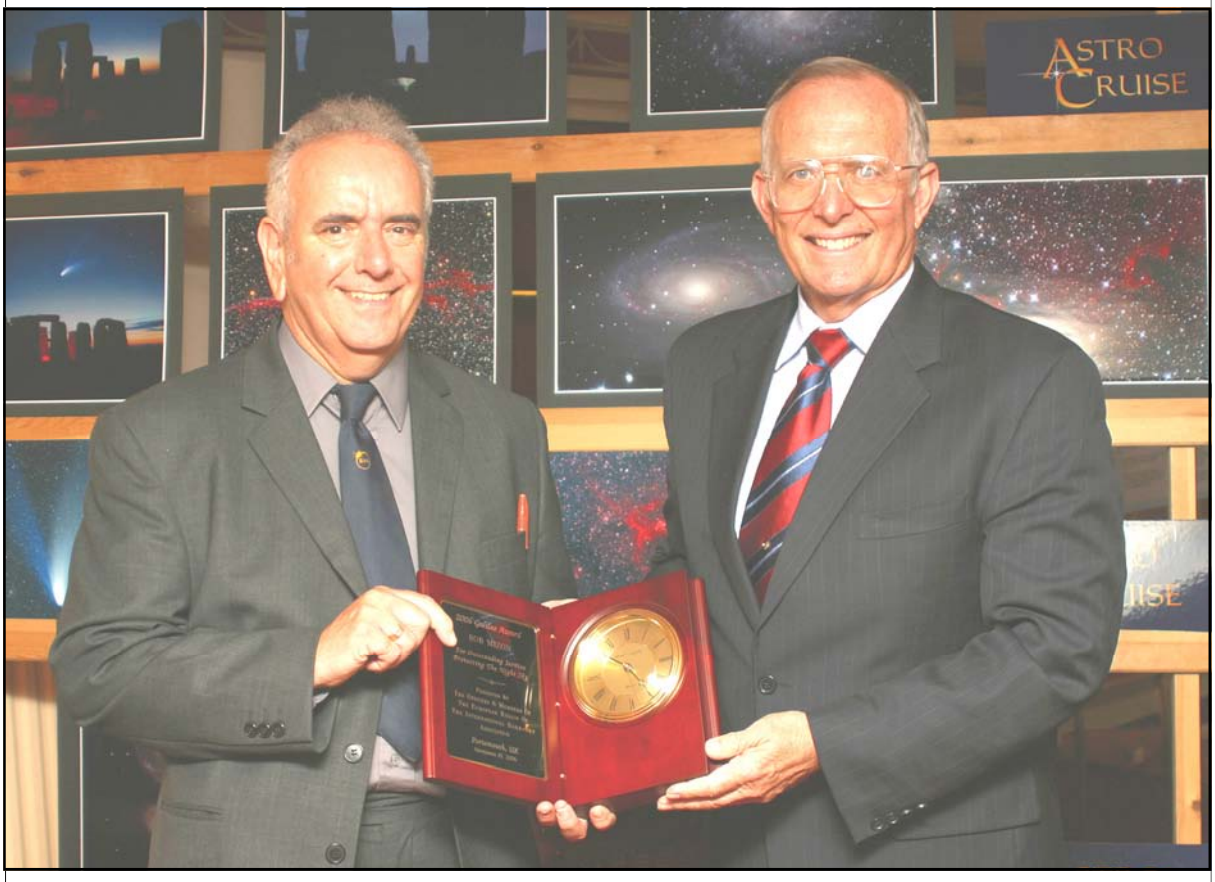
THE NEW ZENITH

THE MONTHLY MAGAZINE OF THE VECTIS ASTRONOMICAL SOCIETY

VOLUME 14 No 9

OCTOBER 2006

BOB MIZON 'DE-LIGHTED' TO GET TOP AWARD



Bob Mizon, on left, receiving his Galileo Award from Robert Gent, Vice President of the International Dark-skies Association. Details on Page 8.

Photo courtesy Pete Seiden

FROM THE EDITOR

Dear Readers

It was my privilege to be a delegate at the 6th European Symposium on Dark Skies, held in Portsmouth back on 15th and 16th September. Delegates from around the world arrived to hear what progress was being made in protection of Earth's night sky. The Symposium was a great success which was only marred for me to note that nobody from the Isle of Wight County Council attended, despite being informed well in advance that matters pertaining to planning issues would be aired. Obviously, more important subjects kept our representatives away; perhaps next time, should the venue happen to be Nice or Rome or somewhere equally exotic, then it would be no surprise to have a ferry crammed with eager 'County Hallers' anxious not to miss a single vital word. Oh well, here's hoping...

