New Zenith

The Monthly Magazine of the Vectis Astronomical Society

Vol 20 Issue 11 — December 2012 *When Printed, this Newsletter costs VAS at least £1*

SOCIETY NEWS

Well, that's another year then! This is the last NZ for 2012 and, as always there is no January edition so I can take a short rest.

PLANNING GROUP NEWS

Work for the planning sub-group is progressing nicely and we are on target to report back to the membership at the January monthly meeting. Meanwhile, contact with the NPS&CA has been re-established and I hope to be invited to their next meeting to discuss the situation regarding the Pavilion and playing field.

NEW YEARS DINNER

As detailed on page 5, Bryn Davis is arranging this event to be held at the Bargeman's Rest, Newport.

We have opted for the normal menu which means you only need to reserve your seat - *you can choose your meal from the menu on the night*.

Please contact Bryn to book your place.

On behalf of the Committee, thanks for your continued support and best wishes for Christmas and the New Year

VAS Website: www.wightastronomy.org

Submissions or letters to New Zenith are always welcome and should be sent to:

The Editor New Zenith
35 Forest Road
Winford
Sandown PO36 0JY

Tel: **01983 864303** or email: **editor@wightastronomy.org**

Material for the next issue by the 6th of the month please.

VAS Registered Office

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The Vectis Astronomical Society and the Editor of the New Zenith accept no responsibility for advice, information or opinion expressed by contributors.

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Observatory Diary

Monday, 19.30hrs	**Members Only**. Telescope and night sky training. ***Contact Barry Bates 01983 872979***
Thursday, 19.30hrs	**Members and Public**. Informal meeting and observing.

Contents this Month

Monthly Meeting Calendar 2012

Friday meeting are held at the Parish Centre, Town Lane, Newport, IW, PO30 1JU. All meetings start at 19.30 hrs apart from August which is at 1900 to allow time for the business of the AGM.,

Date	Subject	Speaker
23 Nov	The Search for Intermediate Mass Black Holes	Dr Tom Maccarone

Monthly Meeting Calendar 2013

Travel for our monthly speakers is sponsored by:

WIGHTLINK
PART OF ISLAND LIFE

Date	Subject	Speaker
25 Jan	Mapping the Universe	Dr Rita Tojeiro
22 Feb	Galaxy and Mass Assembly	Dr Jon Loveday
22 Mar	Active Galaxies	Nick Hewitt
Apr		
May		
Jun		
Jul		
Aug		
27Sep	History of the Dark Sky	Alan Dowdell
Oct		
Nov		

All details correct at time of publication.

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National Trust Brighstone

A few of us took telescopes and binoculars up to the Jubilee car-park on Mottistone Down on 10 Nov for an event organised by Robin Lang, Head Ranger for the National Trust in the area.

