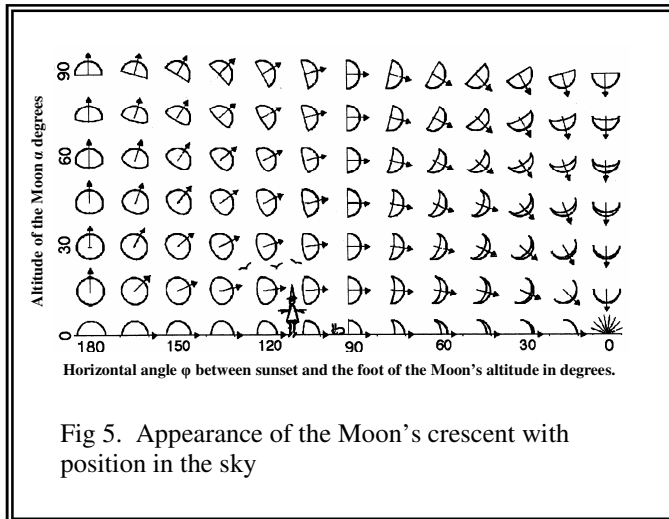


Fig 5. Appearance of the Moon's crescent with position in the sky

the ruler until cheese 2 can be fitted between the ruler and the table edge, as per Figs.3 and 4, then peer up OM to see the inclination of the plane along which hypothetical light travels practically horizontally from the sunset to the Moon, parallel to the ruler, but apparently 'coming in from above right'!)

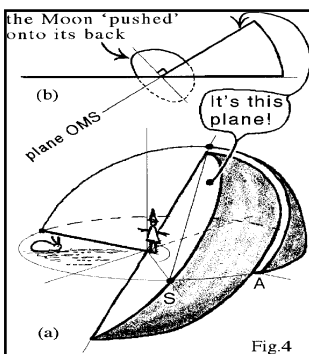


Fig.4

overhead, then the scarecrow can face in any direction so the half-moon images across the top of the diagram illustrate the same geometrical condition with the scarecrow rotating beneath. How the terminator appears is calculated making the approximation that rays of light from the Sun to the

Moon are parallel to the line OS in Fig.3(c) - not a bad assumption, at worst this is only one sixth of a degree in error (the biggest angle between the lines Earth-to-Sun and Moon-to-Sun).

What a coincidence! - the maths used to calculate Fig.5 is identical to that used in the manufacture of doubly-rotated quartz crystals for communications! (I once worked in this field) The cosine of the tilt of the Moon's crescent relative to the local horizontal is $\sin\phi[\sin^2\phi + \sin^2\alpha.\cos^2\phi]^{-0.5}$. I mention this to keep artists happy!...

Moon are parallel to the line OS in Fig.3(c) - not a bad assumption, at worst this is only one sixth of a degree in error (the biggest angle between the lines Earth-to-Sun and Moon-to-Sun).

Happy Scarecrow

Now for an experiment to reveal the truth that light travels in a straight line across the sky from the Sun to the Moon. Take a piece of card (the corner of a cereal packet) as in Figure 6(a), make a hole in it - about the size of a new penny (or an old six-pence) and make a slit (accurately perpendicular to the fold as shown). When a half or 3/4 Moon and the Sun are both visible, hold the card several inches away and view the Moon through the hole. Rotate the card around the hole until the Sun makes a bright stripe across the hole, Fig.6(b) - hey-presto! - this stripe cuts symmetrically across the crescent of the Moon, Fig.6(c), the illusion vanishes! - **but never look directly at the Sun.**

Does all this really answer the question of the 'illusion'? Do straight lines over large angles of the sky appear curved? The illusion comes about because when we bisect the Moon's crescent we (idiots that we are!) tend to think of a line, rather than viewing a plane edge-on, and we try to the project this line sideways, at a constant distance from us, towards the Sun, sweeping across the sky as if the sky is a dome. But the horizon isn't a straight line, it is a circle viewed

