

Science education newsletter 157

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For those involved in science, mathematics,
technology and environmental education

Education forum

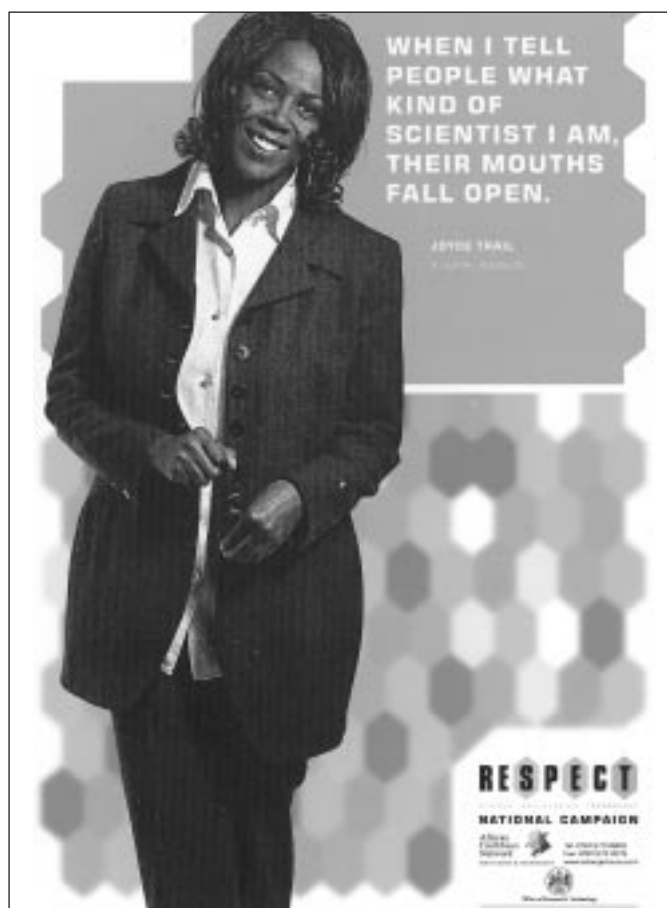
July 2002

AFRICAN-CARIBBEAN NETWORK FOR SCIENCE AND TECHNOLOGY RESPECT FOR SCIENCE! – NATIONAL RESPECT CAMPAIGN

A new national drive to increase the number of young African-Caribbean people studying and working in Science, Engineering and Technology (SET), was launched by the Science Minister, Lord Sainsbury, in February 2002, at the Science Museum. This is a unique groundbreaking event, the first ever at national and local level to enhance the profile, representation and participation of African-Caribbeans in Science, Engineering and Technology careers.

The National RESPECT Campaign seeks to improve the attainment of African-Caribbean pupils in Science, Engineering and Technology (SET) by raising both their awareness of SET careers and their aspirations to pursue them. It will increase pupil regard for developing numerical, scientific and technological competencies by exposing them to African-Caribbean SET practitioners, trainees, materials and activities. These activities target both boys and girls and men and women.

The National RESPECT Campaign has been funded by the Government's Office of Science and Technology (OST) and delivered by the African-Caribbean Network for Science and Technology. The Science Minister, Lord Sainsbury, said, *'The UK's continued success in science depends on young people believing that science has something exciting to offer them.'*



We want to make the most of the potential and full range of talents of all the young people in this country. This means encouraging more youngsters from ethnic minorities, including the African-Caribbean community, into science. The National RESPECT Campaign is an important way to do this.'

Additional funding has been provided by the Co-operative Insurance Society (CIS). The CIS is a business rooted in the community according to Terry Webb who is responsible for the development of the CIS's community involvement. He explains the rationale for their sponsorship of the National RESPECT Campaign as follows: 'As a major modern employer, we believe that the people who work for us should be representative of the population as a whole. Historically, the financial services industry was perceived to be white, male and middle class. However, we have been working to achieve diversity throughout the organisation. The African-Caribbean Network for Science and Technology shows one characteristic that is especially seen as a virtue in the co-operative movement: the giving of help for self-help. We look to the day when the African-Caribbean Network for Science and Technology fulfils its ambition of seeing the diversity of this country's population reflected among the professionals working in the fields of science, engineering and technology.'

Dr Elizabeth Rasekoala, founder and director of the African-Caribbean Network for Science and Technology, explains: 'The aim of the National RESPECT Campaign in showcasing Blacks in SET is to raise awareness of the under-representation and under-participation of Black people in these fields and to cause educators and British society in general to reflect on the need for, and mechanisms for, positive change in this regard. It is to enable educators and young people to develop the mental "wide angled lens" through which to generate and sustain a multi-dimensional panoramic view of the potential educational achievements and career aspirations of African-Caribbean people in British society.'