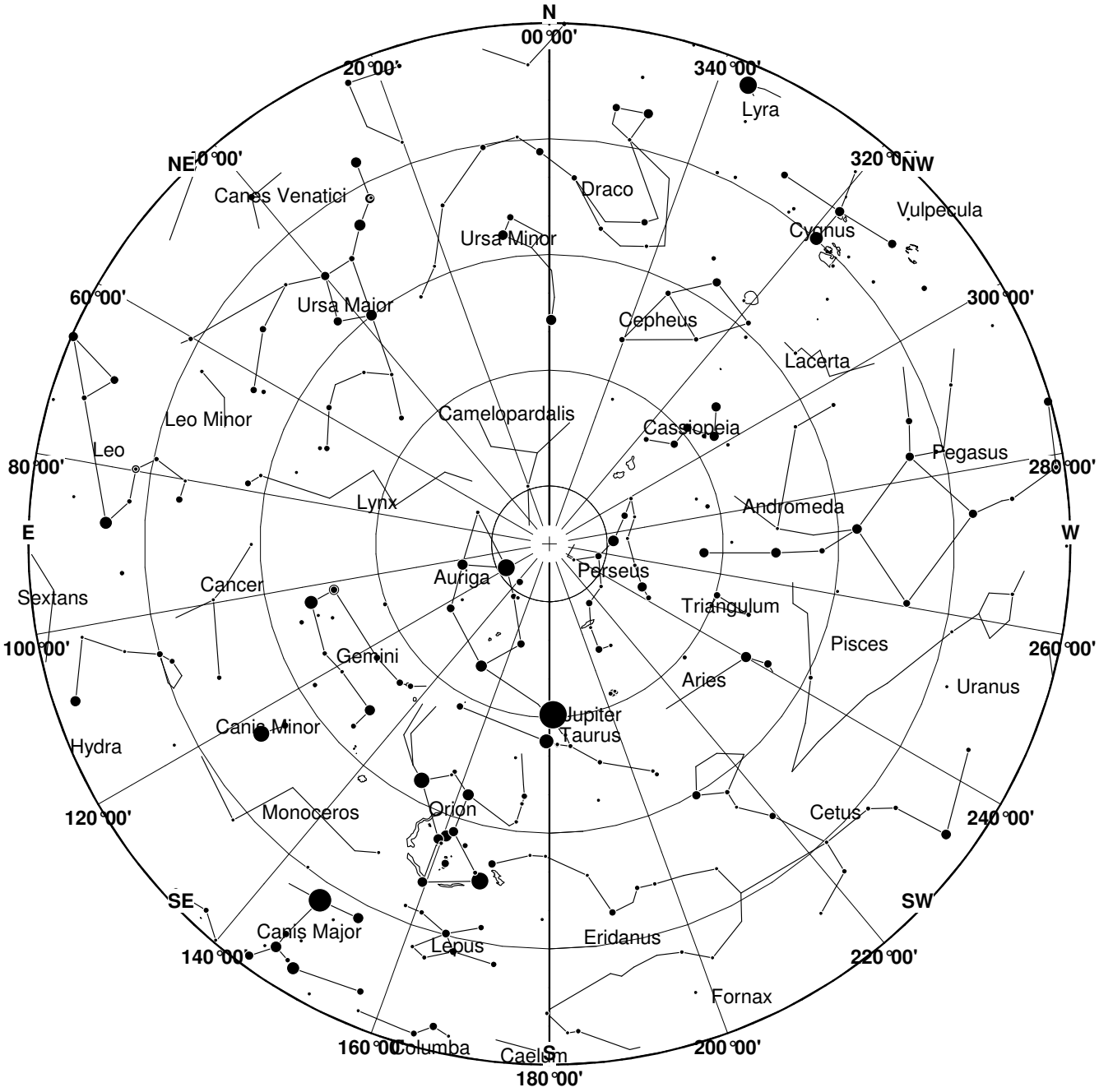
The weather forecast wasn't good but we soon realised that it was wrong and we were lucky enough to have chosen probably the best night of the year so far for a public observing session.

Some 30 or so people turned up and Elaine Spear, Mark Williams, Martyn Weaver and me did our our best to entertain them.

The event was obviously well received as we have been asked to arrange another sometime next year! Thanks to everyone who helped.

Stargazing Live is on again in 2013 and as this has been very successful for VAS, I'd like to hold another event early in 2013 - if you can help I'd love to hear from you.

December 2012 Sky Map



View from Newchurch Isle of Wight UK - 2300hrs - 15 December 2012

NGC 869 is an open cluster located 7600 light years away in the constellation of Perseus. The cluster is most likely around 13 million years old. It is the westernmost of the Double Cluster with NGC 884. Located in the Perseus OB1 association both clusters are located physically close to one another, only a few hundred light years apart. The clusters were first recorded by Hipparchus, but have likely been known since antiquity.

The Double Cluster is a favorite of amateur astronomers. These bright clusters are often photographed or observed with small telescopes. Easy to find, the clusters are visible with the unaided eye between the constellations of Perseus and Cassiopeia as a brighter patch in the winter Milky Way.

December 2012 Night Sky

Moon Phases

New	1st Qtr	Full	Last Qtr
13th Dec	20th Dec	28th Dec	6th Dec
11th Jan	18th Jan	27th Jan	5th Jan

The winter solstice; the time at which the Sun is at its most southerly point is on the 21st at 11:10. From this point onwards the nights will be getting shorter as we head into the New Year.

