



**Hilltop Cloud**

## *Time Travellers Club*

Dugood Bach  
Mallwyd  
Machynlleth  
Powys  
SY20 9HR

March-17

[www.hilltopcloud.co.uk](http://www.hilltopcloud.co.uk)

Dear Club Member,

When I was a science teacher I used to love teaching students about light. We'd shut all the blinds, and plunge the lab in to complete darkness, and spend an hour replicating the work of Isaac Newton. It was a great subject to teach because the results of putting prisms, slits, lens, and filters in front of the light source are instantaneous.

Ask any British child to tell you the order of the colours in the spectrum and they're probably use the mnemonic Richard of York gave Battle in Vain, to US school children it's Mr Roy G Biv (and there is a delightfully ear-wormy song by We Might be Giants to go with it!), but to children in India they remember it in reverse as VIBGYOR.

But why 7... after all there are 3 primary colours in light (Red, Green and Blue, unlike paint, which is one of the reasons why converting colours from screen to print is tricky). When you look at a spectrum produced by a prism, the start and end are obvious as Red and Violet, but there are no clear sub-divisions. Newton picked another 5 colours, and that's the way we've kept it. Most of the light that comes from our sun is in the green area of the spectrum, so Newton decided he wanted equal subdivisions either side of the "middle" green. So he decided on orange, and yellow to get to red. But in the other direction... look closely at a spectrum and it's pretty hard to pick out 2 clear distinct tones. He could have gone with turquoise as a colour between blue and green, but instead he was influenced by the latest craze. In the mid 1600's the latest dye had just arrived, Indigo was flooding the market, via ships from the Indies. So he went with a deep, dark blue shade as an intermediary between blue and violet.

Rather handily that also gave him 7 colours, and in those days people still believed that certain numbers had power.

Of course none of these discoveries might have happened were it not for the Plague. Universities were shut to try and halt the disease and Newton was sent home. He had nothing to do except mess around, and from this period of experimentation most of his later work began. It was here he observed the famous apple, that was the basis of his work on gravity, and 2 toy prisms were the start of his work on light.

Happy Spinning,

Katie