The key features of the National RESPECT Campaign involve high-profile launch events and school-based promotional activities involving Black SET professionals as role models in the following target cities: Manchester;

Sheffield; Wolverhampton; Bristol; Northampton and London. The target audience for the launch events are pupils and teachers from local primary and secondary schools and Black professionals in SET participating as role models. Poster leaflets, posters, a Good Practice Guide and other materials for the project, showcasing 12–15 Black professionals in SET fields, will be distributed to all primary and secondary schools in the above cities.

The National RESPECT Campaign also seeks to enhance positive images of African and African-Caribbean communities in the general public by raising the awareness of the achievements of these communities in terms of their contributions to developments in science and technology. In this regard, it will challenge the limited and stereotypical expectations of African and African-Caribbean people as non-achievers in science and technology. This stereotypical negative expectation is very much at the heart of the under-achievement and low self-esteem of many African/African-Caribbean young people and adults in these fields.

Liz Rasekoala further outlines, 'My personal experience as a chemical engineer and that of many other Black professionals in science, engineering and technology in Britain is one of isolation, invisibility and marginalisation. This failure and inequality in British society in recognising the contributions of Blacks in SET is particularly disturbing in terms of its impact on the accessibility of Black youth to Black professional role models in these fields and their opportunities to thus enhance their aspirations and achievements beyond the stereotypical and limited confines of careers in the fields of sports and music. It places a considerable burden on our youth because it makes it well nigh impossible for them to challenge the stereotypical and limited mainstream expectations of them.'

She concludes, 'The National RESPECT Campaign has shown what can be delivered when there is the genuine commitment to move beyond the empty rhetoric on race equality and face up to the challenge of effecting innovation in curriculum and pedagogy. We urge all people of goodwill to join us as role models, through their commitment and action, in taking this innovative message into schools, workplaces, communities, homes and families.'

For further information, contact

Dr Elizabeth Rasekoala, Director
African-Caribbean Network for Science and Technology
Unit 9, Progress Centre
Cakebread Street
Ardwick Green
Manchester M12 6HS, UK

Telephone +44 (0)161 273 8808
Fax +44 (0)161 273 3313
E-mail lizrasekoala@hotmail.com
www.ishangohouse.com



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UNVEILING OF NASA WEB SITE HIGHLIGHTING INTERNATIONAL COLLABORATION, POSKOLE 2002, CZECH REPUBLIC

By Ruth Petersen

On 12 April 2002, with the help of our interpreter, David Ulbrich, Lawrence Williams (Director of Studies, Holy Cross School, UK) and I co-presented at the Poskole 2002 Conference in Lazne Sedmihorky, Czech Republic. Poskole, which began in 1997, is a seminar about computers in school and is sponsored by Charles University, Prague, Czech Republic.

Lawrence began the 90-minute presentation with an introduction to the many uses of technology tools by the Holy Cross School, primarily in drama, art, and music and, more recently, science. I introduced the Glenn Learning Technologies Project (LTP), which includes the Beginner's Guide to Aeronautics and NASA Virtual Visits. We then paused for questions on the participation of NASA scientists in NASA Virtual Visits and on how teachers in the Czech Republic can become involved.

Lawrence continued the presentation by challenging the audience to explain NASA's involvement with Holy Cross. Our first collaboration was one in which videoconferencing connected Holy Cross science students to NASA scientists/researchers. Through additional e-mail correspondence following this connection, Lawrence recognised the Glenn LTP commitment to real world science exploration, which is shared by Dr Eric Albone, Director of the Clifton Scientific Trust. Dr Albone was the organiser of the Japan 2001 Science, Creativity and the Young Mind Workshop held at Bristol University, UK, 22–27 July 2001. Lawrence saw collaboration between NASA and one of the teams at the Workshop as the perfect opportunity to beta-test his new ICT Learning Model (www.grc.nasa.gov/WWW/K-12/MarsV/appD.htm). Joe Kolecki, physicist and Mars Pathfinder scientist, suggested a comparison of Mars's and Earth's volcanoes as a topic, which was endorsed and supported by the Earth Science Department at Bristol University.

I completed the presentation by sharing the NASA web site developed by Steven Gutierrez to highlight the entire process (www.grc.nasa.gov/www/k-12/marsV/index.htm), which is the final step of Lawrence's learning model. In order to see the site in greater detail, I was asked to continue the presentation in the afternoon for 20 additional minutes. The audience was especially interested in IP videoconferencing and the

commitment of NASA scientists to our project. My presentation was dedicated to Joe Kolecki and Eric Albone who were invited to the Conference but were unable to attend.

I believe that the presentation at Poskole 2002 will lead to additional collaborations with Eastern Europe. Dr Miroslava (Mirka) Cernochova (Department of Information Technology, Faculty of Education, Charles University) was the organiser of the conference and would like to work with us in two ways: pre-service teacher training and e-mail connections between NASA scientists and children hospitalised in the Czech Republic. Lawrence and I had a discussion with a Czech technology coordinator about possibly scheduling a videoconferencing connection including NASA, Czech students, UK students from Holy Cross School, and US students. Dr Bozena (Boba) Mannova (Department of Computer Science and Engineering, Czech

Technical University in Prague), who was Co-European Woman of the Year in 2001, is also very interested in working with us. Dr. Mannova has strong ties to the US She earned a PhD from M.I.T. and her son (MD) is currently living in Tennessee completing his residency. In addition, as a result of our participation in the Japan 2001 Science, Creativity and the Young Mind Workshop, Lawrence and I have been invited to attend and submit proposals to present at conferences in Spain and Cyprus.