Planets

Mercury

Mercury makes an appearance in the morning sky and is a favourable object for the first fortnight of December. Use Venus and Saturn as pointers towards this elusive little world. The end of January marks the start of a rather disappointing evening apparition.

Alt and Az for Mercury at 07:30 during Dec					
Date	**Alt**	**Az**	**Date**	**Alt**	**Az**
1	13°	134°	16	7°	135°
4	12°	134°	20	4.5°	134°
8	11°	135°	24	2.5°	132°
12	9°	135°			

Venus

The morning apparition of Venus and the year end at almost the same time with Venus slipping into the dawn twighlight. As it dips toward the horizon it starts to catch up with Mercury, but the fleet footed messenger of the gods is too quick and races towards the Sun before being caught.

Mars

Mars is too close to the Sun in the evening sky to be visible.

Jupiter

Jupiter is at opposition on the 3rd. It is ideally placed for observing all night, it rises as the Sun sets and is high in the south at midnight. It resides amongst the stars of Taurus close to the bright red giant star Aldebaran. After the Moon Jupiter is the brightest object in the evening sky. By the end of January it is already high in the southern sky at sunset and rapidly passing its best.

Saturn

At the start of December Saturn is just above Venus and by mid month it is about halfway between Venus and Spica, the brightest star in Virgo.

Uranus

Uranus is due south at sunset at the start of December allowing a few hours for observation before it gets too low down and lost in the haze. By the end of January it is too low to be considered a good object for observation.

Neptune

For such a faint object Neptune is too low down at sunset to be seen by the time the sky has darkened adequately.

Meteors

The reliable Geminid shower peaks on the 12th of December. This shower lasts from the 7th until the 13th with up to 100 bright yellow meteors per hour.

Deep Sky objects

M52 The Scorpion Cluster RA 23h 25m Dec 61° 37' mag 8.0

Follow the line from Schedar through Caph for 6 degrees beyond Caph and you will find this fine open cluster. It is large, almost half the size of the full moon and the density of stars makes it relatively bright such that it stands out from the background Milky Way. A telescope will resolve many of the cluster members. A chain of 11th magnitude stars form a hook shape that bears a passing resemblance to the tail and sting of Scorpius. Two other stars of similar brightness mark out the claws. The brightest star in the cluster, a red tinged eighth magnitude star is not actually a cluster member but a line of sight coincidence

NGC869 & 884 The Double Cluster RA 2h 19m Dec 57° 19' Mag 5.3

Either of these clusters would be high in the list of sights in the winter sky yet here we have two in the same field of view. They can be seen as a pair of diffuse glows with the naked eye, and were recorded by the ancient Greeks. A small pair of binoculars show them to be a pair of rich star clusters and will resolve a few of the stars. A telescope at low magnification gives the best view, careful use of magnification is needed as too much will spoil the view.

NGC1647Open Cluster R.A 4h 46m Dec 19° 7'

Scanning with a pair of 10x50 binoculars from Aldebaran towards Elnath,(the star often shown shared with Auriga) just as Aldebaran is leaving the field of view there in the centre should be a fuzzy triangular patch of stars about the same size as the full moon. This is NGC1647. Like many galactic clusters aperture is more important than magnification, an increased aperture will show more members of the cluster and allow them to be resolved whereas magnification will lessen the visual impact of the overall cluster.

NGC1746 Open Cluster R.A. 5h 3m Dec 23° 45'
Continuing the journey from Aldebaran to Elnath, just past the halfway mark is NGC1746 a very large (1 degree diameter) very sparse cluster. There are a number of chains of stars of various colours, and in the centre of the group three of these chains make up what looks like a three bladed propeller that seems rather the worse for wear.

