

Merseyside Branch Newsletter Autumn 2000

Dear Member,

Welcome to our new-look newsletter. In addition to presenting the Merseyside Branch programme for the 2000/1 session, the Newsletter also includes short contributions by the Branch Education Secretary (Ann Marks) and the Branch Industrial Representative (Michelle Mercer). Ann presents the various meetings and events which are being organised for local physics teachers over the winter and spring period, whilst Michelle introduces a new initiative which the Branch is now pursuing, to create new links with members working in industry in our region. These developments reflect the IoP policies of strengthening the support to members in schools and colleges who are teaching physics at all levels, and making the work of the IoP more relevant to physicists in the industrial work-place. We hope that members involved in both these professional activities will find our new initiatives relevant and beneficial.

This year we have a varied and interesting programme to present to you. Most of the meetings, as usual, will be at the University of Liverpool, but two meetings will be held at the Daresbury Laboratory, near Warrington (see last page for venue details). These both will be combined meetings with the Manchester Branch of the IoP. The second, in March, will be the highlight of the year, for we will welcome the new IoP president, Sir Peter Williams, who will give us an insight into the workings of physics in industry. Other meetings will give you the opportunity of hearing about such varied topics as hot-air ballooning, extra-solar planets, and the new UK synchrotron source. The choice of the location for this project was the subject of many articles and debates in both the academic journals and the daily press; now you will be able to hear about the particle accelerator at the heart of the facility and the experimental programme which it will support.

We start the year with a talk by Professor Ken Peach, who will give us an insight into the latest development in particle physics; this talk is linked with the initiative of sending a number of Merseyside teachers on a short visit to CERN (see the Education Secretary's contribution). For the last meeting of the session we will join with the Liverpool History of Science and Technology Group, to hear more of the earlier foundations of our subject; these talks have al-

ways proved very popular and are well attended. On this occasion (26 April 2001) we shall also have our Annual General Meeting, where you will receive reports of the year's activities and vote for a new committee and officers. Additionally, we shall consider and, I hope, accept a new constitution for the Branch — it is proposed to unify across all branches the 'essential' rules concerning finances and the correct conduct of business, whilst leaving some latitude to branches as to how they wish to structure their activities.

The programme also includes two visits, one to see the medical cyclotron at Clatterbridge Hospital, whilst our December meeting will be of a more social nature. We will visit Cain's brewery in Liverpool, to study the manufacture of 'dilute aqueous solutions of ethanol'; this will include the opportunity of sampling the product! I hope that you find the complete programme exciting and attractive and that you will be able to attend a number of the Branch meetings.

Turning again to the Newsletter, you will also find a short article concerning communications between members and the Branch Committee. I would encourage you to send us your views and suggestions concerning the policies and activities of the Branch. The officers and committee are here to serve the Branch members. Please let us have your opinions and comments; e-mail and postal addresses are given below. I look forward to hearing from you and meeting you at the Branch meetings.

Neil Marks
Merseyside Branch Chair

Merseyside Branch Officers

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Programme

Programme 2000/1

26 September Ken Peach UoL

The massless neutrino – scientific impossibility?

The Standard Model of particle physics, born ~1978, has enjoyed fantastic success in explaining a huge variety of experimental data; it is truly an intellectual triumph of 20th century physics. However, one of its assumptions – that the neutrinos have identically zero mass – is now under strong empirical threat from observations of the interactions of neutrinos from the sun and from the upper atmosphere. The implications for the standard model are far reaching. Prof Peach will try to explain what the Standard Model is, why we believe in it, why we now believe that the neutrinos have mass and how this challenges the structure of the model, and how future facilities ('neutrino factories') could help untangle some very deep mysteries of nature.

4 October Dominic Dickson UoL 2:00 pm

Physics Is Cool With Liquid Nitrogen

An exploration of the properties of materials at low temperatures, to illustrate how the energy of the atoms and molecules affects how things behave.

1 November Prof Tony Ryan

Soft Nanotechnology DL

The requirements of the next generation of consumer opto-electronic devices point to a wide range of conflicting properties. The materials should be flexible, bright and intelligent. They should also be cheap to process, be environmentally benign and ultimately disposable. Silicon technology can fulfil some of these requirements but new semiconductor, opto-electronic and photonic materials are being developed to take this burgeoning technology forward. The key to soft nanotechnology is to take lessons from nature. This talk will give examples of existing and potential applications in opto-electronics devices and prototype molecular machines.

23 November Alan Penny UoL

Searching for planets like the Earth and for signs of life on them

Alien worlds are a staple of science fiction but until just a few months ago, they had no place in science fact. Despite decades of earnest searches, astronomers had no direct evidence that planets circle other stars. Re-



cently astronomers detected a planet circling the star 51 Pegasi. In rapid succession, observers have reported finding a dozen more planets circling nearby stars. "This is a unique era" exclaims an expert in modelling planetary formation. "It is the most exciting thing I've seen in my scientific career."

www.aao.gov.au/local/www/cgt/planet/aat.html
www.extrasolar.com/planetsearch.html

7 December

Visit to Cain's Brewery

Members interested in this social visit to Cain's should notify the Secretary by 15 November as numbers will be limited.



