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The CHESTERFIELD ASTRONOMICAL SOCIETY

Newsletter November 2015

CAS website www.chesterfield-as.org.uk **Registered Charity No. 514048**

Secretary: Marilyn Bentley

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Subscriptions - full membership £60
or £6 per month by Standing Order (10 months)

Senior citizens (60 yrs and over) and students (18 yrs and over) £40
or £4 per month by Standing Order (10 months)

Juniors members - (17 yrs and under) £0.
(All juniors must be accompanied by an adult who must be a fully paid up member).

Welcome to the November issue of the News Letter

This picture (above) is courtesy of Space Weather. It was by Johnny Henriksen, who photographed this outburst over Harstad, Norway.

CAS New

We are starting with the children's groups now the nights are darker. We already have quite a few booked so we will be entertaining the usual groups of Brownies, Guides, Cubs, Scouts etc.

Thank you to Marilyn and Graham Leaver who gave talks in October.

Coming up.....

TALK – "WIMP hunting: the search for dark matter" by Anne Green a Professor at Nottingham University.

This is on Friday 13th November.

TALK – Colours of the Universe "Colours of the Universe" - Talk by Julian Onions

This is on Friday 27th November.

Let's have a good turnout for these two events I'm sure they will be very interesting. We have had good audiences for all the previous talks which have been much appreciated.

Please check our website frequently to see what's on and when. Also have a look at our photo gallery plus news and notices.

Also please remember if you ordering from Amazon to follow the link from our website – it earns us commission!

CALLING ALL MEMBERS

Wanted: Instructional videos of between 5 - 10 minutes long on astronomical subjects of your choice.

For example:

How to set up a telescope.

OR How to find a particular deep space object.

OR Learn your constellations.

OR how to do anything astronomical.

The choice is endless.

These videos should target both beginners and more experienced members. When we have had some submitted, we will have a video show one Friday to share them with the rest of the membership.

We are hoping that if we get enough, we can put them on YouTube on behalf of the Society.

If you do not feel able to submit a video, can you suggest a topic to be covered? If so please put topics in the SUGGESTIONS BOX and we can share them.

THANKS
Marilyn Bentley
Secretary

Future Talks

We have been contacted by a Martin Braddock who sent this message:-

" I wondered whether your Society would be interested in having me come and give a talk to your group?

I am a professional scientist with Astronomy as a serious hobby and am a regular speaker at my local astronomy society (Mansfield and Sutton Astronomical Society).

I will shortly be giving a lecture to the Northern Irish Astronomical Society and have a number of subjects which are aimed at the enthusiastic amateur rather than those with professional astronomy or astrophysics qualifications."

These are as follows:-

Martin Braddock – Astronomy Talks

1. **Project Hyperion – Complexities Associated with Interstellar Travel**

- Why aim for interstellar travel?
- Some terminology
- Where to go and how to get there
- Empty space
- Effect of m-g and hyper-g on the human body
- Radiation
- Let's talk about sex……
- Law and order
- Project Hyperion
- Kardashev scale
- Summary
- Further presentation
- Acknowledgements

2. **Astronomy: Past, Present and Future**

- Free your mind!
- The past – 100 years ago and the Solvay Conference
- The present - understanding of distance and the discovery of 'New Worlds'
- The future – interstellar travel?
- Do try this at home!

3. **Europa – Missions To Unlock Her Secrets**

- The Jovian lunar system
- Europa – some facts
- Exploratory missions
- A geological wonderland
- Science objectives & instruments for the new flyby mission
- Landing on Europa
- Summary
- Additional references

4. **Astronomy and Why we Love it!**

- Why is astronomy interesting?
- Some terminology

- Understanding of distance
- Discovery of ‘New Worlds’
- What could the future hold?
- Do try this at home!

5. Black Holes and the Einstein-Rosen bridge as a Concept of Space-time Continuum

- **Key people, dates and events**
- **Some basics**
  - Relativity
  - Gravity
- **Black holes**
  - What are they?
  - How are they formed?
  - What are they different types?
  - How do we know they exist?
  - Falling into a black hole
- **The Einstein-Rosen bridge**
  - What are wormholes?
  - What are the different types
  - Do they exist?
  - Can they be used for space travel?
- **Acknowledgements**

6. The Fermi Paradox and the Search for Extra-terrestrial Life

- **Some basics**
  - Some people we need to know
  - Who was Enrico Fermi?
  - What is Fermi’s Paradox?
- **Potential explanations**
  - Three most common
  - Less conventional
  - ETI perception of planet Earth
- **Distance and space travel**
  - Why is life likely elsewhere?
  - Concepts of distance
  - What could the future hold?
- **Implications of the Fermi Paradox**
  - For science
  - For planet Earth
  - For human kind
- **Acknowledgements**