Peter Burgess

NEW YEAR'S DINNER

Sat 19th Jan 2013
VAS Member's New Year's Dinner

19.30, Bargeman's Rest, Newport

Contact Bryn Davis for up-to-date information
chairman@wightastronomy.org

FOR SALE

Canon EOS 350D Digital Camera, 18-55mm Canon EFS lens plus Canon Zoom EF lens 90-300mm, battery charger and USB connection, Canon Solutions Disc and Manual CD

All in excellent condition

Total cost £500

Sale Price £250

Contact Bryn Davis
01983 406125
davisbryn3@aol.com

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Unused Mint Condition Due to Severe Street Lighting Conditions

Full Spec and Manual available ***here***

Sale Price £360

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Celestron C5 Schmidt-Cassegrain telescope, 5" aperture with equatorial mount, tripod, finder, dew shield, star diagonal, and two eyepieces. Excellent optics. Ideal starter 'scope or 'grab and go' telescope to take to dark sky site or star party.

£150 complete

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£220 complete

Glyn Salmon 01983 403047

Observing Galaxy Clusters

26 October 2012 Lecture report

Owen Brazell - Abingdon AS

Well-known in astronomical circles and with our memories of his talk on 'Observing Planetary Nebulae' (NZ July 2011), the lecturer needed little introduction - "A Dobsonian man, specializing in Deep Sky Observing". Starting in Toronto with a comet, he has observed the night sky from places world-wide, finding recently that on the Continent the French are using 1-metre class telescopes, needing step-ladders, similarly in Germany. A favourite observing place is Wales. Useful comparisons were made between various telescopes, helping amateurs to find their way around clusters using different magnifications and fields of view, selected according to which galaxy cluster catalogue is used. Galaxies seen on screen were sometimes indicated as "those guys", perhaps conveying the fond notion that a large proportion of amateurs out there, in every galaxy, are united in their love of Dobsonians.

Preamble

This talk is really about the legacy of Volume 5 of a series of publications of the Webb Society, founded in 1967 as an offshoot of TA ["The Astronomer", founded in 1964; their members form a worldwide amateur network with rapid publication of observations, making many discoveries of comets, novae, meteor showers and so on]. The volumes are:

1. *Double Stars*.
2. *Planetary nebulae and diffuse nebulae*.
3. *Open and globular clusters*.
4. *Galaxies*.
5. **Clusters of Galaxies written & illustrated by George Whiston 1982, ISBN: 0 7188 2552 7.**
6. *Anonymous Galaxies* (meaning not in the Messier catalogue or NGC).
7. *Southern Objects*.
8. *Variable Stars*.
9. *The Webb Society Star Atlas*, in colour, is good for studying on rainy nights [in print, plus a black and white version which is water-resistant and opens flat].

Volumes 1-5 are out of print [but the VAS library has all the volumes 1 to 8], Volume 5 contains a foreword by Prof. Abell who is happy that at last astronomers are accepting his view that superclusters of clusters do exist, and the Russians believe that superclusters are flattened. But the uniformity of the radio background indicates that on scales bigger than 100 megaparsec, 'superduper clusters' do not exist. Vol.5 contains several readable chapters and many charts. Abell likens a galactic supercluster to a metropolitan area, with major cities, smaller towns and even a few individual dwellings, yet there are no galaxies between the superclusters.

The Webb Society prints four issues of "*The Deep Sky Observer*" per year. In 1859, the Rev. Thomas William Webb 1807-1885, published his book "*Celestial Objects for Common Telescopes*", revised in 1917 by Thomas Espin using larger telescopes, it remains popular with amateurs and professionals and is still in print (Cambridge University Press, 2010).

Definition of a galaxy cluster

There are no hard definitions. Most groups are gravitationally bound. Zwicky studied the dynamics of the Coma cluster, concluding there was not enough visible mass to hold it together gravitationally, the idea of 'dark matter' starts here. However, the Milky Way belonging to the 'Local Group' of 42 members, is thought of as a group rather than a cluster, Abell said that it wouldn't qualify for inclusion in his list.

