



Liverpool College

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The College Scientist

LENT 2010

Worm Glue in Bone Surgery! *by Peggy Howard, Year 9*

Scientists are always looking for new solutions to problems and often we have the natural world to thank, as it often contains the best answer. Thanks to the sand castle worm, we may have a new type of super glue.

Scientists at the University of Utah, Salt Lake City, have been studying the sand castle worm. With its' help they have created an extremely powerful glue, which works underwater and hardens very quickly. This sort adhesive would be fantastic to use inside the human body. For example, when doctors are working with broken bones, they could use this glue to hold them together. The Sand Castle Worm is a small, underwater dwelling creature. It gets its name from its rather strange house. It collects

pieces of broken shells and debris, then uses it to create a special glue to stick them all together.

This glue hardens in less than 30 seconds underwater, and after 30 minutes is tough like leather.

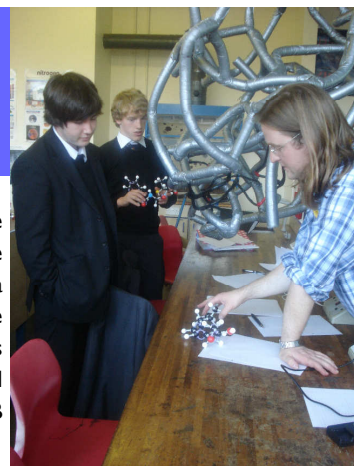


It turns out it contains a number of proteins that have strong positive or negative charges. These charges like to stick together, which is what makes the glue so super sticky. The scientists then tried to create their own glue, which they found is almost twice as strong, and most importantly, non-harmful to human cells. They are now trying to find out if they can make the glue able to dissolve, which would make it absolutely perfect for use in surgery.

Medicines and Drugs

Liverpool College Chemistry Department were very fortunate to host Steven Rossington as he presented a workshop on Medicines and Drug Therapy to our Year 13 Chemists and Biologists. Steven is a Laboratory Instructor in Pharmaceutical and

Medicinal Chemistry within The Centre for Drug Design at The University of Salford and provided a valuable insight into the advancements in biological activities of potential anti-cancer and anginal agents which is part of the IB Chemistry specification.



Special thanks to all those who contributed to The College Scientist:

Peggy Howard, Olivia Silalahi, Asha Ray, Harley Morrison, Paul Thompson, Kassim Farooq, James Hill, Miles Price, Anna Powell.

Who is Glazebrook? *By Harley Morrison, Year 10*



As you enter the Science block, have you ever wondered who that tall serious looking moustached fellow is?

Sir Richard Glazebrook was born in West Derby, Liverpool and the son of a surgeon. He was educated at Dulwich College until 1870, Liverpool College from 1870 to 1872, Trinity College and Cambridge, from which he graduated in Mathematics in 1876. He studied physics under James Clerk Maxwell and Lord Rayleigh at the new Cavendish Laboratory and in 1880 was appointed a demonstrator at the laboratory. The following year he was also appointed a college lecturer in mathematics and physics and a university lecturer in mathematics.

He hoped to succeed Rayleigh as Cavendish Professor of Physics in 1884, but was passed over in favour of Sir J. J. Thomson, which was a great disappointment to him. In 1898 he was appointed Principal of University College, Liverpool.

In June 1899, however, he left to become first Director of the National Physical Laboratory in Teddington. He held the post until his retirement in 1919, successfully establishing the NPL as a world leader in physics research.

In 1882 he was elected a Fellow of the Royal Society at the very young age of 28. He was also awarded President of the Physical Society, later the Institute of Physics, from 1903 to 1905.

“A bucketful of water contains more molecules of water than there are buckets of water in all the oceans combined”
Mr Traynor

Bouncing Squash Balls *By James Hill, Miles Price, Kassim Farooq, Year 9*

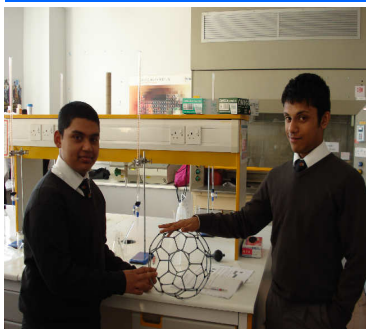
In a year 9 experiment we heated a black squash ball using water and a Bunsen burner to determine the Efficiency of the ball when heated to high temperatures such as 100 degrees Celsius.

We found out that the higher the temperature the higher the ball bounced, this showed that the ball gets more efficient as it gets warmer. In

addition we found out that a squash ball can withstand temperatures of up to 160°C. We concluded that the squash ball was affected by temperature but that it was generally inefficient as it barely cleared a third of the way up the ruler during any of the tests.



Nanotechnology Workshops @ University of Liverpool



Students from Year 10 and 12 visited the Chemistry Department at the University of Liverpool to take part in workshops designed to explore the theme of nanotechnology and its uses such as electronics, semiconductors, medical

diagnostics, energy conversion and storage.