And speaking of junkets, you have only a very short time to put your name down for the VAS 30th Anniversary Dinner. The list is almost completely full but, first come - first served. My knife and fork have been sharpened already. Cheers.

IN THIS ISSUE

PAM SMITH

I would like to thank all of those who attended my wife's funeral and sent me letters and cards of condolence. It was very gratifying to know how well thought of she was, and how she always supported me in my VAS activities. The collection raised £428 which will be donated to the Island Society for the Blind

Thank you all again.

John Smith

NEXT MONTH'S LECTURE

In the Parish Hall
Town Lane
Newport

BLACK HOLES By Dr Katherine Gunn

October 27th at 7:30 pm

Cross the Hall's Event Horizon if you dare!!!

October 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

236	Mr P. Bingham	£17
282	Mr P. Hogan	£13
308	Mr P. Grattage	£7
382	Mr A.Taylor	£13
383	Mr S. Taylor	£17
416	Mr A.Bennett	£13
417	Mr P. Jeffery	£17

Hayabusa at Itokawa

By Dr John Mason

In the summer of 2003 the Japanese launched an ambitious mission to a small asteroid. The aim of the mission was to investigate a typical Earth crossing asteroid and try and bring a sample of the material back to Earth. This object was chosen as representative of the type of meteorite that could collide with the Earth and cause a major catastrophe.

Itokawa was chosen when the original launch date had to be postponed and was named only after launch, previously being known as asteroid 25143. The name recognises the father of the Japanese rocket programme.

The asteroid is only half a mile in diameter and so possesses insignificant gravity. A number of techniques for collecting a sample were considered: land, anchor the spacecraft and drill into the surface; use a harpoon; fly past and blast material off using the rocket; land, fire pellets into the surface and collect the resultant debris.

The last of these options was chosen. A small rover vehicle was included in the mission that would also try and gather material.

On arrival on 12 April 2005 and during the transfer orbit a huge solar flare occurred that caused some damage to the onboard systems. Most recovered except for one of the attitude control sensors.

Pictures taken from a distance of 6-7km show the asteroid to be a 'rubble pile'. There was a rough surface with some smooth areas, no craters and numerous large boulders. Overall it appeared to be a number of chunks of material that had fused together.

The first trial landing was attempted on 4th November 2005. Unfortunately, communication was lost during descent and the spacecraft returned to its safe 'hover' position at 7km. This happened again on the 12th November with the added disaster that the rover was launched from height and lost to space.

On 25th November a successful landing was made and the command to fire the gun was sent. However it appears that the gun failed to fire but the sample container was sealed so hopefully some material was gathered.

Return to Earth was delayed due to further loss of communication on 8th December following a fuel leak. Contact was finally regained on 23rd January and new software uploaded. The return to Earth is now along a non-ideal path and we will not know how successful the mission was until the craft lands in the Australian outback in June 2010.

New Horizons at Pluto

Pluto has now been classified as a dwarf planet, reducing the number of planets in the Solar System to eight. However, this does not change the status of the New Horizons mission to Pluto, its moons and other objects in the Kuiper belt.

Following launch in January 2006 the spacecraft will get a gravity assist from Jupiter in February 2007 and arrive at Pluto in July 2015.

Pluto is one of a large family of objects known as **Trans Neptunian Objects** (TNOs). These can be sub-divided into:

Classical **Kuiper Belt Objects** (KBOs) that are within the gravitational influence of Neptune and exhibit gravitational resonances with Neptune's orbit, and

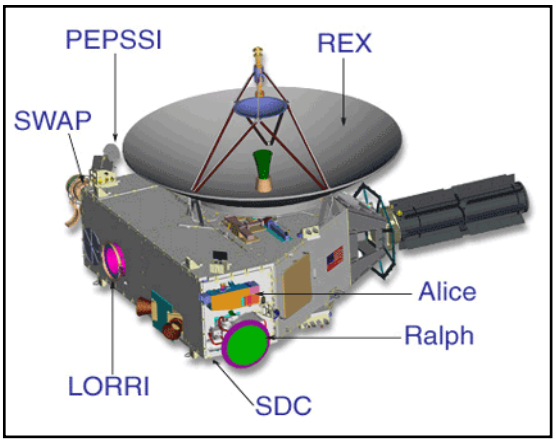
Scattered Disc Objects (SDOs) in eccentric, highly inclined orbits, also under Neptune's influence.

Typical SDOs are Pluto itself, Sedna and Xena at an average distance of 76AU. Sedna is slightly smaller than Pluto at 1500km diameter, compared to 2320km while Xena is slightly larger at about 2860km. Spectra suggest all these are of similar composition.