Tools

Galaxies emit light across the whole spectrum so optical filters tend not to help, but dark skies certainly do. Good finder charts help to avoid getting lost, since galaxies "are everywhere". The assistance of a driven telescope, allowing a narrower field of view with easier searching, gives an average of half a magnitude improvement in depth. It was mentioned, in relation to averted vision, that the eye is good for seeing moving objects - a slight wiggle on the telescope helps to interpret very faint objects, [see in the VAS library "*Galaxy Groups and Clusters*" Robert McGown & Miles Paul, Astronomical League, 2001, which gives five recordable values using averted vision].

The still popular classical method of finding your way around involves drawing to assist identification, but there's still a lot of work meeting the challenges even with driven telescopes and they are getting larger. Four 20-inchers were seen at the last IoW Star Party. High contrast optics helps, so does decent baffling and hoods to keep out stray light, plus a good range of eyepieces, from low to high power, 250-300, comfort is the guide.

Eyepieces

Be careful not to start a war when discussing these - strong opinions on what's best vary considerably. Some favour long eye-relief, others go for wide angles, a hundred degrees or more, or orthoscopic ones with the least number of elements for the best contrast. Some eyepieces correct for coma distortion, and so on. You can pay twice the price for an eyepiece than for a telescope. The Chinese are designing eyepieces which promise to be very interesting.

Charting Resources

Examples from the following showed amazingly dense fields of galaxies, with just enough room to identify about fifty with catalogue numbers in each field of view.

- Megastar 5.
- The Sky X.
- Guide 9.
- Carte du Ciel, begun in 1887 by the Paris Observatory, used 22,000 photographic plates, mapping the whole sky to 11-12th magnitude.
- Aladin - http://aladin.u-strasbg.fr/aladin.gml. Intended for professionals, yet within the compass of amateurs.
- Microsoft World Wide Telescope is a free download but needs an internet connection to use.
- Sloan Survey, covers only a quarter of the sky but this is where most galaxies are seen.

Planning Resources.

- SkyTools 3 (American)
- Astroplanner (American)
- Eye & Telescope 2.2 (German) [now upgraded to version 3].
- Deep Sky.

Two units for Digital Setting Circles were illustrated, one was called a 'Sky Commander' used to identify 'faint fuzzies'. Smartphones and ipads, like various charting resources, can send GOTO information to your telescope, the iphone can be held to the sky to show where you are looking with a correctly oriented nightsky map.

Galaxy group catalogues.

- CGCG Catalogue of Galaxies and Clusters of Galaxies. Zwicky 1968.
- ACO catalogue, Abell, Olowin & Corwin. In 1958 George O. Abell (1927-1983) published a list of 2712 rich clusters, applying criteria for richness, compactness and distance, visible on the Palomar Observatory Sky Survey, POSS. H.G.Corwin worked on the Southern Survey and the extended catalogue was completed by R.P.Olowin in 1989.
- Hickson Groups Catalogue, contains popular targets such as HCG 92 "Stephan's Quintet", see details of "*A Guide to Hickson Clusters"* by Alvin H. Huey on FaintFuzzies.com
- Shakhbazian catalogue of compact groups 14-19 magnitude, are more challenging than Hickson Groups.
- The Rose Catalogue of Compact Galaxies contains 205 compact trios, quartets and quintets, but are very faint, needing 18-inch telescopes.
- **www.FaintFuzzies.com** - provides much information, eg. on eyeguards; loose-fitting hoods with enough breathing room so eyepieces don't get fogged, hoods give an extra quarter magnitude in depth; vests with pockets keep eyepieces warm; light pollution maps; Galaxy Cluster Catalogues, and books like "*Burnham's Celestial Handbook*", Dover, NY, 1978 [in the VAS library].

Galaxy groups

Many examples were seen, with much to discuss, including Markarian's chain of galaxies containing M84 and M86, attracting debate as to whether they are a chance alignment or represent a large-scale physical structure. Often foreground stars are blue, but when changing to stronger eyepieces, yellowish objects are resolved into galaxies. NGC 3750 is Copeland's Septet, he was an assistant to Lord Rosse, observing through the mists of Ireland. Hickson 44 is best seen in the Spring and Autumn, when sideways viewing to the disc of the Milky Way is favoured. Squashed flatter spirals sometimes have bars containing alcohol. A bright star in the Coma cluster is fairly overpowering, and finding the location of an HST image within the cluster is still proving to be a puzzle. The galaxies in clusters are mostly elliptical, but the Hercules cluster AGC 2151 contains many spirals. [Note: AGC also stands for the 'Arecibo General Catalogue', but here AGC references are Abell Galaxy Cluster numbers.] Other examples seen were AGC 2165 the Corona cluster, and AGC 1367 the Leo Cluster. On large scales, galaxies form a foam-like structure containing strings and voids.