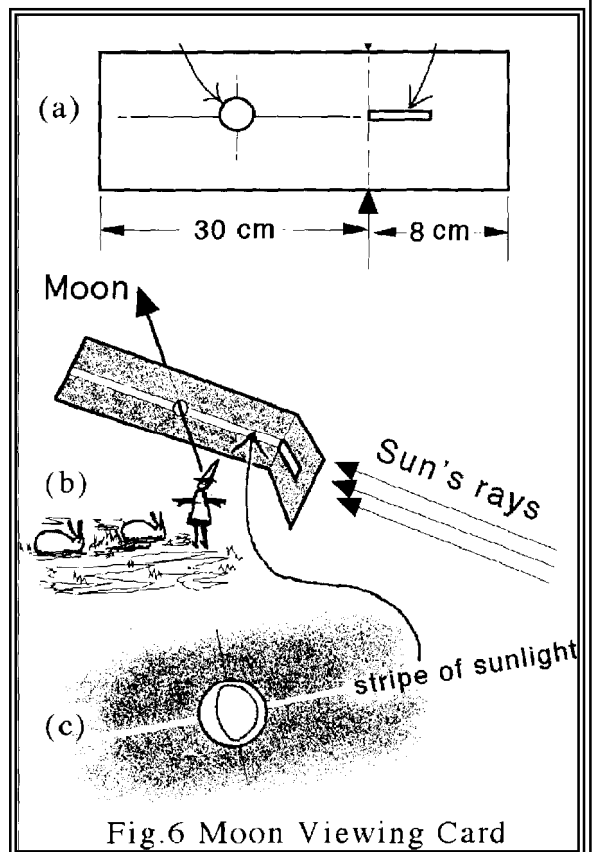


Fig.6 Moon Viewing Card

THE 2006 TEXAS STAR PARTY

'The Stars At Night Are Big And Bright, Deep In The Heart Of Texas'

Ever since reading a couple of articles about the Texas Star Party in the Webb Society's *Deep Sky Observer* and, later, in *Amateur Astronomy*, I have wanted to go to it. For a north eastern European, and especially UK, observer for whom observing can be a frustrating waiting game given Britain's notoriously inclement maritime climate and insane light pollution (60 million people overcrowded into a tiny archipelago less than a third the size of Texas certainly put out a hell of a lot of light in a small area) the TSP, which has a higher (though certainly not 100% guaranteed) chance of good observing weather, is a highly sought opportunity and legendary amongst Europeans. So, after eleven years I finally made it over there for the 2006 event. I originally planned to attend the 2005 one, but I had to pull out and, as it turns out, this was just as well because apparently the weather and conditions were awful last year with only a few hours' observing time over the entire week.

I registered for TSP 2006 in December and was allocated (as requested) a slot in a bunk house. I booked my flight with Northwest Airlines in January and flew on an elderly DC10 to San Antonio via Minneapolis (and the required – and nerve racking – Homeland Security immigration bit, fortunately it only took less than half a minute) on Sunday 23rd April where I was met by Robert Reeves who was giving me a lift out to the Prude Ranch where TSP is held. Monday was spent looking round San Antonio and also visiting the famous Alamo, which was much smaller than I expected.

On Tuesday, Robert and I left at 0730 for our long drive out to the Ranch in the Davis Mountains. The drive, with frequent stops, took eight hours and we got to the ranch mid afternoon, the latter part of the drive being through some beautiful mountain scenery. After dropping my belongings at the bunkhouse it was time to look round. I headed for the vendors' hall and bought some nice astronomy-related t-shirts; Robert had also made his way there and introduced me to legendary visual observer Barbara Wilson who was absolutely delighted that I had come all the way from England just to attend TSP.

I visited the vendors' area several times during TSP and came away with some TeleVue equipment - a 3mm Radian and a 2.5x Powermate and I also bought a second hand 5mm Radian later in the week: nice, useful souvenirs to take home!

By then, it was time to go and register for the star party as registration didn't open until 1630. I bought a TSP 2006 t-shirt, a TSP baseball hat (very useful for keeping the sun out of my eyes) as well as made a donation to Friends of TSP (this is a charitable organisation dedicated to keeping the TSP running year after year).

There were many telescopes of varying sizes on the three observing fields, but it was the upper field that was the most populous, being the TSP's prime location. This is from where I did all my observing. Large Dobsonians, well represented by Obsession and Starmaster examples, seemed to be the most popular type although Schmidt Cassegrains and their relatives were also well represented and there were also a few smallish refractors. I must admit I would love to be able to afford one of these large Dobsonians, but the price of purchase and then shipping to the UK would be, sadly, prohibitive.