It is the presence of a number of similar size objects that has caused Pluto to be downgraded to a dwarf planet along with Sedna and Xena and any others that are found. Otherwise all these objects would be classified as planets.

After New Horizons has visited Pluto and its moons Charon, Nix and Hydra, the spacecraft will continue out into the Kuiper belt and observe objects over the period 2016-2020.

Reported by Roger Young



New Horizons Spacecraft

PEPSSI	Pluto Energetic Particle Spectrometer Science Investigation
REX	Radio Science Experiment
Alice	UV Imaging Spectrometer
Ralph	Visible and IR Imager
SDC	Student Dust Counter
LORRI	Long Range Reconnaissance Imager
SWAP	Solar Wind Around Pluto

October Skies

John W Smith

The Planets

Mercury is unfavourably placed for viewing this month.

Venus reaches inferior conjunction at the end of the month.

Mars is too close to the Sun for observing.

Jupiter sets at around 19:00 by mid-month so is only an early evening object.

Saturn is slowly moving away from the Sun and lies in the constellation of Leo. By the end of the month it will lie due south at sunrise time, about 08:16.

Uranus and **Neptune** are approaching evening twilight so will be lost to view.

Meteor Showers

*1 The *Piscids* reach their third maximum on the 15th but rates are low.

*2 The *Orionids* reach their maximum on the 22nd/23rd when the Moon is unlikely to interfere, and with favourable viewing conditions, rates up to 15 per hour may be observed.

Moon Phases

New	1st Quarter	Full	Last Quarter
22nd	29th	7th	14th

Deep Sky Objects for small telescopes and binoculars

M31 NGC224 The Great Andromeda Galaxy is the nearest large galaxy to the Milky Way and can be viewed as a fuzzy star with the unaided eye in reasonable seeing conditions. It is an excellent object for almost any viewing instrument. However, it can seem a little disappointing in that the outer arms and dust lanes are not so bright and a large instrument or photograph is necessary to reveal the superb outer structure. M31 lies at around 2.2million light years from us, and in the very far distant future it is predicted that it and the Milky Way will merge to form a giant elliptical galaxy.

M32 NGC221 A small elliptical galaxy lying close to M31 and can be viewed in the same field. It is relatively compact and bright so is fairly easily located.

M33 NGC598 Another spiral within our own local group of galaxies. It lies in the constellation of Triangulum and is about 2.5 million light years from Earth. Unless seeing conditions are good it can be difficult to find this object due to its very diffuse open arms, although the central core is rather star-like. Gently rocking the telescope across the field of view may make its location easier as the outer arms will show as lighter areas against the background sky.

M76 NGC650 This planetary nebula in Perseus lies about 15,000 light years from Earth and is often referred to as "The Little Dumbbell" due its resemblance to M27. Quite a challenge for a small telescope but if conditions for viewing are good, use high powers to observe its structure. The central bar appears rather darker than the rest of the object. William Herschel thought it to be a double nebula and Lord Rosse identified it as a spiral galaxy!