The most popular question from the public is "how far can you see?" A recommended book is "*Cosmic Challenge*" Philip S.Harrington. A book popularly called "L and S" is the "*Observing Handbook and Catalogue of Deep Sky Objects*" C.B.Luginbuhl & B.A.Skiff, Cambridge University Press, 1998. And there's always Arp's well-known *Atlas of Peculiar Galaxies*. For "Adventures in Imaging Deep Sky Objects" see newforestobservatory.com. Discussion took place during the lecture, finishing with the future availability of the Webb Society books.

Dr.Guy Moore

Super-Earth Discovered in Star's Habitable Zone

The exoplanet is one of six believed to be orbiting a dwarf star 42 light-years from Earth.

The family of planets circling a relatively close dwarf star has grown to six, including a potential rocky world at least seven times more massive than Earth that is properly located for liquid water to exist on its surface, a condition believed to be necessary for life.

Scientists added three new planets to three discovered in 2008 orbiting an orange star called HD 40307, which is roughly three-quarters as massive as the sun and located about 42 light-years away in the constellation Pictor.

Of particular interest is the outermost planet, which is believed to fly around its parent star over 320 days, a distance that places it within HD 40307's so-called "habitable zone."

The planet's five siblings are all believed to be too close to the star and therefore too hot for water to exist in a liquid state.

"The planetary system around HD 40307 has an architecture radically different from that of the solar system," lead researchers Mikko Tuomi, with the University of Hertfordshire in the United Kingdom, and Guillem Anglada-Escude, with Germany's University of Goettingen, write in a paper to be published in the journal Astronomy & Astrophysics.

The finding suggests there may be many ways for a planet to end up in a star's habitable zone, the astronomers added.

More detailed studies of HD 40307's brood are unlikely because the planets do not appear to transit, or pass in front of, their parent star, relative to Earth's line of sight.

The new findings are based on a re-analysis and refinement of data collected by Europe's High Accuracy Radial velocity Planet Searcher (HARPS) instrument, a light-splitting spectrograph installed on Europe's La Silla Observatory in Chile. Planets beyond the solar system can be detected by tiny gravitational tugs they exert of the light coming from their parent stars.

To find HD 40307's sixth planet, scientists had to make the difficult distinction between starlight impacted by a planet's gravity and the effects of stellar activity, such as flares and magnetic storms.

More at ***Discovery News***

The Universe Has Almost Stopped Making New Stars

Most of the stars that will ever exist have already been born, according to the most comprehensive survey of the age of the night sky.

An international team of astronomers used three telescopes — the UK Infrared Telescope and the Subaru Telescope, both in Hawaii, and Chile's Very Large Telescope — to study trends in star formation, from the earliest days of the universe. Extrapolating their findings has revealed that half of all the stars that have ever existed were created between 9 and 11 billion years ago, with the other half created in the years since. That means that rate at which new stars are born has dropped off massively, to the extent that (if this trend continues) 95 percent of all the stars that this universe will ever see have already been born.

Several studies have looked at specific time "epochs", but the different methods used by each study has restricted the ability to compare their findings and discern a fuller model of how stars have evolved over the course of the entire universe's lifespan.

We do know that many stars around today — including our own — likely formed out of the dust left over from earlier, bigger stars going supernova in the early years of the universe. The problem was figuring out exactly how many stars the universe used to give birth to relative to how many are born in later years, as it seemed that at some point there was a steep drop off in the creation of new stars.