Amenities: Well, the accommodation is pretty basic but as it's

cheap and I'm not that fussy anyway, it's a good deal (if you can ignore the loose toilet pans and utter lack of privacy!). Besides it's pretty comfortable and the ranch people do provide linen (something they didn't in the past, apparently). The food's not bad at all and there's hot water available.

Daytime and evening talks: There were a range of speakers from Richard Jakiel talking about visual observing and sketching to Robert Reeves talking about 'Imaging with a Webcam' and also Steve O'Meara talking about 'The Art of Seeing The Invisible' and Darrell Lee about the birds to be seen in the Davis Mountains area.

Observing at TSP: Above anything else, TSP is an *observer's* event. It is **not** about the latest innovations or the most outlandish telescope design but **is** about *observing*. That is why people traipse across the United States and from further afield, for West Texan dark (and mostly) clear skies. As far as observing was concerned Tuesday night was a complete cloud-out but, for me, this turned out to be a blessing in disguise as I was still pretty tired from all the travelling. However, the next four nights had enough clear spells to guarantee lots of observing. Wednesday and Thursday nights had some cloud (but not enough to prevent people observing) but Friday and Saturday were as clear as could be and led to all-nighters. The earliest I went to bed on a clear night was at 0400 and that was on the Wednesday.

On the first two nights I mostly used Alvin Huey's enormous 30" Dobsonian to observe Hickson Galaxy groups and Arp Peculiar Galaxies. We also had a shot at the Horsehead but as Orion was getting pretty low this was incredibly tough and the Horsehead was **extremely** faint and I didn't attempt to sketch it. I observed and sketched Hickson's 40, 55, 57, 61, Arp's 63, 94, 129, 137, 232 and 263 (the latter was my favourite due to its shape, comparative brightness [in a 30"!]) and its surroundings, lots of tiny faint galaxies with MAC, MCG, UGC, CGCG designations and so on. Wonderful!) plus I also (well it'd have been rude not to!) had a look at Omega Centauri with the 30" and that was extremely impressive and overwhelming. And no, there was NO chance I was going to attempt sketching *that* (besides I'd already done so, in a *much punier* instrument in Australia in 1997). It had an almost three dimensional effect and I almost thought I could see right through the thing. I also got to look at the spiral structures of M51 and its little friend NGC 5195 as well as M101 and I sketched these and very pleasing they are too.

NGC 2359 (aka Thor's Helmet), a nebula associated with a Wolf-Rayet star, was also observed and sketched and this reminded me of a football (ok, *soccer*) referee's whistle more than a Viking helmet.

On Friday night, I got the opportunity to observe with well known observer Larry Mitchell's vast 36" Dobsonian. This is easily the biggest telescope I have ever looked through and was matched by a huge, but stable, stepladder. I joined in the fun of a search for Abell 28, a large and elusive planetary nebula in Ursa Major. After it was established that this was yes, definitely, the right field, we took it in turns to scrutinise the field of view. I think I saw some brightening in the right area, but not sure enough to say with 100% certainty that I made a positive observation. This thing is notoriously difficult anyway, so maybe it wasn't surprising that we had a few problems with it. The fact that it was getting low didn't aid our cause much, either. I put it down as 'perhaps a definite maybe'.

Next up in the 36" was Vorontsov Vel'yaminov 172, aka Hickson 55, a faint chain of five galaxies in Draco. I observed and sketched these with no prior reference to images and was pleased when Larry showed me a photo showing the five tiny nuclei exactly where I'd placed them in my sketch - "Man, you've NAILED 'em!". Even more impressive is the fact that these tiny galaxies are actually 1 BILLION light years away.

We also looked for and saw Herbig Haro 555, a jet of matter buried deep in the Pelican Nebula in Cygnus. I saw the tiny knot and part of the jet, it was very hard to see, but definitely there. This has to be the most exotic object I've observed to date and it was fascinating. After this, we decided to ruin our dark adaptation with a high powered view of NGC 4565 - all I can say was that this thing in the 36" was awesome, filling the whole field of view and blazing brightly and bisected by its dark lane, providing a good contrast to the bright galaxy. We also saw NGC 6888, another Wolf-Rayet star nebula and this looked like silver filaments with a diamond at the centre - I've seen this with an 8" in the UK but, of course, the views were incomparable to this.