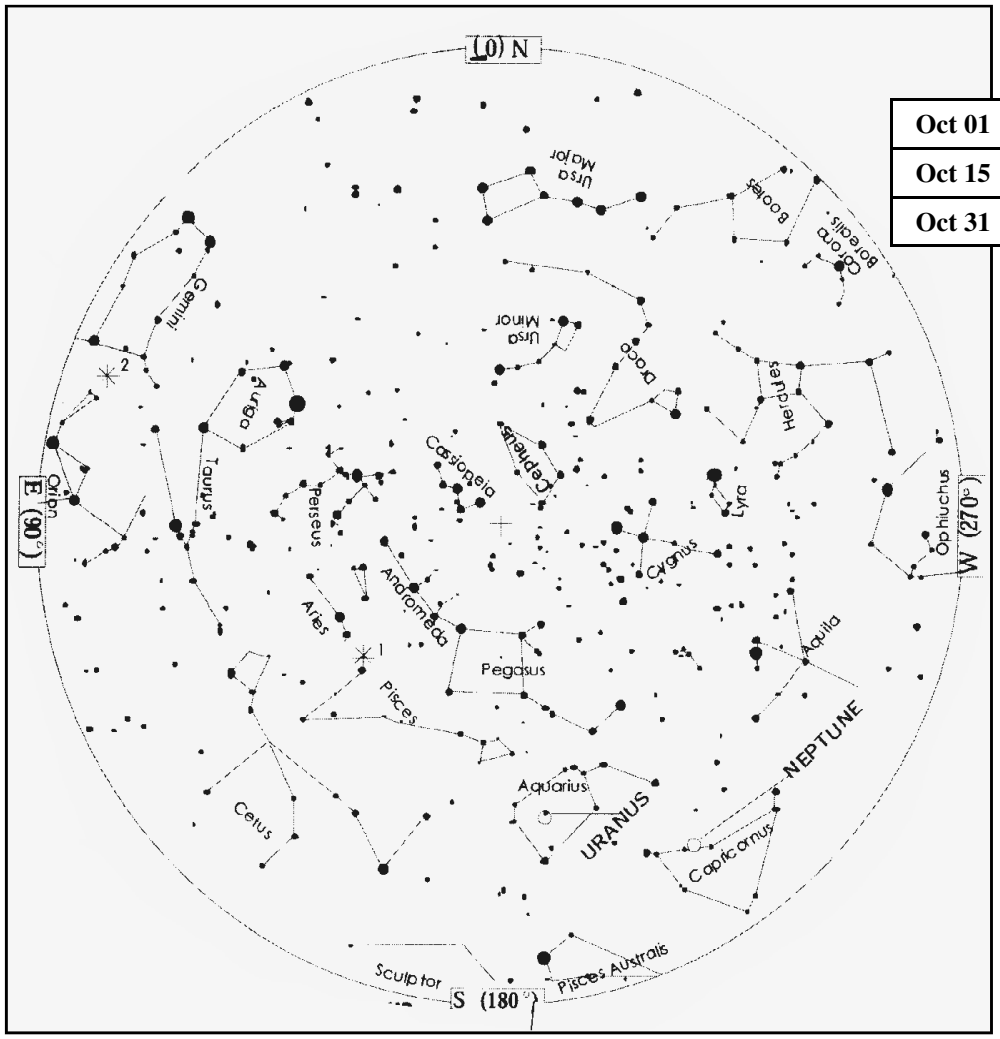
Coordinates

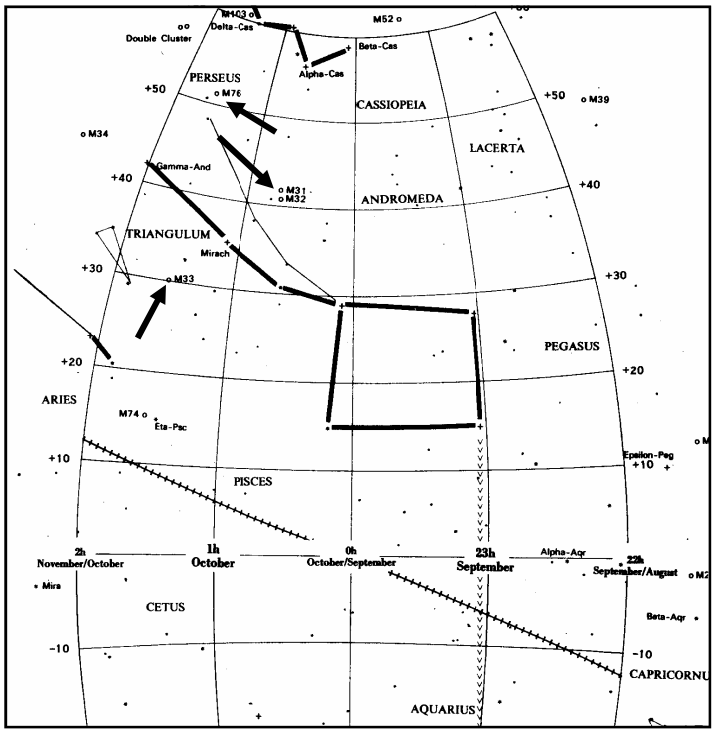
OBJECT	RA	DEC	MAG	SIZE (ARC MINS
M31	00h 43m	+41deg 16m	4	160 x 35
M32	00h 43m	+40deg 52m	9	3.4 x 2.8
M33	01h 40m	+30deg 39m	6	65 x 35
M76	01h 42m	+51deg 34m	11	1.5 x 0.7

NEVER UNDER-ESTIMATE THE POWER OF THE PRESS!

Remember the ***Last Words*** article (Sept 06 issue) about ex-Editor Dennis Norris being stuck in Lahore, Pakistan, without an exit visa? Well, our prayers and thoughts obviously had an influence on the Pakistan Immigration Service since at the AGM where that NZ was issued, Dennis walked into the meeting room to the great amazement of all. Dennis told us that the valuable donations sent out to him from VAS had been put to good use in the purchase of some family tents that happened to have the VAS logo printed on them. In all, the Island raised over £21,000 to assist with humanitarian aid. Well done and thank you to all donors.

