

Stargazey Pie!

A slice of Highlands astronomical life!

Tues 3rd June 2014

HAS Meeting Notices June 2014

1. **Current News and Dates for your Diary**

- HAS celebrated its 20th Anniversary in April 2014 – the Anniversary Lecture will be by Professor Martin Hendry of the School of Physics and Astronomy, Glasgow University: and will be entitled: “*2020 Vision – the Future of Astronomical Telescopes*” and will take place on 3 March 2015. Apologies that this is a long wait, but we wanted to attract a top speaker.
- Other forthcoming talks can be found on our 2014/15 Programme of Events – this is now available at reception; the details are also on the website at: www.spacegazer.com
- Solar Saturdays have recommenced – these take place at the Observatory at Culloden Moor (park at the far back left of the NTS Battlefield car park, there is a grassy path to your left which leads to the Observatory). Please check the website before setting off to find out what time (and whether) the session is running.

2. **Inverness Science and Technology Festival**, aka “Monsterfest” will take place from Friday 13 to Tuesday 24 June. It promises to bring you “a host of fascinating, stimulating, educational, fun and enjoyable events, on a wide variety of science and technology themes.” Bookings are now being taken! Further information at: <http://www.monsterfest.co.uk/>

3. **The next meeting is on 1 July** - this will be a talk by James McTaggart of HAS, entitled: “Is there Life on Earth?”.

4. **Aurorae and Telephone alerts** – should you see an aurora, noctilucent clouds, or anything else of astronomical interest, please alert Paul (01667 456789) or Pauline (07751 112 586). It is never too late at night to let us know.

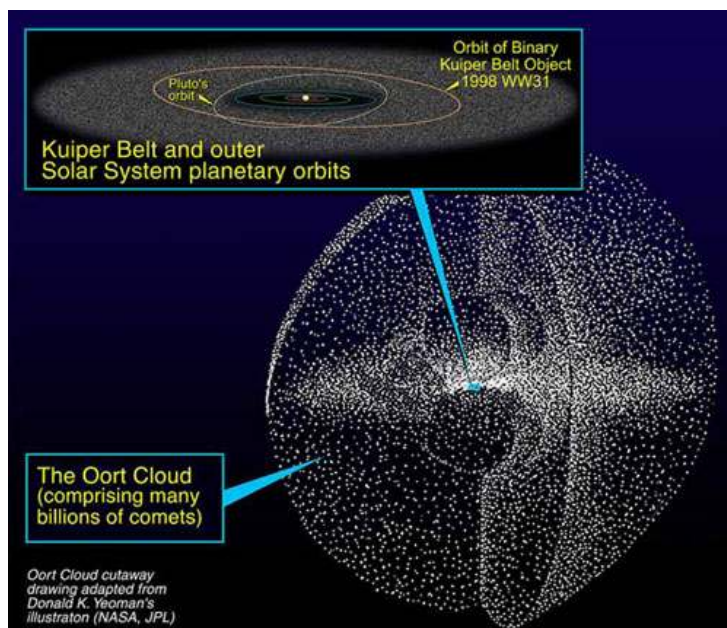
5. **Subscriptions** for 2014/15 are now due. As agreed at the AGM, there will be no increase in price, this is for the second year in a row. Forms are available from the front desk. Please pay Ronnie at tea break. Thanks.

Main Event: Under Alien Skies 2 by Arthur Milnes

Arthur Milnes is our Chairman and gives regular talks to us. He tells us that as a boy, science has always been a great interest of his. After a grammar school education, he joined a firm of electrical engineers and gained a Higher National certificate before national service. He wasn't keen on spending two years in the army so joined the Fleet Air Arm which proved exciting and challenging and led to a 17 year career as a commercial pilot. He joined a young HAS in 1993 and has enjoyed every meeting he attended since that time. He joined the committee very early on and hasn't left, being a major help in the old and new observatory although he professes to be more an armchair astronomer. His knowledge on many aspects of astronomy is considerable and he disseminates that knowledge in talks and through the breakout groups.

