



CIRENCESTER SCIENCE AND TECHNOLOGY SOCIETY

2005 Mid year
edition

New on the block

Welcome to the first newsletter of the CSTS. This we hope will be a means of communicating to our ever increasing membership what is going on in the society, what your committee is planning and perhaps act as a sounding board for members through their contributions.

We hope that members will express their opinions through letters to the 'editor' and also perhaps their ideas for visits and meetings. At this stage we are amateurs so your suggestions and constructive criticism are important.

Feel free to use the internet or mail to the editor's address at the end of the newsletter.

Our membership includes an enormous range of disciplines across most of the sciences and also a wide range of technologies. It is particularly notable that although there is this wide spectrum we have such good attendance at meetings even on the most diverse subjects- such is the thirst for knowledge amongst us. Sadly this tendency is not mirrored in the population as a whole who use science derivatives everyday and yet have no appreciation of what or how!

Editor

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Contents of this issue

- 1 Editorial
- 2 Committee, newsletter contents, meetings
- 3 Chairman's introduction, Cirencester Science and Technology Society - A short history and aims.
- 4 Great Moments in Physics
- 5 What are Museums for? Interactive section
- 6 Visit to the Centre for Ecology and Hydrology

Society Meeting times and dates

June 22 Old disease, New threats
Dr Tim Brooks of Director Health Protection Agency, Centre for applied Microbiology and Research, Porton Down.

Royal Agricultural College, 7.30pm

Chairmans Introduction

I am delighted to write this brief introduction to the first edition of our newsletter. I hope that it will establish itself quickly as a valuable means of two-way communication between members and the Committee. Also it will provide current information about other science and technology activities and issues, e.g. lectures in other societies. The newsletter will also be a means of presenting our programme to local schools/colleges, the media and local government. The aim is to have at least two editions per year.

At present the Society's programme is set out a year in advance and the only other communications are via Chairman's announcements at specific events, plus two letters from the Chairman. I am convinced that a more flexible system of communications is essential for the Society.

One advantage of the Newsletter will be to provide in-year details of changes to the programme, such as the extra lecture given in June 2004 by Dr Ian Gibson, the Chairman of the Science and Technology Select Committee, and also visits arranged for the summer period.

To be successful the Newsletter will need contributions from members and the Committee. I particularly welcome Eric Gibson's account of the origin of the Society in this first issue.

The Newsletter will also be mounted on the Society's revised web-site. Comments on its format would be welcomed by any member of the committee..

Geoff Richards

Cirencester Science and Technology Society A short history and aims

How did the Society start?

In the summer of 1996, Fred James and Eric Gibson were commenting on the fact that in Cirencester there was a club or society for the discussion of almost any subject except science. They thought that a science club might be formed for members to discuss aspects of science which interested them. They were also concerned about the poor public image and bad press of science. There was a need to improve the public appreciation of science and the benefits it brought to society.

To assess local support, letters were written to a selection of local members of the Royal Institute of Chemistry, all the educational establishments in the area and others known to be interested in scientific matters.

A preliminary meeting was held in the Nicol Centre in October 1996 attended by 12 people, some representing schools or colleges but mainly people with an interest and previous experience in the subject. As a result of that meeting it was agreed to organise a few meetings to see if attendance warranted the formation of a society.

Early meetings

The first meeting was a lecture by Professor Roy Postlethwaite on BSE, held at the Royal Agricultural College in November 1996. Because of the topicality of the subject several staff and students from the College attended the lecture boosting the turnout to more than 50. This encouraged the initiators to organise a series of meetings consisting of a presentation on a subject, followed by as much discussion as members wanted.

A small steering committee consisting of Prof. Ted Burge, Dr Eric Gibson, Dr Fred James, Prof. Roy Postlethwaite and Geoff Sleightholme who came from fields of nuclear physics, chemistry, medicine, virology and education, a useful and wide coverage of the sciences. Dr Fred James was effectively the executive secretary of the Society. From January – June 1997 meetings were held at the Methodist Church in Ashcroft Road, Cirencester, with audiences of 10 – 15 people. From September 1997 the meetings were held at the Royal Agricultural College which has continued to be supportive of the Society. Dr John Conway from the RAC joined the committee as treasurer.

The first formal Annual General Meeting of the Society was held in December 1997 at the RAC. At that stage the club had 22 members who had paid a subscription of £7 each. The steering committee had arranged a programme of speakers for 1997/98. An important part of the meeting was the discussion of future activities including the suggestion of an exhibition to improve the public appreciation of science. This suggestion led to an event with the title SCIENCE AND FOOD SAFETY held in Bingham House in June 1998. This was an important opportunity to make the existence of the Society known to the general public and to present some aspects of science to them.