My final night at TSP was spent observing NGC galaxies in Ursa Major and Virgo with Barbara Wilson, using her 20" Dobsonian. Barbara was (I think) doing a Herschel 400 project and kindly allowed me to observe with her and sketch the objects. Among these were NGC's 3575, 3652, 3516, 4608, 4612, 4654, 4691, 3583 and 3577. The same night I also managed to see Palomar 4, a difficult globular that Anna Chandler had located in her 18". That was pretty faint, but was also pretty obvious in the eyepiece as a faint glow.

Another observing treat was the fragments of Comet Schwassmann-Wachmann 73P. One fragment showed a beautiful fan shape, with tail, through Mike Planchon's 10" Dobsonian. This is (these are?!) already a good comet and hopefully will get brighter over the coming weeks. Texas skies certainly show objects like these to their full advantage.

During my time at TSP, and with the exception of my binoculars (I used them to get a TSP observing pin), the smallest scope I used was an 18" Dobsonian. I used 20", 30", 18", 18" and 36" instruments, all of which are superb scopes and gave fantastic views. This sort of opportunity is rare and I took full advantage of it.

Nearby astronomical sites of interest: During the week I visited the Very Long Baseline Array radio dish which is adjacent to the Prude Ranch and Robert, myself and Ben Jones got a guided tour which included climbing up into the radio telescope itself.

The following day I went on one of the TSP organised bus trips to the nearby McDonald Observatory on Mt Locke. This cost \$11 but was worth the money for we got to see some world famous telescopes. We went into the 107", 82" and Hobby-Eberly domes; although the latter is usually not open to the public I suppose we got to go inside as we were considered a special-interest group and not just mere, slightly curious 'Joe

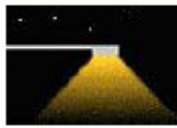
Public' I have to admit the Hobby-Eberly talk about spectroscopy was not the most interesting (to me anyway) and I took a quick power nap against the base of the telescope itself - I was not the only one! That was the combined effects of a hot afternoon, just after lunch, and a very late night observing until 0400!

Farewell Texas: All too soon it was time, not only to say farewell to the Texas Star Party and the many friends I met there, but also to Texas and the USA and very reluctantly fly back to England. The flight from San Antonio was not without incident as the jet starter didn't work and they had to go fetch another (apparently this is a machine which gets air flowing through the turbines so the engines can be started) so we were late into Detroit and I had to run for my London flight - at the other end of the airport, of course - and I'm pleased to report that I made the flight with a few minutes to spare and I was also pretty relieved to be reunited with my checked-in bag at Gatwick Airport's baggage reclaim the next morning as I had doubts about that making the flight in time!

Conclusion: The Texas Star Party is the premier star party in the world and is well worth the time, effort and money invested to get there. Ok, the Prude Ranch's amenities are, well, slightly *rustic* but, hey, that's no problem. For me, it was an inexpensive and good-value-for-money vacation and immersing myself in astronomy for a week, as well as meeting other observers, is too good an opportunity to pass up. I recommend that all serious observers attend at least once in their lives, it is well worth it and you meet some great people. I am already making plans to return next year and I'm hoping airline fuel prices don't rise too much in the intervening time, with their attendant ticket price rises.

There is one dangerous side-effect of the Texas Star Party - I now have a bad case of aperture fever since returning home and am wondering where I can acquire a 20" mirror within the UK... I do have to confess that, while I love BIG SCOPES, I don't think I would really want anything larger than 20 or 22" aperture due to the fact that it would probably never get used. I did find that going up and down ladders all night is hard on the feet, but on the other hand that was a very small price to pay for the views I got.