This is a continuation of a talk that Arthur gave four years ago with the introduction repeated. Some years previously Paul had outlined how humans might journey to the nearest star – the Alpha Centauri triple star system – which is 4.2 light years away. Arthur puts the distance into context: four light years is 27 million solar diameters or 6,400 times the distance between the Sun and Pluto. If you put a marble on the ground to represent the Sun then the three stars of Alpha Centauri two small marbles and a small ball bearing, 25 miles away. Arthur feels we would have to discover warp drive before a journey would be possible.

These far away stars can now be viewed in many different wavelengths revealing greater detail than ever before. This is important if we intend to visit a star with accompanying planet for possible colonisation otherwise this would turn into a one-way journey. However, by using imagination along with scientific detail, graphic artists can paint planetary scenes for us to travel to even the most hostile of environments.



For our journey, let us stay relatively close to home and take a ride on a comet from the edge of our solar system in towards the Sun. We can use our imagination to speed past the gas giants and the Kuiper Belt – a doughnut like ring of solar debris with some chunks the size of Pluto and millions of others much smaller – then we will find ourselves in a vast gap far wider than the distance already travelled and now we approach the inner edge of the Oort Cloud, a huge spherical globe of small icy bodies out to a distance of about 1.6 light years.

We arrive at an icy body of about 3 miles in size, which is just one of trillions. They cruise no faster than a small aircraft, the speed of which is just balanced by the feeble gravity of the distant Sun. Around us is utter blackness filled with bright stars. One yellow dot is our Sun, which is not as bright as Sirius and some of the other stars in the sky. No planets can be seen from here and even the closest icy body is probably about two billion miles away. Our iceberg has probably been orbiting the Sun for three billion years and nothing is likely to change that soon. The surface looks bumpy with reddish brown ice with temperatures of about -268°C . While exploring, if you happened to fall into a crevasse, your descent would be slow and gentle as gravity is so low, but this also means you could easily jump a mile into space.

If a passing star nudges our orbit, we would start falling infinitely slowly towards the Sun. As millennia pass, the little yellow dot appears to grow more intense until it is the brightest star in

the sky. We gain speed and start to pass the giant outer planets; Neptune, Uranus, Saturn, and now the weak warmth of the Sun can be felt as small patches of ice become agitated and unstable. Dust grains begin to rise and gentle puffs of gas from below the surface send grains of dust skywards. Passing Jupiter, we may have formed a graceful tail of gas and dust as big jets of gas, ice crystals and dust now erupt all around us.



Straight tails of blue ionised gas and curved yellow tails of dust are always pointing away from the Sun blown by its solar wind and the growing pressure of its radiation. Our speed is perhaps thousands of miles an hour as we approach the Sun, overhead is a thick haze of gas called the coma surrounding the nucleus of the comet which is now shifting, cracking and crumbling allowing yet more gas to escape.

Fortunately, we fly past the Sun in a wide orbit preventing disintegration, which can happen if a comet gets too close. Activity begins to subside as Mercury is passed. Further on is a small blue world and an observer here would see a beautiful spectacle with the large tails now preceding the comet. As we move out of the deadly heat to the cold, dark Oort Cloud, the bright coma and long tails gradually diminish until it is just an iceberg once again, perhaps never to return or possibly on a vast orbit which, thousands of years into the future, may bring us back on another wild, perhaps destructive swing around the Sun.

For now it is back to our green Earth on our spaceship of imagination; the safest and most comfortable way to enjoy space travel.

Thank you Arthur for taking us for a spectacular ride on a comet.

Next month we have James talking to us about Life on Earth and whether there is any? Hmm, one to ponder whilst drinking tea and eating biscuits at the next meeting. In the meantime do join us at the observatory to view the big yellow ball in the sky.

Pauline Macrae