Growth and Development of the Society

The Society gradually became better known, partly by means of reports of meetings published in the local paper. The numbers attending the monthly meetings steadily grew. The recorded numbers of paid up members are as follows: 1998, 22; 1999, 53; 2000, 59; 2001, 70; 2002, 80; 2003, 98.

Constitution

At the 1997 it was suggested that a constitution be prepared. Dr Theo Stening prepared a draft which was discussed and adopted at the AGM in 1998. The name was agreed as **The Cirencester Science and Technology Society** and the objects of the Society were set out as “To foster the discussion, awareness and understanding of pure and applied science amongst scientists, technologists and the wider community.”

Exhibitions

Three exhibitions have been held :-
SCIENCE AND FOOD SAFETY, June 1998, followed by public lecture by Prof. Hugh Pennington “Food Poisoning – Out of Control?”
THE WAY AHEAD – USING DEVELOPMENTS IN TELECOMMUNICATIONS, November 2000, preceded by public lecture by Prof. Steve Woolgar “Is the Internet Really Going to Change Our Lives?”
MEDICINE IN THE NEW MILLENNIUM, June 2001, followed by public lecture by Prof. Karol Sikora “The Future of Cancer Treatment”

Programme of Lectures

A full programme of speakers at monthly meetings from September to June has been organised each year since 1997. The Society has been fortunate in attracting distinguished and entertaining speakers, incurring only travels costs and often at no cost.

Links with schools

From the outset the Committee wanted to attract the attention of young people with the object of fostering their interest in science and technology. It was made clear to the schools that senior students were welcome at the monthly meetings and various attempts were made to engage the interest of students and senior science teachers. On the whole these efforts have not borne fruit.

A further attempt to attract the interest of students was made during the medical exhibition. The Society offered cash prizes for the best two essays on some aspect of the subject of the exhibition. The response was disappointing, only three essays being offered. All three were of good standard, and a cash prize was awarded to all three entrants.

Eric Gibson

Great Moments in Physics

The following concerns a question in a physics degree exam at the University of Copenhagen:

‘Describe how to determine the height of a skyscraper with a barometer.’”

One student replied:

“You tie a long piece of string to the neck of the barometer, then lower the barometer from the roof of the skyscraper to the ground. The length of the string plus the length of the barometer will equal the height of the building.”

This highly original answer so incensed the examiner that the student was failed. The student appealed on the grounds that his answer was indisputably correct, and the university appointed an independent arbiter to decide the case. The arbiter judged that the answer was indeed correct, but did not display any noticeable knowledge of physics. To resolve the problem it was decided to call the student in and allow him six minutes in which to provide a verbal answer that showed at least a minimal familiarity with the basic principles of physics. For five minutes the student sat in silence, forehead creased in thought. The arbiter reminded him that time was running out, to which the student replied that he had several extremely relevant answers, but couldn't make up his mind which to use.

On being advised, to hurry up the student replied as follows:

“Firstly, you could take the barometer up to the roof of the skyscraper, drop it over the edge, and measure the time it takes to reach the ground. The height of the building can then be worked out from the formula $H = 0.5g \times t^2$. But bad luck on the barometer.”

“Or if the sun is shining you could measure the height of the barometer, then set it on end and measure the length of its shadow. Then you measure the length of the skyscraper's shadow, and thereafter it is a simple matter of proportional arithmetic to work out the height of the skyscraper.”

“But if you wanted to be highly scientific about it, you could tie a short piece of string to the barometer and swing it like a pendulum, first at ground level and then on the roof of the skyscraper. The height is worked out by the difference in the gravitational restoring force $T = 2\pi \sqrt{l/g}$.”

“Or if the skyscraper has an outside emergency staircase, it would be easier to walk up it and mark off the height of the skyscraper in barometer lengths, then add them up.”

“if you merely wanted to be boring and orthodox about it, of course, you could use the barometer to measure the air pressure on the roof of the skyscraper and on the ground, and convert the difference in millibars into feet to give the height of the building.”

“But since we are constantly being exhorted to exercise independence of mind and apply scientific methods, undoubtedly the best way would be to knock on the janitor's door and say to him ‘If you would like a nice new barometer, I will give you this one if you tell me the height of this skyscraper’.”

The student was Niels Bohr, the only person from Denmark to win the Nobel Prize for Physics!!

What are Museums for ?

Each year 25 million of us visit one or more of the 2500 museums that are dotted throughout the country. Once there we cast our curious eyes over the 180 million natural, scientific or artistic objects they hold, or at least those that have made the journey from storage. Why we need museums, the different purposes they serve, was the subject of December's talk on 'What are Museums for?' given by Dr John Paddock, Head of Museum Services for Cotswold District Council.