Oct 01	**at**	**23:00**
Oct 15	**at**	**22:00**
Oct 31	**at**	**21:00**



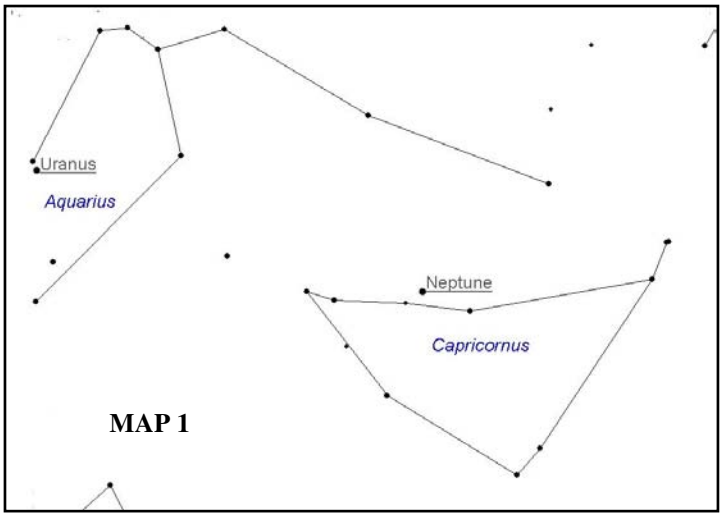


Fancy seeing all of these objects and more? Easy - come along to the VAS 3-day star party event at the Observatory beginning on Thursday October 12th from 7:30 pm onwards. If the daytime weather is clear, there will be an opportunity to observe the Sun in all its glory through specialist solar scopes outside. Continuing on to Friday and Saturday nights as well, we should provide for all tastes with a chance to practice imaging techniques, assisted by experts; bring your own telescopes and have them checked over; have a quiet moment looking at some new DVD shows on the Observatory's recently purchased video equipment and generally enjoy meeting people arriving from outside of VAS who will need to be informed about astronomy and why it is always looking up...

PETER BURGESS' GUIDE TO PLANET FINDING

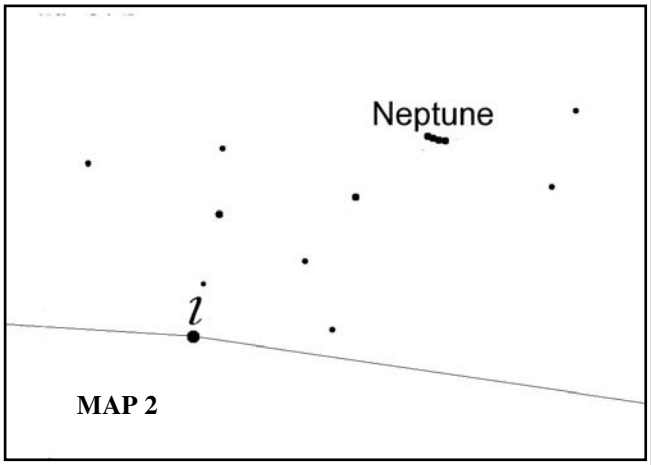
Uranus and Neptune are not difficult to see, you just need to know where to look. Both planets are in what is for most of us uncharted territory: the dim constellations down in the mist towards the southern horizon, Capricorn and Aquarius. Finding your way around this area of sky is not helped by there being no bright stars. Look south on any clear night in the evening at this time of year and what do you see? Probably not much, maybe only Fomalhaut, (which believe it or not is as bright as Deneb, the eastern point of the summer triangle) skimming the horizon.

If it is your first attempt at finding these outer planets, choose a clear night. That may sound obvious, no one is going to see very much through the rain clouds, but I mean a night where the sky transparency is good with a minimum of mist near the horizon. Find Altair, the southern point of the summer triangle and look at the two stars either side, these are as bright as the brightest in either Capricorn or Aquarius. If the little dolphin is shining clearly then it is a good night to try, these are the same brightness as our target constellations.



MAP 1

Look to the south and east of Altair and trace out the broad triangular shape of Capricorn; use a star map or planisphere. The wide field map shows just Capricorn and Aquarius with Altair about half the map height above and right of the right hand corner. Neptune is close to the star Iota Cap, zoom in with a pair of binoculars and the view should be like map 2. You may see a few more stars if your eyes are good and the sky is clear and dark. To see Neptune your eyes will need to have dark adapted, it is not bright but clearly visible as a blue point of light.