The telescopes searched for alpha particles emitted by Hydrogen atoms (commonly found in star formation, appearing as a bright red light) throughout huge patches of sky. Snapshots were taken of the look of the universe at defined different points in time, when it was 2, 4, 6 and 9 billion years old — a sample that's 10 times as large as any previous similar study.

The results showed clearly that half of all the stars that have ever existed in the universe were created more than 9 billion years ago, with the remaining half coming into existence since then. On the Subaru Telescope's site, the study's lead author, Leiden University's David Sobral, writes: "The production of stars in the Universe as a whole has been continuously declining over the last 11 billion years; it is 30 times lower today than at its likely peak 11 billion years ago. If this trend continues, no more than five percent more stars will exist in the Universe. We are clearly living in a Universe dominated by old stars. All of the action in the Universe occurred billions of years ago!"

More at ***Wired Science***

Royal Institution 2012 Christmas Lectures: The Modern Alchemist

When medieval alchemists staged spectacular stunts in front of royalty they never revealed the secrets of their mystical potions and fire-breathing creations. Today's chemists can perform equally impressive feats, but they do so to explain and explore the extreme frontiers of our material world. Dr Peter Wothers is the Modern Alchemist. In this year's Christmas Lectures he will unpick the chemistry of the world around us - looking at Air, Water and Earth - three of the original ancient Greek 'elements' that tantalised alchemists for centuries.

Air: The Elixir of Life

Filming date: Tuesday 11 December, 6.00pm

Take a deep breath. Inside your lungs is a mixture of highly reactive and incredibly stable gases. Oxygen is the most reactive constituent. When we eat it's these O2 molecules that seize electrons from our food to give our bodies the energy to live. Add a third oxygen atom and we make ozone, a gas so reactive that it's toxic if we breathe it in, but high up in the stratosphere this gas protects us from the sun's radiation. Add a carbon atom and we produce carbon dioxide, a greenhouse gas responsible for warming the planet. We will unravel the puzzle of how and why these compounds of oxygen hold the key to the viability of life on the planet.

Nitrogen, the most common element in air, is an unreactive gas, but a key atom in every cell in every living thing on Earth. How can we imitate nature to bring this suffocating gas alive? Even less reactive are the Noble or inert gases. They're so stable they are the only elements that exist naturally as individual atoms - but what is it about them that make them so inert? And how can we excite these gases enough to join the chemical party? We've come a long way from the days when alchemists thought air was a single element.

Water: The Fountain of Youth

Filming date: Thursday 13 December 2012

Water is essential to life since every reaction in our bodies takes place in it. But what makes this fluid so special? What happens when you add a lighted splint to a mixture of hydrogen and oxygen? Kaboom! But why? What makes this particular rearrangement of atoms to form water so explosive? Can we tap this energy release to provide environmentally friendly solution to our energy problems? Plants have the ability to reverse this reaction by using the energy from sunlight to release oxygen from water. We are starting to learn how to do the same. In this lecture we unpack how energy lies at the heart of chemistry.

We'll also look at the salts contained in water. Once again we will see the startling difference between a compound and its constituent elements. Take sodium chloride - aka table salt. Sodium is a soft silvery metal that explodes with water; chlorine a deadly poisonous, choking green gas. Both elements are lethal to us, but after they have met, a dramatic change takes place. The sodium and chloride ions that form are essential components in our bodies. They help generate the electrical impulses that make our brains and nerves work. We begin to see how chemistry plays a vital role in our lives.

Earth: The Philosopher's Stone

Filming date: Saturday 15 December 2012

The rocks that form planet Earth have always fascinated alchemists. Deep in the bowels of the Earth they thought the metals literally grew in the rocks and that one metal over time matured into another. They dreamed of replicating these natural processes turning 'base metals' into gold. Today the extraction of minerals and metals from rocks has made fortunes, but not quite in the way the alchemists imagined. We now know many rocks are the result of oxygen combining with different elements - each with individual properties. Breaking the strong bonds between oxygen and these elements has always been a challenge. Humankind learned how to release copper in the Bronze Age, and iron in the Iron Age, through smelting. Now we can extract even more exotic materials.