Nanotechnology is widely regarded as an up and coming field, and “nano-literacy” may soon become as highly sought after as computer literacy was 20 years ago.



Got Milk?

By Paul Thompson, Luke Tully, Alexander Wu, Year 9



Our experiment was to identify how much oil each type of milk contained during our studies of emulsifiers. We tried whole milk, semi-skimmed and skimmed we found

Investigating Emulsions in different samples of Milk

out that the one with most oil in was the whole milk. Using a microscope you could see black dots which we knew were oil droplets.

The whole milk was then drunk by Sam Foster-Lightburn and he said he was very creamy indeed. When we put semi-skimmed under the microscope there were less dots than whole milk. This was because it contained less oil. Sam also had the pleasure of tasting this milk and

said it was still quite creamy but not as nice as the whole milk. Finally we put skimmed milk under the microscope and this had very few black dots as whole milk and semi-skimmed. This was because it contained less oil than whole milk and semi-skimmed. Our chief taster, Sam, said that it had virtually no taste at all.

We found out by experiment that the more oil in the milk, the more creamy it was and the better the taste.



Local Heroes Rediscovered

Our Year 10 Scientists at Liverpool College were proud to host Dr Rossington's loud, explosive, wizz-bang and highly enjoying lecture, on Salford born scientists William Henry, James Prescott Joule, Manchester based scientist John Dalton and Ernest Rutherford and how their work changed our understanding of chemistry today. The talk explored the properties of

solids, liquids and gases, packed with some cool experiments, so cool in fact they reached temperatures of -196 degrees Celsius! From the relative inertness of nitrogen to the explosive nature of oxygen, the lecture was filled with plenty of exhilarating and heart-stopping demonstrations.



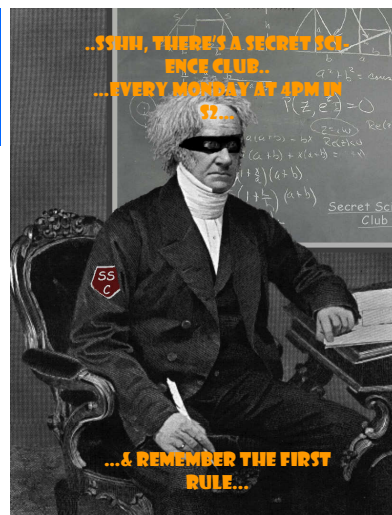
"It was boss, especially when the entire floor was covered in dry ice. It was like being on the X-Factor!"
Mr Turbitt

Can Science be fun?

By Anna Powell, Year 8

My favourite Science Club experiment was when we exploded balloons. We put metal compounds in powder form inside the balloons and filled them with hydrogen. Then tied up the balloons with wire and hung them on a meter ruler suspended into the air. Next we lit a splint attached to another meter ruler, put it

under the balloon and waited for it to explode with a distinctive flame! It was very loud and very colourful.





Department of Chemistry

Liverpool College

Year Six Science Club

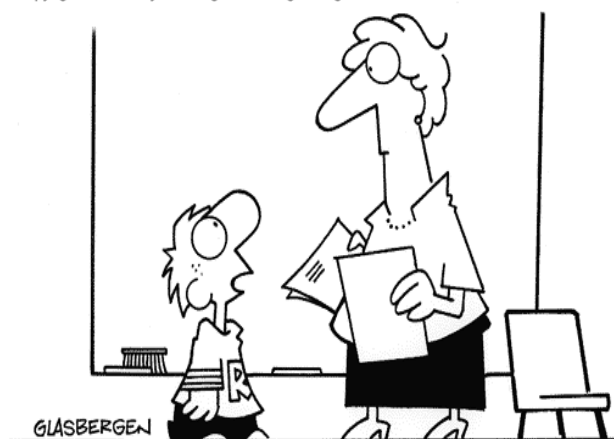


This club is simply 'Science for fun!' The activities we cover in a term capture the pupils imagination and aims to encourage a love of and genuine excitement for all forms of Science. The club will build their confidence in the laboratory and they will become more familiar with apparatus and chemicals, but there is no writing of reports or following a syllabus; just challenges, fizzes and 'kitchen chemistry'. So far we have investigated what makes fire-works sparkle with a particular colour, made our own version of 'flubber' and investigated how acids react with various metals.



Holly Cavanagh Maddox showing off her skills as a magician by bending a stream of water using a charged rod

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"I couldn't do my homework because my computer has a virus and so do all my pencils and pens."

Useful Websites for revision/pastpapers/exam timetables

<http://www.chemguide.co.uk/>

http://web.aqa.org.uk/admin/qp-ms_library.php

<http://www.biologymad.com/>

<http://www.freeexampapers.com/>

<http://www.bbc.co.uk/schools/gcsebite/size/>

http://store.aqa.org.uk/admin/t_table_pdf/TT-GCSE-SUM10.PDF