Hilltop Cloud

Time Travellers Club

January-18

Dear Club Member,

When looking through the notable anniversaries there was one happening this month that I couldn't resist exploring as a theme! On this day (22nd January) it's the 50th anniversary of the take off of Apollo 5, carrying the first lunar module in to space. Now I couldn't use the moon as my theme... I love grey, but even I think that sending it 2 months in a row is a little excessive.
So instead we're looking skywards and exploring space, out in to the black.

In between all the black are the tiny specks of light from distant stars, and they seem to be white. Nothing could be further from the truth however, look closely and there's a whole rainbow of colours. Red Giants are huge stars that are cooling down, and reaching the end of their life (stars have a certain amount of fuel to burn, and when that runs out they eventually die). If you look up at the night sky and find the constellation of Orion, the star on his right shoulder (left as you look at it) is called Betelgeuse, and it's an example of a red giant. If you can find a clear night sky you will even be able to pick out the reddish tinge to it's light. We have some of the clearest skies in the UK out here in the Cambrian Mountains, so I am very lucky that if it's a clear night I can see a huge number of stars.

In March last year we used the theme of Newton's Indigo, and I described how he used a prism to split the white light from a candle in to a spectrum. You can do the same with the light from stars, except when you look closely at their spectrums you can see black lines in them.. Within each star will be various chemical elements (stars are where all the elements are made), depending on how old the star is, and the type of star it is. Those black lines are where light of a certain wavelength is absorbed by a specific element. If we use the fingerprint of the black lines, we can tell what elements are present. So despite the night sky being black... when we look closer there is a whole world of colour that can revel a huge amount about the universe.

So how does this link back to that Apollo 5 mission? Well the huge American space programme, set up with the intent to send man to the moon, has ended up leading to far more important scientific discoveries. By putting satellites and telescopes in space we can look more closely at these incredibly distant stars, and gain far more accurate information.

Happy Spinning,

Katie

There's lots about Spectroscopy that will probably only make sense with photos, so here are some links for further reading/watching if you want to know more.

http://www.bbc.co.uk/science/space/universe/questions_and_ideas/spectroscopy#p00fl87r
(Section from Wonders of the Universe, probably will only work in the UK)
https://www.youtube.com/watch?v=n_KyYFYNvpI
(You Tube link of the same video clip)

https://thethoughtstash.wordpress.com/2012/05/20/finding-out-what-a-star-is-made-of-with-spectroscopy/
Quite a technical explanation about absorption spectrescopy

https://imagine.gsfc.nasa.gov/science/toolbox/spectra1.html
Simpler explanation courtesy of NASA