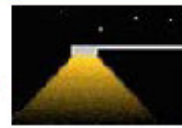
The best things about TSP? Well, the dark and - for the most part - clear skies, the talks, the scopes, the opportunity to buy astro gear at a fraction of the price you'd pay this side of the Pond, the scenery, the warm weather, the wildlife and, above all, **the people**. Other amateur astronomers are a joy to meet up and observe with and are generous beyond question when it comes to sharing their scopes and time; meeting, and observing with, some of the world's best observers - Barbara Wilson, Larry Mitchell, Steve O'Meara, Alvin Huey *et al* was a real thrill. I also get a kick out of seeing how other observers observe, and there's no better way to do this than at a huge star party. This was a surprisingly, given the distance to travel, pretty cheap vacation (amounting to not much more than £500 all in, except spending money) and by whatever means I can I am determined to return in 2007. *Faith Jordan*



CfDS 2006

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IF YOU WOULD LIKE TO GO TO THIS SYMPOSIUM IN SEPTEMBER, PLEASE USE THE ABOVE FORM AND SEND IT WITH YOUR CHEQUE TO THE ADDRESS GIVEN. MORE DETAILS ON EXACT VENUE IN PORTSMOUTH LATER.

Back in the June 2006 issue of NZ, we carried an article entitled 'Kids' Stuff?'. Junior member James Dymock asked two questions that seemed utterly simple until you got down to thinking about the deeper implications. Guy Moore obviously has had severe insomnia in wrestling with the answers, but here below he presents THE TRUTH!

"Good questions from James Dymock - famous physicists sometimes comment that, like children, we must not forget how to ask the big 'why?' - but unlike adults, we shouldn't keep children waiting for answers to profound questions like this! - I'm a bit rushed (sorry no pictures) but here goes:

Puzzle 1 .Light trapped in a box. Yes, it would be possible in principle to trap light in a box, turn the lights out, then open the box in a dark room and see the light re-emerge - but a few things need to be done:

1. The box must have all inside walls and the lid made of perfect mirrors, otherwise the light first let into the box becomes absorbed by the walls. (This causes a slight increase in temperature in the box - and when the lid is opened. the light comes out, not as light, but as invisible infra-red radiation - provided the darkroom is also colder than the box.)

2. You must be exceedingly quick to see the light re-emerge or else you need to perform the experiment on a big scale, using a mirror-box with sides hundreds of miles long, taking several seconds to fill with light (don't forget all the internal multiple reflections). The experiment becomes a 'thought-experiment', which in principle could be done, but in practice, is usually too difficult to do.

Designing 'thought experiments' was the key method used by Einstein, who, replying to the next question from a puzzled person who had just learnt that Einstein was a physicist, asked, "...and where is your laboratory?" Einstein tapped the pen in his pocket and said, "This is my laboratory!"

Much more could be said about hypothetical mirror-boxes in the form of cylinders fitted with moving pistons - to compress or expand the light! - or the radiation inside boxes at different temperatures. The microwave background found in the universe is like the radiation you would find inside a box at a temperature of 3 degrees above absolute zero. This brings us much too quickly to the next question:

Puzzle 2. Does all light travel at the same speed?

Yes, through a vacuum, otherwise always slower when travelling through a transparent medium, such as air, glass, water, various crystals or optical fibres, or space containing a few electrons per cubic metre, causing radio crackles from flares on stars to arrive

minutes later than their light.

The most curious questions relate to light travelling through perfect space. All electromagnetic waves - radio, infra-red, visible light (all colours), ultra-violet, X-rays and gamma rays - travel through empty space at close to 300 million metres per second regardless of the speed of the source of the waves. This makes sense, or you would have the weird situation where, in the same region of space, light beams travelling in the same direction, could be found moving with different speeds according to how fast the various sources of the beams are moving! This doesn't happen with sound travelling through air - sound waves travel with the same speed through the air regardless of speed of the source of the sound. But there is a deep problem! Space doesn't contain any air - so relative to what do you measure the speed of light? And what about the motion of the observer?

Einstein rescued us from Victorian notions of an all-pervading medium, the 'aether', which nobody could ever detect by experiment - for the simple reason, it does not exist. Any observer, drifting freely through space, regardless of their speed, always measures the same velocity of light - and the reason? Because you cannot think of a thought-experiment enabling you to measure the speed of light relative to nothing at all.