7. **Bio-signatures and the Search for Life on Extrasolar Planets**

- **Biosignature research**
  - Leading scientists?
  - What is a 'bio-signature' ?
- **What can the Earth tell us?**
  - Evolution of life on Earth
  - What extremes can life inhabit on Earth?
  - What life-forms exist in such extremes?
- **What can we measure today?**
  - Isolating a planet's spectrum
  - Imaging spectroscopy and spectra-polarimetry
  - Venus, Earth and Mars and plans for the future
- **Is there life elsewhere in the Universe?**
  - Ingredients of life on HD189733b
  - What do you think?
- **Acknowledgements**

8. **Lithopanspermia - Seeding Life on Other Worlds: Could it Have Happened?**

Science paper review:

- Worth RJ et al (2013) Seeding life on the moons of the outer planets via lithopanspermia. Astrobiology 13: 1155-1165 (open access)
- Burchell MJ et al (2014) Survival of organic materials in hypervelocity impacts of ice on sand, ice and water in the laboratory. Astrobiology 14: 473-485 (open access)
- Some near earth objects
- Sub-marine exploration of dwelling conditions for extremophiles in warm water. Requires intensive investigation over the next several years……..

9. **'Soup to Nuts': Evolution of Life on Earth as a Model for Galactic Life?**

- **Formation of the first life on Earth**
  - Happened quickly!
  - Easy to make the building blocks?
  - Building blocks to life – how?
- **Oparin and Haldane**
  - Evolution of life on Earth
  - How to tie a tie
  - LUCA and great oxidation event
- **Probability**
  - Spontaneous generation
  - Ecephalisation quotient
  - Basis for other elemental based life

- **Imaging life on other worlds**
  - What *could* it be like?
  - What do you think?
- **Acknowledgements**

10. Aspects of Cosmology

- Introduction – some famous cosmologists
- Understanding of familiar distances in space
- Measuring and calculating distances in space using
  - trigonometric parallax
  - radiation flux
- Hertzsprung-Russell diagrams
- Doppler and cosmological red-shift
- Hubble's law & constant
- Existence of dark matter
- Rockets and propulsion

Please have a read through these and see which ones you would be interested in and let Marilyn Bentley know your preference(s)

There is a little bit about Martin on this website below and he does not charge a fee just travelling expenses.

The Northern Ireland Amateur Astronomy Society (NIAAS):

http://www.eaas.co.uk/cms/index.php

and his full profile can be found here if you are at all interested!

https://www.linkedin.com/profile/view?id=AAIAAAEygacBn7gQESbdm861uR5_GQChPaIC6EI&trk=nav_responsive_tab_profile

Thank you.

Things to see in November .....

Tuesday 3rd Venus and Mars continue to appear close to one another in the early morning sky, low in the east before dawn. This morning both planets have an apparent separation of 41 arcminutes. The apparent close separation is a line of sight effect – Mars is three times farther from Earth than Venus is.

Friday 6th Early risers will be greeted with a view of the 24% lit waning crescent Moon just 4.6° southwest of mag. -1.7 Jupiter. From the UK this positions the crescent Moon to the right and slightly above Jupiter in the sky.

Saturday 7th The morning show continues with Mars, Venus and a 17% lit waning crescent Moon creating a tight triangle around mag. +3.6 Zavijava. Look for them in the east-southeast.

Tuesday 10th The Moon is a thin sliver just 1% lit this morning. See if you can spot it low down in the east-southeast from just after 06:00 UT.

Thursday 12th Tonight is the official peak of the Northern Taurid meteor shower which has a zenithal hourly rate of five meteors per hour. Enhanced Taurid activity has been predicted for this year.

Friday 13th The planets continue to dazzle in the morning sky. This time it is the turn of mag. –4.2 Venus which is 5 arcminutes from mag. +3.7 Zaniah at 05:20 UT but continues to close to a separation of just under 4 arcminutes as the sky starts to brighten.

Tuesday 17th The Leonid meteor shower reaches its peak tonight. The good news is that the shower radiant, which lies in the Sickle asterism, rises as the Moon sets.

Sunday 22nd The Alpha Monocerotid meteor shower reaches its peak at 04:25 UT. Its zenithal hourly rate is a low five meteors per hour but twenty years ago it topped out at 420 meteors per hour for a five-minute period. The next outburst is not expected until 2043 but observations are always worthwhile.