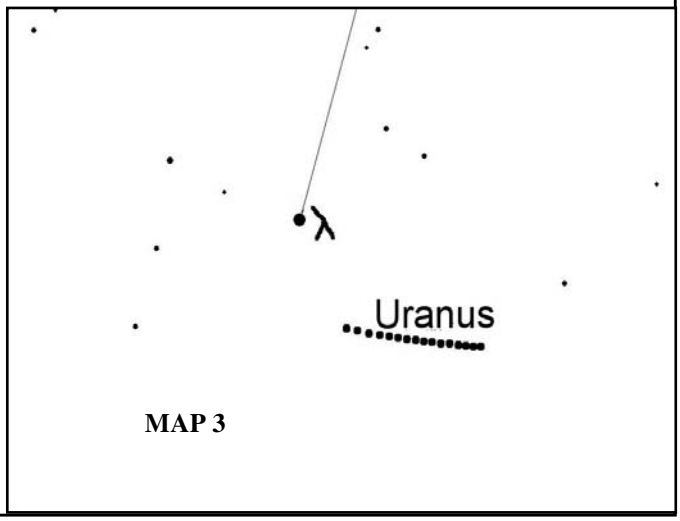
MAP 2

While waiting for your eyes to increase in sensitivity, try for Uranus, it is much brighter, if somewhat more tricky to locate. It means venturing further into the realm of dim stars. Uranus is close to Lambda Aqu and moves noticeably throughout the month as shown in map 3. It is the only other bright object in the area so there should be no mistaking it.

If you have trouble first time finding these planets don't be too disheartened, you probably did see them but just didn't realise it. Keep trying, the more you look at the maps and the sky the better you will get to know your way around, and eventually, maybe with your next try you'll wonder what all the fuss was about and find them first time every time. It usually takes me a couple of tries at the beginning of the season to remember the star patterns that I expect to see through the binoculars, Uranus is easy, it is so bright, but Neptune being much fainter can sometimes be mistaken for a dim star that wasn't on the map.

Give it a try it's easier than you think.

Peter



MAP 3

SURPRISE ENCOUNTER ON OBSERVING THE PARTIAL ECLIPSE OF THE MOON.

I've seen lots of lunar eclipses, partial and full, but on this occasion I was using the Moon to calibrate my eastern horizon.

I am fortunate in having a very clear eastern horizon. In a previous house we had a beautifully clear western horizon, but I suppose it is asking too much to find a house with clear horizons in both directions. On moving into a new house I like to calibrate the horizon; that is, make a chart of the outline of the trees and distant houses with an azimuth scale. (The azimuth angle is the angle clockwise along the horizon from due north.) One way to do this is to observe the rising Sun and Moon at various times through the year and from almanacs or computer programs, find the azimuth angle and mark it on a sketch or photograph. When complete, one has a pretty good estimate of where to find the minor planets when they come round in the evening (western) or morning (eastern) sky.

There was a good clear sky in the east for the recent partial eclipse of the Moon on the evening of 7th September so I got out my laptop computer to run SkyGlobe (version 3.6). This program is now a little old but the orbital parameters are still accurate to within half a degree which is good enough for most purposes. (This program has been discontinued so there is no update.) I set the computer to lock on to the Moon in real time so that I had a continuous readout of its azimuth. But after a while I noticed a small green spot up and to the right of the Moon on the computer screen: it was Uranus. I have never had the occasion to observe Uranus and as it was only 2 degrees distant from the Moon it should be easy to find at magnitude +5.7, despite the glare of the partially eclipsed Moon. I don't have a telescope (!) so I got out my 10x50 binoculars and started to scan that region of the sky and yes, there was a faint spot just in the right position. I had found Uranus for the first time in my 72 years. Only Neptune and Pluto to go!

David Broughton

Dr John Mason signing his autograph for Junior Member James Dymock at the August Lecture

6TH EUROPEAN SYMPOSIUM ON DARK SKIES

Our cover picture of old chum, **Bob Mizon**, all dressed up in a brand-new suit for the occasion, reveals the respect that he is held in by the International Community dedicated to preserving our nighttime environment. **Bob Gent**, VP of the Board of Directors of the International Dark-skies Association (IDA) based in Tucson Arizona, presented the UK Bob with a splendid trophy in the shape of a mahogany book that when opened out revealed a rather elegant clock together with the citation **"For outstanding service in protecting the night sky."**

Bob Gent, handing over this IDA Europe Galileo Award to our Bob said that he could not think of a more deserving recipient. Bob M was quick to say that it was the result of a great deal of teamwork in the Campaign for Dark Skies that had led to this award and he personally thanked everyone who had been part of all the extremely hard work so far.