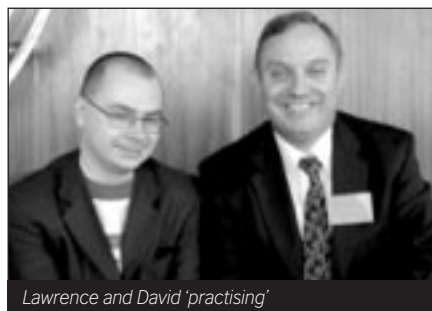
For additional information, please contact
E-mail Ruth.Petersen@grc.nasa.gov
Telephone +44 (0)216 433 9714
www.grc.nasa.gov/www/k-12/MarsV/index.htm



Ruth and David Ulbrich, interpreter



Lawrence, Ruth and David during the presentation



Lawrence and David 'practising'



Ruth and her guide Ariana at the entrance to Charles University, sponsor of Poskole 2002

New Zealand will be experiencing the best of British science theatre this July, courtesy of the British Council. The New Zealand International Science Festival, staged in Dunedin, New Zealand, will feature two members of the Edinburgh International Science Festival SciCrew. The SciCrew will be entertaining audiences with its popular show, *Fast Food*.

Fast Food is staged in the Greased Lightning fast-food outlet, where Herbert and Zach don't make fast food; they make hyper-fast food. Using kitchen assistants drawn from the audience, they rustle up (before our eyes) a hyper-fast meal: egg buttie; coke; chicken and chips; with ice cream for dessert. Then they set about making the digestive process faster. Hyper-fast in; hyper-fast out.

The show is a surprising, funny and explosive look at playing with food which introduces some basic biological, physical and chemical principles in a light-hearted way. The crowd-pleasing gherkin-blaster caps off the explosive show.

The Edinburgh Science Crew is part of an exciting international line-up of guests being featured at the New Zealand International Science Festival (29 June to 7 July).

Just weeks ago, Dr John Grunsfeld was walking in space as part of his mission to service the Hubble Space Telescope. He will soon be touching down in Dunedin to participate in the Festival.

And from space to a real-life 'Indiana Jones' ...

Sir David Attenborough described him as being 'in the league of the all-time great explorers like Dr David Livingstone'. Tim Flannery, author, scientist, explorer and director of the South Australian Museum, will amaze audiences with his stories of near-death experiences in the far reaches of Papua New Guinea.

Emma Ramsay, director of the Festival, said this year's theme, *Earth and Beyond*, will bring visitors on a voyage of discovery to the past, present and the possibilities of space,

'From dinosaurs to startling present-day discoveries to space travel, this year's Festival will bring science out of the labs to spark our imaginations.'

said Emma. *'The Festival will give audiences the opportunity to come face-to-face with a living legend, stars of the stage, the best of New Zealand's scientific achievements and some star-gazers of international acclaim.'*

Other international guests include:

Dr Steven Beckwith, Director of the Space Telescope Science Institute – Dr Beckwith will bring with him the latest images of the cosmos as seen from the eye of the Hubble Space Telescope. He will also describe the outstanding contributions made by the Hubble to our knowledge of the universe.

Professor David Malin, Space Photographer – Professor Malin is acknowledged internationally as one of the great space photographers. The Festival will feature over thirty of his large-scale images and hear his explanations of what they show, how they were taken and what we can learn from them.

Emma said that over 300 events have been organised to attract a wide audience, *'We will have events that appeal to audiences from pre-school age to retired people. There will be interactive activities, science theatre, workshops, field trips, and a number of exciting international guests. And as always, most of our events will be either free of charge or will request a gold coin donation.'*

The New Zealand International Science Festival runs in Dunedin from 29 June to 7 July. For further information go to www.scifest.org.nz.

or contact

Heather Allan, Publicist
E-mail heather.allan@xtra.co.nz



Activities in the UK

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GUIDING THE WAY TO SCIENCE

Can you make a pet cloud? Do you know how to make your own lava lamp? Thousands of girls across the UK do, following a joint project between SCI and Girlguiding UK (formerly known as the Guide Association). Since the beginning of Science Year in September 2001, a series of pull-out science activity pages have featured in *Guiding* magazine, reaching thousands of girls and women across the UK.

Opening up science to girls is an important drive behind the UK Government's Science Year project. According to research in the UK, women make up less than fifteen per cent of the full-time industrial and academic workforce in science, engineering and technology. With an established interest in education, most notably through the Millennium SCICentre project, SCI decided to tackle informal learning with an emphasis on fun.