This has some strange effects - identical clocks set to the same time, will say different times if you take one clock on a long but rapid journey 'there-and-back'; objects in motion relative to us appear to become shorter, called 'Lorentz contraction', and they become heavier the faster they move - with many consequences for cosmologists and astronomers!

One of the biggest questions that Einstein faced, was 'action at a distance'. His thoughts on this began when playing with magnets, as a child, wondering how things can affect each other at a distance. What travels between one object and another? - or can effects be produced remotely from their causes, without anything travelling through intervening space? It was these thoughts together with history and personality that led Einstein to become the most famous scientist of all time!

Guy Moore

Note: Guy uses Macintosh computer equipment (and BBC micros) - never throw unwanted or not working Macintosh equipment away, give or sell it to Guy.

INTERESTING FACTS

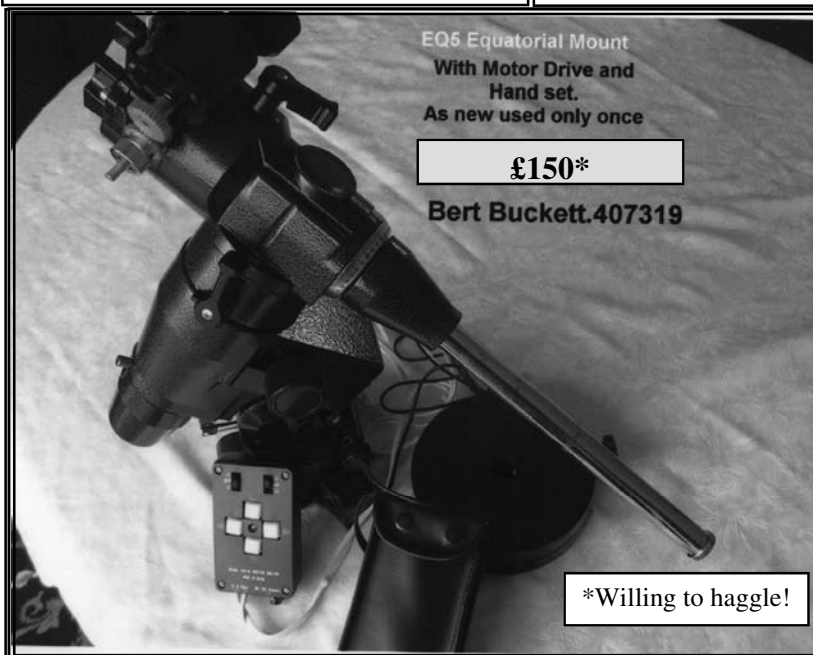
PART 23

In 1993, six newly discovered asteroids were named after the stars of Monty Python's Flying Circus. First-named of the series was 9617 grahamchapman.

Website of the Month

http://www.boulder.swri.edu/~durda/Apollo/landing_sites.html

Get out your binoculars and walk on the moon. (don't mention Arizona)



FOR SALE

Bert Buckett wishes to dispose of this magnificent mount (left) which is virtually brand-new. Asking £150, which is not unreasonable due to its pristine condition, nevertheless Bert enjoys a good haggle and is looking for offers. Call him on 01983 407319.

Last Words

The VAS 30th Anniversary Dinner has been scheduled for Saturday 4th November this year. The actual anniversary is on 5th November, but if everybody keeps the party atmosphere going until midnight on the 4th, we should see in the great day splendidly. After too much refreshment, however, it is possible that some Members will be having trouble with the 'seeing conditions'!

If you fancy coming along to the do, and wish to drag the loved one along too - all welcome- then drop an email to the Editor, or contact any of the Committee people. At present all we require is a good idea of numbers in order to provisionally book a venue. Later on there will be more information re. location, menus and price per head.

Editor

Submissions to the **NEW ZENITH** are very welcome and should be sent to the the following address
The Editor **NEW ZENITH**
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Alverstone Garden Village
Sandown PO36 0HF
Tele: 01983 407098
E Mail: john@vlangley.freemove.co.uk (any attached files in Word Document format, preferably)

FIND VAS ON THE INTERNET

Members should note the Vectis Astronomical Society Website address:

<http://www.vectis-astro.org.uk/>

MATERIAL FOR THE NEXT ISSUE TO BE RECEIVED BY THE 6TH OF THE MONTH

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