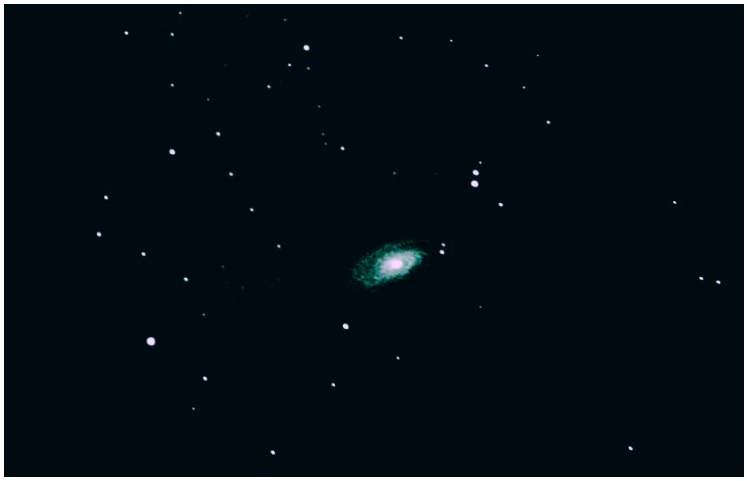
Monday 30th The beautiful Pleiades open cluster is currently visible in dark skies 30° up in the east at 19:00 UT. This is an ideal time to look at this beautiful object as the Moon will still be below the horizon.

Photo gallery.....

They have been in short supply this month but Graham Jenkinson has saved the day with this great set of pictures.

These are all from him.

M77 in Cetus



M88

M99

M100

M104 Sombrero Galaxy
17 mins 10 secs total exposure time
38 frames

Running Man Nebula

M81
104 frames and 11 dark frames 30 secs
each at 800 as

M17 in Sagittarius
54 frames at 800 asa

M17 is located about 5500 light-years from Earth in Sagittarius and may have had more names bestowed upon it over the ages than any other object of its kind. Although officially known as Messier 17, its nicknames include: the Omega Nebula, the Swan Nebula, the Checkmark Nebula, the Horseshoe Nebula and — lest those with more of a more marine bent miss out — the Lobster Nebula.

These are all brilliant. Thanks Boss!

ASTROSTUFF

BLUE SKIES ON PLUTO:

Earth isn't the only planet with blue skies. Pluto has them, too. The first colour images of Pluto's atmosphere were beamed back to Earth by NASA's New Horizons spacecraft just last week, and the sky looks a lot like home.

New Horizons took the picture just after it sped by Pluto on July 14, 2015. The spacecraft's cameras were looking back at Pluto's night side as sunlight illuminated the fringe of blue around Pluto's circumference.

"Who would have expected a blue sky in the Kuiper Belt?" says Alan Stern, principal investigator of the New Horizons mission. "It's gorgeous."

Carly Howett of the New Horizons science team explains the phenomenon: "A blue sky often results from scattering of sunlight by very small particles. On Earth, those particles are nitrogen molecules. On Pluto they appear to be soot-like particles we call tholins."

The term "tholin" was coined by Carl Sagan and Bishun Khare to describe organic substances they obtained in Miller-Urey experiments on gas mixtures akin to atmosphere of Saturn's moon Titan. On Pluto, tholins form high in the atmosphere where UV sunlight breaks apart nitrogen and methane molecules. The fragments re-combine to form complex macromolecules. These macromolecules continue to combine and grow until they become "tholins."

Ironically, tholins themselves are not blue. They merely scatter blue light. When tholins fall to the ground they show their true colours, gray or red. At least some of Pluto's

patchy red colouring is thought to result from a gentle rain of these particles from the planet's atmosphere.

FUN STUFF

NASA CHICKEN CANON

NASA engineers built a cannon that launches dead chickens at the windshields of airplanes, military jets and such to test the strength of the windshields against collisions with airborne fowl.

British engineers are eager to test it on the windshields of their new high-speed trains. Arrangements are made and a cannon is sent to the British engineers.

When the cannon goes off, the engineers stand shocked as the chicken crashes into the shatterproof shield, smashes it to smithereens, blasts through the control console, snaps the pilot's backrest in two, and embeds itself in the back wall of the cabin.

The horrified Brits send the Americans a report of the disastrous results, along with an urgent request for suggestions on improving the windshield design.

The American engineers respond with a one-line memo: "Thaw the chicken."

That’s all folks.

Sue

This newsletter is sent out to all present members without whom the Society could not survive. Also to previous members and people with an interest in astronomy in the hope that they may wish to join/re-join the Society.

If you no longer wish to receive this newsletter by e-mail please let us know. Thank you.