Encouraging children to try science outside a classroom setting may help to keep their interest in the subject alive, and help them to see science as part of their everyday life. To show girls how much fun science can be, an enthusiastic SCI working party teamed up with Girlguiding UK to produce the activities for Guides (10–14 years old), Brownies (7–10 years old) and Rainbows (5–7 years old).

As the UK's largest voluntary organisation for girls and young women, with nearly 700,000 members, Girlguiding UK is perfectly placed to reach a wide spread of age groups and areas. Girlguiding UK is also part of the biggest women's organisation in the world, the World Association of Girl Guides and Girl Scouts, with 10 million members in over 140 countries. SCI

hopes that free downloads from the SCI web site will spread these science activities even further, to be enjoyed by girls, and boys, across the world.

The SCI working party reflected the broad span of SCI disciplines. Chris Hayes of the SCI Fine Chemicals Group is based in academia, Tim Reynolds from the SCI Marketing and Publicity Development Committee is a PR professional based in Brussels, Cecile Sinkinson of the SCI Consumer and Sensory Research Group works in the food industry and Tim Wood of SCI Scotland works in the Scottish whisky trade. With support from SCI Web Editor, Sophie Riches and Publicity and Education Officer, Kelly Quigley, the team managed to produce a wide range of activities.

All the science activities featured in *Guiding* magazine are now available at www.soci.org as free downloads from the education resources section of the SCI web site. The page will continue to be updated as new activities are published.

For further information, please contact
Kelly Quigley, Publicity and Education Officer
Society of Chemical Industry, 14–15 Belgrave Square
London SW1X 8PS, UK

Telephone +44 (0)20 7598 1573
Fax +44 (0)20 7598 1579
E-mail kelly.quigley@soci.org
www.soci.org

4

BRINGING PHYSICS TO LIFE

A new course is revitalising physics education in the UK

What links bungee jumping, biscuit making, CD players, safe trains and the fate of the universe? Answer: they all feature in the new Salters Horners Advanced Physics (SHAP) course developed in the UK for students aged 16–19 and already being used in several other countries.

In SHAP, contexts and applications drive the course and provide students with the motivation for getting to grips with the physics. For example, students read a first-hand account of a bungee jump and then consider how such jumps can be designed to be both safe and exciting. To do this, they need to learn about energy stored in a stretched cord and how it can be determined from a force-extension graph. Armed with this knowledge, they then test their own understanding by designing a model bungee jump. In this way, students learn some good, worthwhile physics while also seeing a purpose. Unlike those on conventional courses, where principles come first and applications are introduced later or not at all, SHAP students never need to ask 'why are we doing this?'

Context-led course

The SHAP course is carefully structured so that students build up their knowledge and understanding of physics through a wide variety of contexts. The contexts are all chosen to appeal to young people while also relating to important principles of physics. Some of the eleven teaching units relate to students' leisure interests such as sport and music. For example, the 'Sound of Music' unit uses a CD player and musical instruments as contexts for developing ideas about waves. Others are more technological in flavour, such as the unit called 'Good Enough to Eat' which introduces material properties in the context of quality control in the food industry, and 'Transport on Track' where rail safety is used as a vehicle for studying momentum, electromagnetic induction and capacitance. Frontier areas of research also provide contexts for learning physics – as in the unit called 'Reach for



the Stars', where star formation and the future of the universe bring in a study of Newtonian gravitation. Throughout the course, many key physics ideas are developed in a 'spiral' approach so that students have plenty of opportunities for reviewing and extending their knowledge and at the same time become fluent at applying their understanding in a wide variety of situations.

The use of contexts also leads to the development of student activities. As well as some conventional class practical lessons and teacher demonstrations, SHAP contains activities that arise from the unit contexts. Some of these use CD-ROMS, dataloggers and the Internet while others use simple bench-top apparatus. One example comes from the unit 'The Medium is the Message' which deals with modern telecommunications. Investigating the attenuation of signal strength in an optical fibre (modelled by a strand of jelly) gives students their first quantitative experience of exponential change. This provides a more accessible introduction than capacitor discharge (where changes happen rapidly with time) or radioactive decay (which is complicated by random noise) – both these feature later in the course.

Activities are not limited to the laboratory. In the first year of their course, all SHAP students go on an out-of-school visit to see physics in use. Some students visit an industrial or research establishment, while others may go behind the scenes at a cinema, or explore the applications of physics in a hospital or supermarket. For all, the visit helps bring physics to life and shows the relevance of what they are learning.

Course materials

High-quality course materials are another key feature of SHAP. There are two full-colour student books which introduce the contexts, explain the physics and provide summaries and questions. Maths is an integral part of the course, and maths notes in the back of the books help students get to grips with this aspect of physics. For teachers and technicians, there are detailed notes on activities together with additional materials that can be used to support practical work, to help weaker students or to stretch the more able.

