

## A Museum in one's home.

Collectors around the world will empathize with Tony's story. A person will come across an item: stamp, coin, bottle, painting, an elegant piece of furniture.... and he/she will acquire it. At a later date a similar object takes their fancy and they cannot resist buying it. They are hooked – a new collector is born.

In Mr Tony Swift's case the collection comprises of scientific apparatus and memorabilia from the turn of the 20<sup>th</sup> century and what a time this was for Physics. If ever a subject area went through convulsions it was Physics around the 1900's.

*Mechanics, Thermodynamics and Electromagnetism had given the subject such solid foundations that many people thought there was little more to do at the start of the 20<sup>th</sup> century. Admittedly, there was a slight miss-match with electromagnetism predicting a constant speed of electromagnetic radiation which didn't make any reference to the ether and conventional ideas about waves which clung to the idea of a medium through which the waves must pass. Newtonian axis transformations also had difficulties with a constant speed of light but scientists at the time were convinced that these points were a matter of detail rather than an attack on the fundamentals. How wrong they were!*

Tony's collection expanded like any other and, at some stage, he must have felt that other people would enjoy his collection so, in the confines of his home, he created a Museum . Voilà :-



The fact that it is situated in Glaisdale, near Whitby was unbelievable to me; I had spent my childhood in Glaisdale, going to school there and, later, attending Whitby Grammar School. What was a Museum doing in that remote part of the world, I wondered?

A web address provides us with a brief summary of what to expect in the museum : [www.museumofvictorianscience.co.uk](http://www.museumofvictorianscience.co.uk) ***but it is a visit that takes one through the time warp!***

Tony's presentation lasts for about 2 hours and largely follows a chronological sequence starting with the work leading up to Roentgen's discovery of X-Rays in 1895. Before one's very eyes X-Rays are generated and made visible by fluorescent cards. A discussion of Shoe Store Fluoroscopes for testing the fitting of new shoes was given and this shows how commonplace X-Rays became in later years (1950's) until it was realised that these Rays had damaging effects.

Becquerel looked elsewhere for penetrating radiation and found (in 1896) that a Uranium compound was radioactive – inadvertently some photographic films were darkened when the compound was placed in the vicinity. Tony spends some time on this subject and full credit is given to the Curies for their meticulous work at the Sorbonne University, Paris. Of course, radioactivity presented a real dilemma to Thermodynamics --- a substance giving out energy without any regard for the First Law – “Energy can never be created or destroyed”. Einstein resolved the problem with  $E = mc^2$ .

The museum contains a host of high voltage and electrical instrumentation as shown below; a Tesla generator taking centre stage.



This leads to a discussion of Marconi's work on wireless with the detection of radio waves with a coherer [1].

The start of **particle physics** is described with a working model of Thomson's apparatus:-



Tony explained that, although Crookes had done much initial work on the flow of current through gases in evacuated tubes, it was Thomson who had the mathematical knowledge to identify a new particle, the electron.

Many other things were mentioned in passing and Tony adjusts his talk [2] to suit his audience. My wife, with a minute background in science, thoroughly enjoyed the visit and I was overwhelmed by the quantity and quality of items on show. The loving care which Tony has given to each item makes the visitor immensely grateful and privileged to visit his home. Tony does, indeed, convey much of the excitement of the great Physicists of that time as they peered from the Classical to the Quantum world of Physics.

#### **References**

[1] Coherer explanation given in “One Hundred years of Electronics” Phys.Ed. 2004, Vol. 40(3) pages 252-256.

[2] Topics covered during visit:-

**YOUR PROGRAMMED VISIT TO THE MUSEUM**

A JOURNEY OF REAL SCIENCE THROUGH 19th CENTURY PHYSICS

FIRSTLY, A GUIDE AROUND THE PACKED SHELVES VIA LASER POINTER,  
DEMONSTRATING SOME OF THE MORE INTERESTING INSTRUMENTS

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FEATURING

THE DEVELOPMENT OF THE ELECTRO-STATIC GENERATOR ~ THE WIMSHURST MACHINE & THE ACCESSORIES THAT COULD BE USED WITH IT

THE ELECTRIC TELEGRAPH, WITH WORKING INSTRUMENTS ~ THE TELEPHONE EXCHANGE

DISCOVERY OF X-RAYS ~ FLUORESCENCE & PHOSPHORESCENCE, URANIUM GLASS, PITCHBLENDE, A GEIGER COUNTER, RADIOACTIVITY IN GAS MANTLES AND SMOKE ALARMS, AND MORE.

CATHODE RAYS & THE WORK OF SIR WILLIAM CROOKES ~ GEISLER TUBES, THE RADIOMETER, THE ELECTRIC EGG, THE CROOKES RAILWAY

SIR J.J. THOMSON & THE DISCOVERY OF THE ELECTRON ~ THE AURORA BOREALIS, BOUQUET TUBES, GOLDSTEIN'S CANAL RAYS, PULUI'S PHOSPHORESCENT LAMP

DR FRANKENSTEIN'S LABORATORY, THE CLIMBING ARC, LIGHTNING, THUNDER, SPARKS