By understanding the properties of materials, such as the silicon present in computers, or the rare earth magnets generating our electricity in wind turbines, we are entering a new era of chemistry in which we can engineer electrons in new configurations for future technologies. We can now put together the unique cluster of protons, neutrons and electrons that form each of the 80 elements in exciting new ways. If the ancient alchemists were alive today they'd be dazzled by the wonders created by the Modern Alchemist.

Lectures will be televised on BBC 4

THE BACK PAGE

LINKS, COMMENTS AND OBSERVATIONS

Global warming felt by space junk, satellites

Manmade increases in carbon dioxide might be having effects that are larger than expected

Rising carbon dioxide levels at the edge of space are apparently reducing the pull that Earth's atmosphere has on satellites and space junk, researchers say.

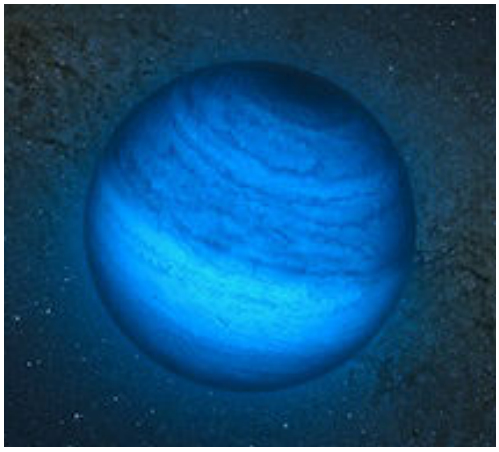
The findings suggest that manmade increases in carbon dioxide might be having effects on the Earth that are larger than expected, scientists added.

In the layers of atmosphere closest to Earth, carbon dioxide is a greenhouse gas, trapping heat from the sun. Rising levels of carbon dioxide due to human activity are leading to global warming of Earth's surface.

However, in the highest reaches of the atmosphere, carbon dioxide can actually have a cooling effect. The main effects of carbon dioxide up there come from its collisions with oxygen atoms. These impacts excite carbon dioxide molecules, making them radiate heat. The density of carbon dioxide is too thin above altitudes of about 30 miles (50 kilometers) for the molecules to recapture this heat, which means it mostly escapes to space, chilling the outermost atmosphere.

*Read more at **MSNBC***

Astronomers catch a rogue planet without a solar system



A possible free-floating exoplanet, drifting through interstellar space without a star of its own to orbit, has been discovered a hundred light years from Earth. If confirmed, it will be the first of its kind to be proven to exist - and there may be billions more like it out there.

The object, named CFBDSIR2149, was discovered by the Canada-France-Hawaii Telescope on Mauna Kea and is part of the AB Doradus moving group, which is a cluster of around three dozen stars that formed together and are now loosely moving through space in unison. Although rogue planet candidates had been discovered previously, it has been impossible to accurately determine their age, which is crucial in determining their mass. As such, it is uncertain whether they can be classed as planets or as brown dwarfs, which are small, failed stars with masses between 13 and 80 times that of Jupiter, rendering them unable to reach temperatures hot enough in their cores to ignite the nuclear fusion of hydrogen atoms.

Planets and brown dwarfs begin life hot and gradually cool down with age at a rate depending upon their mass, their mass and age dictating their luminosity.

*More at **http://www.astronomynow.com/news/n1211/15rogue/***

Observatory

For your own safety, when visiting the VAS observatory, please bring a torch. Also, please make sure you close and lock the car park gate if you are the last to leave - if you need the combination to the lock, please contact a member of the committee.

Articles Needed

New Zenith welcomes letters, articles or pictures related to all aspects of astronomy. Contributions to the Editor at the email or postal address on the front page.

"I'm sure the universe is full of intelligent life. It's just been too intelligent to come here"

Arthur C. Clarke

Quotations

"Thus mathematics may be defined as the subject in which we never know what we are talking about, nor whether what we are saying is true"

Bertrand Russell

"The more success the quantum theory has, the sillier it looks"

Albert Einstein

"I believe that a scientist looking at nonscientific problems is just as dumb as the next guy"

Richard Feynman