Student successes

The SHAP course was designed to make physics more attractive and accessible, with the hope of encouraging students to continue with their study of physics and related subjects. Does it work? The course has been running now since 1998. The first two years were a pilot, limited to a few hundred students. Since September 2000 the course has been one of six A-level physics courses which are available to any school or college in the country, and there are now about 7000 students taking the SHAP course. About 24 per cent of these students are girls, which is slightly more than the average of 22 per cent for all A-level physics courses. Over 1300 SHAP pilot students have now taken the A-level examination at the end of the two-year course which qualifies them to enter university. Of these, about 22 per cent are now studying engineering and a further 12 per cent are taking physics degrees – considerably more than the average nine per cent of UK A-level physics students who enter physics degree courses.

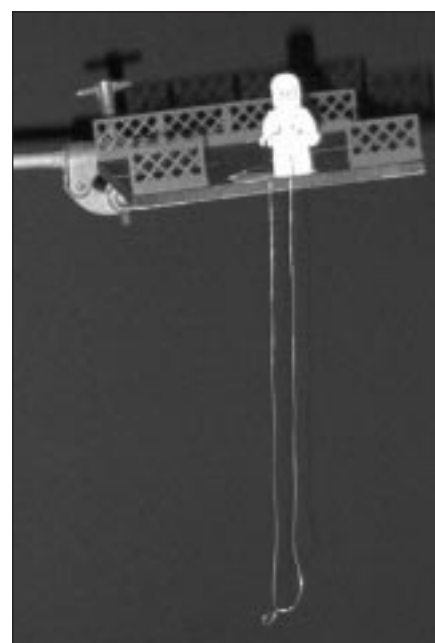
But the final word must go to SHAP teachers and students themselves: *'This is physics in the real world, the world my students live in. It is physics which is so obviously useful and interesting'* (teacher); *'The most powerful point is that the context drive behind the course helps to maintain interest across the whole spectrum of abilities'* (teacher); *'They look into real examples to explain the theory, which is interesting'* (student); *'I have enjoyed all of the practical experiments as the visual and hands-on aspect makes things easier to learn and understand'* (student); *'Brilliant'* (student).

For more information about SHAP, visit the project's comprehensive web site:

<http://www.york.ac.uk/org/seg/salters/physics>

SHAP has already spread beyond the UK. There are schools in Belgium, Spain and Hong Kong taking the course, and SHAP materials are being used in Sweden and Denmark. The project office in the University of York would be pleased to hear from anyone wishing to use SHAP materials or adapt or translate them for use in their own country.

Dr Elizabeth Swinbank
SHAP Project Director
Science Curriculum Centre
University of York
Heslington
York YO10 5DD, UK
Telephone +44 (0)1904 434537
E-mail es14@york.ac.uk



EDITOR'S NOTE

Science education news readers will be pleased to know that at 7010m on the North Col of Mount Everest on the 27 April 2002 at about 2.00pm (GMT). Chris Mothersdale carried out his thirty minutes science lesson and succeeded in setting the Guinness world record for The Highest Altitude Prepared Lesson (science teacher). (See issue 156, article 1, Living Science from Mount Everest.)



Courtesy of Dave Allason-Pritt

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SCORING FOR SCIENCE – ON-LINE GAMES LAUNCHED TO GET 11–14 YEAR-OLDS INTO SCIENCE

4Learning has joined up with the Institute of Physics and the Royal Society of Chemistry to create a new science web portal, Secondary Online Science (SOS). The site features three games; Energy Quest; Fashion Victim; and Sound Park, developed in styles borrowed from the games console industry and targeted at both boys and girls. Secondary Online Science aims to bring high quality and innovative web design to the core of the secondary science curriculum.

The three games on SOS are highly interactive and provide a novel presentation of the science curriculum. The games are complex and challenge the students' game-playing skills, at the same time testing their understanding of science. Children of all abilities can enjoy the games. A good gamer, who may not be academically successful, may do well in the game and achieve a top position in the high score league table. The style of SOS is motivational and supportive for individual learners.

- Energy Quest: Explore the three fun-filled islands of Buzz Archipelago. The user has to solve the energy problems in time for the opening of Club 11–13.
- Fashion Victim: Hang out in the shopping village, buy clothes and play action games! The user has to buy the best clothes and learn about the fabrics they are made from.
- Sound Park: Hang out in Sound Park, play games and try and unlock the music samples trapped in the audio zones. The user learns about sound and makes music that can be published on the Channel 4 web site.

'This has been a unique partnership between the three parties. Two scientific societies and a media company have joined forces to make science fun, multicultural and accessible to kids of all abilities,' says Simon Fuller, Deputy Manager, 4Learning. 'Most children find playing computer games very absorbing. What we have tried to do with SOS is to combine the motivating aspects of game playing with suitable science content. The whole concept behind SOS is making science relevant and enjoyable.'

The SOS portal also appeals to children by being relevant to their own lives and by using real world applications of science, such as DJ culture, fashion, sport and the environment. The series of three games are based upon the same model and principles creating a consistent language for the user. The user can create their own characters in SOS by using different skin and hair tones and selecting different coloured clothes.