The word 'museum' is from the Greek and translates as 'home or temple of the muses'. The first known museum was located at Alexandria and dates back to around 300BC. But these 'temples' of knowledge were not for the man or woman in the street, they were for the rich and well educated - an opportunity for rulers to display their wealth and power. It wasn't until the Museums Act of 1753 that museums in this country were made widely accessible to the general public.

Museums are seen as places that enable people to explore rare and everyday objects from the past for both learning and enjoyment. Objects decay with time so museums also have an important role preserving items of interest for future generations. The challenge museums face is to devise new and exciting routes into their collections: the use of the Internet; interactive displays; new technology; shops and cafés are important to maintain interest and attendance levels, particularly for the younger visitor. If the parties of schoolchildren we see trooping around museums today don't find the experience enjoyable, they are unlikely to return tomorrow as adults.

After the talk we had the Society's AGM, a glass of wine and mince pies.

John Plevin

Interactive section

The Cirencester Science and Technology Society is proposing a version of a balloon debate for our internal meeting in 2005-6 (date not yet fixed). The question would be something like "who made the greatest and most enduring contribution to the progress of science?" Candidates might include Galileo, Newton, Linnaeus, Darwin, Mendel, Marie Curie, Einstein, Rutherford + Cavendish Laboratory team, Watson + Crick. Each candidate, probably not as many as listed, would have a member of the Society as a proponent (5 minutes) plus questions from the floor (up to 5 minutes). They could be jettisoned one by one, or there could be a voting system.

Do members think this is a good idea or not? Would individual members like to volunteer as proponents for named scientists. Please register your comments by email to me at palmer.newbould@btopenworld.com

Diary dates

Sept. 5 – 9 British Association Annual Meeting, Trinity College Dublin

2005 is Einstein Year. For details consult www.einsteinyear.org Bath Royal Literary and Scientific Institution, 16 – 18 Queen Square, BATH, BA1 2HN are holding a series of seven lectures. Further details on CSTS Website.

Events promoted by the British Association can be accessed on www.the-ba.net/events and those promoted by the Bristol and Bath Branch on www.ba-west.org.uk These will also be available on CSTS website.

[I hope we may be able to cross-reference on the website to other relevant programmes such as CAHS, Cotswold

Water park, Gloucestershire Naturalists Society, Corinium Museum and any other programmes that members draw my attention to. Perhaps there are events in Oxford, Bath & Bristol Universities we should feature, also University of Western England.]
Palmer Newbold

Visit to the Centre for Ecology and Hydrology by CSTS on 24th May 2005

We were welcomed by Frank Farquharson who explained to us how the three groups at Wallingford work together and are financed through the UK's Natural Environment Research Council (NERC) and through grants and contract research funding from other organisations.

The expertise at Wallingford and other sites is used to develop sustainable use of natural resources both at home and abroad. Particular interest is focused upon the impact of human activities on the natural environment, climate change, air pollution and land use change.

Dr Andrew Johnson then spoke on the effect of sex hormones present in sewerage on the nation's rivers. Most striking is the effect on fish in which males exhibit female characteristics and are infertile. The dilution levels are huge with only 45 kg per year present in the effluent of the whole country. A computer model is being constructed to study whether sewage disposal methods may be improved to overcome the effects of the oestrogen.

Dr Charles Stratford then described the work going on related to the use of 'Wet lands' in terms of biodiversity, as a part solution to pollution, and as a safety run off for flood conditions. Again computer models have been developed and early results look promising.

Finally Bob Moore and Alison Kay gave an insight to the work being done on climate change and the forecasting of flood situations. This raised some interesting discussion of the use of resources and time.

A big thank you to Professor Palmer Newbold for arranging this most entertaining visit for us. (and also to the coach driver who introduced us to parts of the Oxfordshire countryside we had not seen before!)

Editors notes

This is the first version of the newsletter and to some extent this is the prototype. I still have to learn the best way to put it together, to find content and to handle the mechanics of printing and posting. I make no apologies but I would welcome members constructive comments for future issues.

This time we have seven pages but that is no pointer to the future, its size will depend to a great extent upon members contributions through letters and articles. I would welcome text on almost any subject provided it is relevant to our society. You can mail me on bunnyleessmith@btopenworld.com or by post to 1 Follyfield, Hankerton, Malmesbury, Wiltshire. SN16 9LA or give me a call on 01666 577275

Please could you look at the address on the envelope you received with this newsletter. If it is correct please take no action but if we have made a mistake please let me know.

Bunny Lees-Smith