Bob M also mentioned that he and his new suit would be going with Dr John Mason on October 24th to meet Her Majesty and Prince Philip at a Buckingham Palace reception for members of the scientific community. (Visiting VAS from time to time has done Bob no harm at all, it appears...)

The Symposium opened with **MP Lembit Opik** speaking about his work in astronomy. He is Chairman of Shropshire AS: his grandfather once ran Amargh Observatory and had a minor planet named after him - *Asteroid Opik* - which Lembit thought could be ironic should it be the one to crash into Earth at a future date and destroy civilisation as we know it. (Lembit is the driving force for the Government's committee for research into Earth orbit crossing objects). He announced that he would be willing to assist with anyone's problems with light pollution affecting astronomy and is contactable via the House of Commons website or through local MPs.

Dr John Mason continued by describing how he became involved with light pollution (LP) issues. It was 15 years ago when he spoke at a lighting engineers conference whose theme was quality lighting. In a nutshell this means the right amount of light in the right place at the right time. John described the three types of LP: **Skyglow,** in general over urban areas from orange sodium lamps, scathingly referred to by Sir Patrick Moore as '**Aurora Bognor Regis'**; **Glare,** which is the uncomfortable contrast of bright light against a darker background; and **Light Trespass,** where light escapes from areas being illuminated.

The above all have various impacts. For humanity in general this means a loss of view of the sky, sleep disturbance, and visual intrusion coupled with a huge waste of energy.

In towns and rural areas there is a loss of separation between the two; a loss of rural tranquillity and a destruction of historic character in towns and villages.

Wildlife suffers a disruption of breeding cycles, migratory patterns and there is much visual distraction for birds, insects and other nocturnal life.

How can this be overcome? John's answers would see a removal of unnecessary lights and conversion of the remainder to Full Cut-Off (FCO); turning off some lights between midnight and 5am - ie a curfew - and usage of variable lighting levels by electronic controls.

He suggested that the real watershed for the adoption of all of the above would come when electrical energy costs became prohibitive to continue with conventional systems. Electric energy is escalating in price even now so the day when the change happens cannot be far away.

Bob Mizon described what he referred to as **Three Eventful Years**. The **Campaign for Dark Skies** was about winning the battle of light pollution. Notable successes had been gained with a huge improvement in installation of improved lighting at the University of Bath; the BAA Joy Griffiths Award presented to Lyme Regis for a total redesign of their sea frontage lighting which was not only efficient but had a high degree of aesthetic merit in the lighting columns themselves. Essex County Council have voted to adopt a county-wide selective switch-off at night time which will save ratepayers over a million pounds per annum from a reduction in energy usage. And of course, the highlight was the enactment of the Clean Neighbourhood and Environment Act 2005 which should enable a reduction in LP over time. However, complacency needs to be avoided since there are still too many exceptions within the Act, such as bus and railway stations, harbours, prisons and airports being allowed to generate as much light pollution as they wish without risk of prosecution.

Bob quoted the following: "Too much lighting nowadays is not designed - it just happens."

Last Chance to get in on the 30th Anniversary Dinner

If you want to come to this prestigious evening on 4th November, at Liberty's in Union St, Ryde, you had better get your skates on. The list is almost full. Estimated cost of the celebration dinner is £20 per head, and this fine restaurant has come highly recommended for elegant surroundings, friendly service and delicious food that will excite your taste buds.

Barry Bates is the chap to contact - he is compiling the list. He will be pleased to talk to you on 872979

6TH EUROPEAN SYMPOSIUM ON DARK SKIES (CONTINUED)

Some interesting facts were presented during the Symposium. One was that many Local Authorities have refused to shield offensive street lights unless the complainant presented a Doctor's Note to prove a deterioration of health was taking place.

Likewise, Local Authorities have said that street lighting has a purpose of safety and security and have repeatedly said the same thing when challenged regarding the need but with a louder voice.

Local Authorities cannot prosecute themselves when street lighting is obtrusive, and there has been no test case as yet as to whether street lighting can be classed as 'premises'.

The entire town of Hostetin in the Czech Republic has had street lighting changed from glaring mercury vapour luminaires with a massive reduction in sky glow. How did they afford to do this? Easy: Philips donated the entire package. Well done, that company.

How can a Local Authority do the same without sponsorship yet at no cost to the local community? Again, easy: obtain a grant from the World Bank, who are pushing for such projects, change all of the street lighting for high efficiency, low energy FCO lamps. World Bank charges 2% on the loan and the Local Authority gains a saving on energy costs of around 50%, which pays off the capital and interest over a period of time. Makes sense?