For further information please contact

Elaine Brass
 Telephone +44 (0)20 7306 3721 or +44 (0)7905 946 313
 E-mail ebrass@channel4.co.uk
 www.channel4.com/sos



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STAR STRUCK OR STAR STUCK? AND GIRL POWER IN SCIENCE! TWO NEW PROJECTS FROM THE TECHNIQUEST CENTRE

How many of us can easily recall all nine names of the planets in our solar system? By using the mnemonic 'My Very Easy Method Just Speeds Up Naming Planets' you can do just that. For those that need to be told, this translates as Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune and Pluto. This information is part of a new series of publications developed and produced by Techniquest that aim to demystify the night sky. The project has been sponsored by PPARC (the Particle Physics and Astronomy Research Council) to help promote astronomical learning in Wales.

Included in the first issue of the series, Solar Systems Beginnings, is a section that sets out to explain clearly and concisely what and where the planets are and how to recognise major constellations in the night sky, even with the naked eye.

Designed and developed to appeal to adults and children from seven years and upwards, the series has been written to directly correspond with Key Stages 2 and 3 of the National Curriculum. Teachers bringing school groups to the planetarium in the Science Centre are given the brochure to take back to the classroom for further investigation. Schools requesting a visit from Starlab – Techniquest's mobile planetarium – will also receive copies. There is however good news for Techniquest's public visitors to the planetarium, who can see a show, experience a tour of the night sky – and get their hands on a copy of this comprehensive guide to the solar system.

Elin Roberts, Public Programmes Officer at the Science Centre in Cardiff Bay, is the key author of the series. Having worked on the project over the last few months Elin said, 'Developing Star Struck has taken a lot of time, but has also been enormous fun and incredibly rewarding. Receiving sponsorship from PPARC has meant that we can take our astronomy teaching that much further. Star Struck gives everyone in Wales the opportunity to be able to name the planets or recognise the main constellations in the night sky and our mission is to provide this information to as many people as possible.'

Techniquest provides a constantly changing programme of themes and activities in the Planetarium and Science Theatre. Visits from schools can be tailor-made to meet most requirements.

For more information visit www.techniquest.org or contact the bookings office on +44 (0)2920 475475.

Physics honour for Techniquest in the footsteps of Faraday...

Wendy Sadler of Techniquest Science Centre in Cardiff Bay is currently clocking up the miles as she travels the UK on behalf of the Institute of Physics to give the 2002 Schools Lecture programme. At just 29, she is the youngest lecturer ever to be invited to give the tour and also the first sole woman.

Throughout the year Wendy will visit over 25 locations from Aberdeen to Brighton and reach a total audience of around 5000 students. With a background in physics and music, music technology seemed like the obvious choice for a talk aimed at 13–14 year-olds. Wendy says, 'Not many people will admit to a passion for physics, but everyone loves some kind of music, so it's a great topic to use as a way of exciting an interest in science – particularly with this age group.'

The talk is a journey through sound from synths to CDs and it looks at the ways that technology has changed the way that we listen to and record music. The presentation is interspersed with musical performances on

strange instruments like the Theremin (one of the first electronic instruments) and a bizarre plastic tube on which Wendy plays the Last Post!

As a keen saxophone player with Cardiff funk band Doctor Lewney, music is a passion along with the science and Wendy is determined to try and shift the image of scientists as 'old men in white lab coats'. As a role model for WISE (Women into Science and Engineering) and now as the first sole woman to give the IOP lecture series, she seems to be on the right lines. She is keen to get involved in more television and radio work as this reaches such huge audiences, and intends to enter the BBC Talent search for a new science presenter later this year. Watch this space...

The tour culminates in November at the Royal Institution in London, when Wendy will achieve a lifetime ambition of standing in the footsteps of famous scientists such as Michael Faraday.

Education Director Dr Anita Shaw says: 'Techniquest is very proud to be associated with the Institute of Physics Lecture Programme for 2002. Wendy has developed an entertaining and informative talk in the tradition of Techniquest shows and we are delighted that she has been given this opportunity to deliver it to school students UK-wide.'

Wendy is currently the Public Programmes Manager of Techniquest and in the last five years the public programmes team have established an astounding array of over twenty-four new science shows that have amazed audiences visiting the Science Theatre. In addition to this she has been a researcher and presenter for the successful HTV science series *What on Earth?* and presented on the BBC *Tomorrow's World* Livelab programme. Her work has taken her around the world, with projects in South Africa and Australia.

Dates for the rest of the tour

9 September	Heriott Watt University, Edinburgh
10 September	Glasgow University
13 September	Northern Colleges of Education, Aberdeen
25 September	Lancaster University
26 September	Salford University
1 October	Rugby School
9 October	Truro College
15 October	University of Kent, Canterbury
22 October	Nottingham University
23 October	Shrewsbury School
5 November	Leeds Grammar School
6 November	University of Sheffield
13 November	Royal Institute, London

For further information, please telephone Techniquest on +44 (0)2920 475475

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THE QCA EDUCATION FOR SUSTAINABLE DEVELOPMENT WEB SITE

In January 2001, the Qualifications and Curriculum Authority (QCA) was asked by the Department for Education and Skills (DfES) to develop web-based support materials to help schools meet the new requirements of, and opportunities for, education for sustainable development (ESD) set out in the 2000 National Curriculum. The purposes of the web site are to:

- increase understanding of ESD
- provide examples of developing practice in ESD across the full range of subjects and contexts
- provide guidance on the management of school development in this area.

The first phase of the web site, which went on-line in July 2001, focused on the first of these. Since then, further materials have been developed on:

- the requirements and opportunities for ESD across all subjects in the revised national curriculum
- examples and case studies of developing practice in ESD across the full range of subjects and contexts
- guidance on, and case studies of, the management of school development in this area.

The second phase of the web site was completed in February, subjected to a brief period of testing in early March and launched at the end of March.

One advantage of web-based support is the opportunity it affords for continued development. Further material will be added during 2002–03, including:

- additional case studies to exemplify aspects of ESD that are under-represented in the current web site
- information about opportunities for ESD in the QCA schemes of work and in the Foundation Stage areas of learning
- information about requirements and opportunities for ESD in GCSE and AS/A level qualifications
- suggestions for ways of using the web site, for example, possible pathways through the web site for users with different requirements (e.g. an ESD coordinator or a subject teacher) or activities for school INSET.

It is planned to add the further material to the site in two stages, one in autumn 2002 and another in spring 2003.

For further information, please contact
Qualifications and Curriculum Authority
83 Piccadilly
London W1J 8QA, UK

Telephone +44 (0)20 7509 5555
www.qca.org.uk

Competitions and awards

8

OPPORTUNITIES FOR YOUNG SCIENTISTS

Novartis Foundation Bursary Scheme

Bursaries are offered for Novartis Foundation symposia in 2002–03:

No. 256 CANCER AND INFLAMMATION
(11) 12–14 November 2002

Closing date for applications: 1 August 2002

No. 257 ANAPHYLAXIS
(24) 25–27 February 2003

Closing date for applications: 24 November 2002

Purpose

To enable young scientists to attend Novartis Foundation symposia (in London unless otherwise stated) and, immediately following the meeting, spend between four and twelve weeks in the department of one of the symposium participants.

The award is for travel expenses to the symposium and host laboratory and board and lodging for the duration of the bursary

Qualifications

Applicants (of any nationality) must be aged between 23 and 25 on the closing date for application. It is essential that they be actively engaged in research on the topic covered by their chosen symposium. They should not have already accepted an invitation to participate in that symposium.

All applications must include the following information: title of symposium; full name, address and date of birth; qualifications and short resumé of UK university education; career history, including a full list of publications, full details of current research; and the names and addresses of two referees.

Please mark applications for the attention of the Bursary Scheme Administrator, addressed to:

The Novartis Foundation
41 Portland Place
London W1B 1BN, UK

Telephone +44 (0) 20 7636 9456
Fax +44 (0) 20 7346 2840
E-mail bursary@novartisfound.org.uk

For further information about the bursary scheme in general and the topics covered by the symposia, contact

The Bursary Scheme Administrator at the above address or visit www.novartisfound.org.uk/bursary.htm

9

ANNOTATED BOOK SUPPLEMENT

9.1 GCSE Biology (third edition) by D. G. Mackean

John Murray, ISBN 0 7195 8615 1, £13.99 paperback

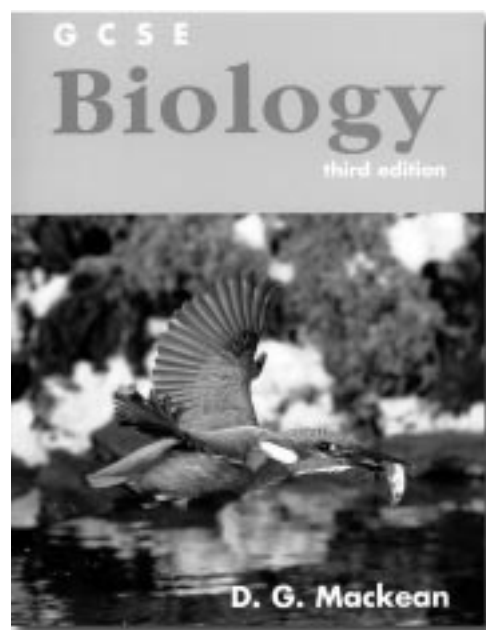
This third edition has been written to reflect the latest developments in the subject and the new specifications for GCSE Science; the biology section of GCSE Science Double Award and equivalent examinations. Amendments have been made throughout the text and the illustration to fulfil these aims. In particular:

- there is additional information on topics such as clinical trials, B and T lymphocytes, infertility, performance-enhancing hormones, fluoridation of water supplies, impact of hunting and overfishing, global warming, biofuels and global travel and disease
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- there is a new chapter on the development of biological ideas, and the principal contributors to these ideas from Galen, to Watson and Crick
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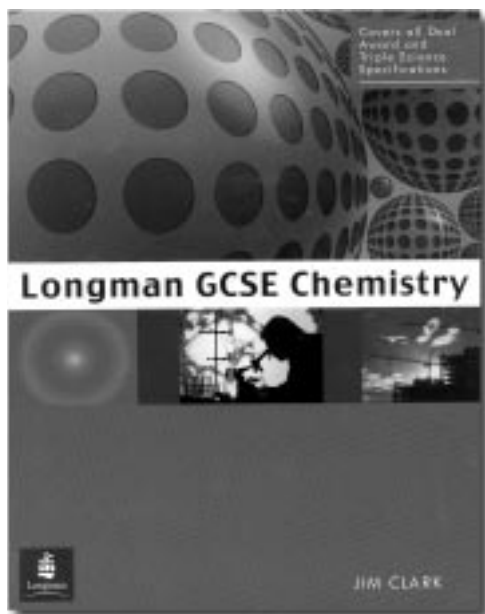


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9.2 Longman GCSE Chemistry by Jim Clark

Longman Publishing ISBN 0582504686 Price £14.99



GCSE Chemistry is designed for higher ability students following the revised GCSE Double and Triple Award specifications. It contains:

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9.3 Microbes in Action by C. J. Clegg

John Murray, ISBN 07195 7554 0, £12.99

Microbes are microorganisms – all the organisms too small to be studied by the naked eye. They are an extraordinary group – many with a very long evolutionary history. Microbes show great power to adapt and transform in a changing environment and, despite their size, they can achieve some incredible feats. Relatively few of the millions of different microbes endanger us by causing serious disease. Indeed, most microbes carry out processes essential to the survival of all life.

This book examines the general characteristics of the main groups that are described as microbes (bacteria, viruses, unicellular protoctista and many fungi) and provides detailed examples from each group. It shows how microbes play a role in the environment in biotechnology, genetic engineering, disease, biodeterioration and preservation and also highlights the economic, social and ethical issues raised by microbiotic applications. The importance of safe working practices when dealing with microbes is emphasised and specialised lab techniques are illustrated.

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Microbes in Action is suitable for students at AS and Advanced level, and for GNVQ courses in Biology, Environmental Sciences, Human and Social Biology and related subjects.

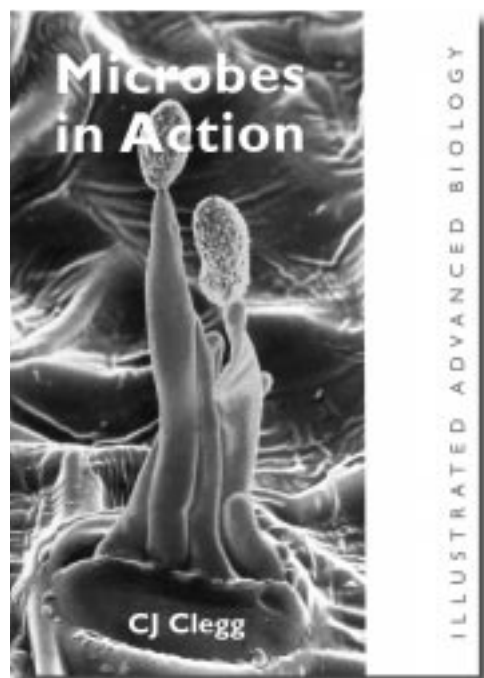
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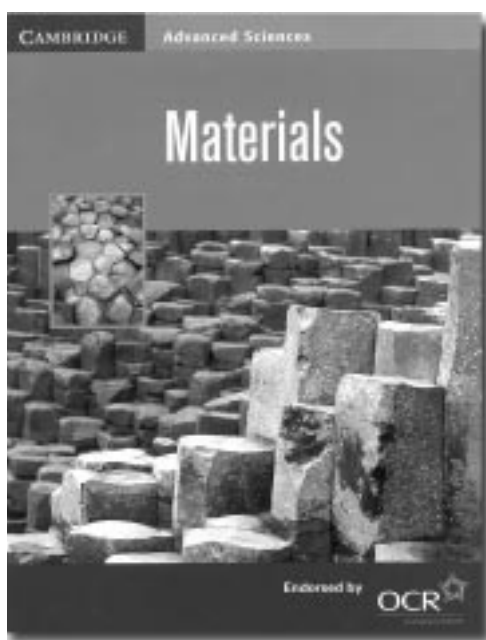
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9.4 Cambridge Advanced Sciences by Janet Taylor

Cambridge University Press ISBN 0521 797489, paperback £7.95



This book is part of a series of textbooks written to provide complete coverage of the OCR Physics, Specification A.

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This book is endorsed by OCR for use with the OCR Science Advanced Subsidiary GCE and Advanced GCE specifications.

For further information, or to order a copy, please contact

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