In California, during a recent power blackout when the energy system became overloaded, people were terrified upon looking at the revealed night sky in all of its glory. Children thought the sky was on fire as they had never seen the stars with such brilliance.

In Belgium and The Netherlands there is a urge to claw back the night sky by the deliberate creation of dark areas. New regulations have been adopted, together with an inspection programme leading to an inventory of most major causes of light pollution and an action plan to eliminate it. Such measures as turning off floodlighting of city buildings after most people are at home in bed, a switch-off for advertising signs when there is no-one to see them, and a reduction in lighting levels where this may be done safely all help to reduce light pollution. The inventory is being carried out by local astronomical societies and environmental groups after have undergone courses and practical training sessions.

In Osnabrück, Germany, Dr Andreas Hänel of the Planetarium has been looking into the increase in light pollution with a program devised to track changes in the increase in background levels. He recommended a visit to **www.globe.gov/globeatnight** which provides an indication of the star magnitudes visible from various places on the ground. Students, families and citizen-scientists from around the world participated in an international campaign on March 22-31, 2006 to observe and record the magnitude of visible stars as a means of measuring light pollution in a given location. Over 18,000 people from 96 countries on all continents (except Antarctica) reported 4591 night time observations. Get ready for next year's campaign, March 8 - 21, 2007.

Dr Hänel, in his research, had discovered some odd results. He had been using a comparison program to search for changes in light pollution levels and found that by subtraction of the original 7 year old data from the latest figures an amazing reduction in pollution levels could be seen in certain areas, yet in others the levels had vastly increased. Further checking revealed that the two sets of data had been corrupted by poor positional coordinates whereby the ground pixels where each light level had been measured from space had been wrongly placed by anything up to 2 or even 3 pixels difference. Where each pixel could be as much as 5 kilometres wide on the ground, this positional error threw all of the results into disarray. Correctional algorithms had been required to remedy this confusion. He made use of the **Fugawi** software which can be accessed via the Internet.

One of the major highlights of the Symposium was a demonstration by **Philip Perkins** of **Astrocruise** who presented a series of stunning pictures that he had taken of deep sky objects from European locations. Philip described his imaging techniques and gave information about various methods of telescope and camera alignment that had led to his success in this field. His website has been noted on Page 10 as being Website of the Month, and readers are recommended to pop in to it and discover what is on offer. Follow the links at the bottom of his home page for articles of interest to anyone wanting to go in for deep sky photography. [With a bit of luck, our programme organisers, Roger Young, could be persuaded to get Philip to give us a talk next year.]

All in all, this was a very successful Symposium, well organised and very well attended in the main. However, there were absences from many Local Authorities, including our own Island gang, who could have gained much in the way of knowledge of the problems we are trying to overcome, and the means by which the long drawn out battle may be won. Oh well, there is always the 7th Symposium to think about and perhaps we shall persuade those who should know to go along to discover what it is all about.

John Langley

INTERESTING FACTS PART 25

Everyone knows that 8 bits make a byte, but do you know what 4 bits make?

A Nibble

Website of the Month

www.astrocruise.com

A really beautiful British site with dozens of spectacular images by Philip Perkins. Also many articles on the best ways of telescope alignment methods that will let you follow in his footsteps.

Well recommended

Appeal

Can anyone shed a ray of light on the identity and whereabouts of a gentleman member of VAS who came along to some of our meetings some 18 months or so ago then fell off the edge of our universe? To jog your memories, it may help to recall that he was rather elegant in his dress, never being without a very smart bowler hat. The Committee wishes to get in touch with him but nobody can recall his name! Any information will be much appreciated. Send details to the Editor, please.

NOTICE TO MEMBERS

You will be aware that the cost of postage recently soared, thanks to Royal Mail's wheeze in moving the goalposts that good old Roland Hill established back in the days (nights, perhaps?) of gas lighting. Now, when NZ is sent to you via post it could cost the Society a lot more. Your Committee would hate to have to increase Subs to cover this extra burden so have come up with a novel idea: **eNew Zenith**. If you would like to receive your monthly issue of your favourite publication (No, Ethel, not Woman's Weekly - pay attention) by email, just let me know your email address and it will be done. Advantages are that you will get NZ in glorious colour, and should you be mourning the demise of the old yellow paper issues, then presto! stick some yellow paper in your printer. File size approx 1Mb in PDF. Editor

Last Words

Should books for educating wizards and witches (it's almost Halloween!) be subject to a spell check?

Submissions to the **NEW ZENITH** are very welcome and should be sent to the the following address
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E Mail: **johnvl@tiscali.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