18 January Donald Cameron

Modern Hot Air Ballooning UoL

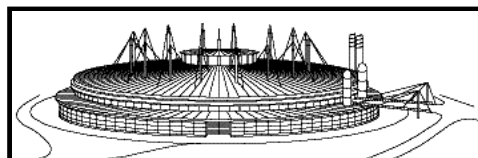
Cameron Balloons are the manufacturers of the Breitling Orbiter 3, the first balloon to travel nonstop around the world. The technology involved in modern ballooning will be discussed by the founder of the company.

www.cameronballoons.com

22 February Vic Suller UoL

X-rays, Synchrotrons and DIAMOND

A new national synchrotron light facility called DIAMOND will be built in the next several years at the Rutherford Appleton Laboratory near Oxford. The way that synchrotrons produce x-rays will be explained and their special properties will be highlighted. Some examples will be given of the exciting research which has been performed with present day facilities and the opportunities for the future will be described.



29 March Peter Williams

DL

The Physics of Entrepreneurship

Physics and mathematics underpin most of science and technology, regardless of discipline. Every engineer has wrestled with the concepts of physics at school, probably to 'A' level standard. Where would bio-science be without protein crystallography, electron microscopy and NMR? Where would we all be without the World Wide Web? But where are physicists to be found when we look at 'the new economy'? There is a huge outpouring from our universities in the form of spin out companies and science parks, yet all too often, the activities fall in the bioscience and IT areas. What role is Physics playing in all this and could Physicists do more?

26 April Jeff Hughes

UoL

Rethinking the History of British Physics 1900-1940

Much of the history of early twentieth century physics focused on the Cavendish Laboratory, Cambridge, to the exclusion of most physics elsewhere – in universities, industry, the military and government. Based on a wide survey of British physics in the period, this talk attempts a reassessment of British physics and its historical significance. (The talk will be followed by the AGM.)

17 May Clatterbridge Hospital

Visit to Clatterbridge Centre for Oncology



A combined talk and tour of the proton cyclotron used for cancer treatment at Clatterbridge Hospital on the Wirral. Numbers are limited and so members should contact the Secretary to reserve a place.

Provisional timetable:

- 6.30 Refreshments on arrival
- 6.45 Talk on the use of accelerators in cancer treatment
- 7.30 Tours in smaller groups
- 8.30 End

www.ccotrust.co.uk

Industry Communication

Over half the Merseyside Branch members now have e-mail addresses registered with the IoP and it is possible for Branch officers to use group mailing facilities to quickly and economically contact members with notification of meetings and events. We would like to expand the use of electronic distribution of information such that it becomes the standard method of distributing newsletters and other documents. We would therefore urge Branch members who have e-mail facilities, and who have not already done so, to register their addresses with IoP.

<http://PhysicsWeb.org/register/iop>

Some of the central IoP records have incorrect e-mail addresses. If, therefore, you have your e-mail address registered with the IoP but you have not been receiving messages about forthcoming events during the early part of this year, then there is the possibility that there is an error in your record. Please use the PhysicsWeb web site to check and if necessary correct your record.

Dear Industrial IoP Members,

In the Merseyside Branch we are attempting to attract more of the membership to our local meetings. We have quite a good turn out from the academic community but do not get such a good response from members in industrial positions.

I am a physicist working in a medium sized company that manufactures analytical equipment and I have taken up the position of Industrial Representative of the Branch. I am looking for ways to attract more industrial physicists to our events, and to do this I need your help. I would like:

- To hear from people who would like to be on-site contacts. This would involve receiving information such as posters to be placed on notice boards advertising our events and also spreading the word about the activities of the Branch.
- Suggestions of physics related topics that you would like to hear more about.
- Feedback on any talks or visits that you have been to.
- Feedback regarding talks that you haven't been to: Are the talks not of interest? Is the timing inconvenient? Is the venue too far away?

I would much appreciate a response and would love to see more of you at our events. If you would like to register with me as an industrial member of the IoP please contact me at mmercerc@hiden.demon.co.uk.

Michelle Mercer
Industrial Representative

Education Events 2000/1

There is a lot happening this year so make notes in your diaries now!

CERN visits 22–24 September

A group of Physics teachers will make a sponsored visit to CERN where they will visit the CERN Exhibition Centre and tour experimental sites. As there has been a large amount of interest in this visit, we are considering arranging a similar event, at a later date, for which a modest fee will be charged to cover EasyJet flights to Geneva and overnight accommodation in the CERN Hostel. Teachers who are interested should contact Ann Marks.

Talk by Ken Peach 26 September

The massless neutrino – scientific impossibility?

Many of you will have heard that our first talk of the new session will be suitable for sixth-formers. Ken Peach's talk will start off at a level suitable for 'A' level pupils and should be very useful. Although part of the talk may be a bit above their heads, we would expect them to find that Ken is an excellent lecturer with a good sense of humour who is able to communicate the excitement of physics research. More details are in the programme.



Liverpool Physics Olympics 14 October

For information on registering contact Dominic Dickson (Dominic.Dickson@liv.ac.uk) or Steve Barrett (S.D.Barrett@liv.ac.uk) at the University of Liverpool.

www.ssci.liv.ac.uk/~POWW

Particle Physics Day

Following last year's successful event, another one-day Particle Physics Course for teachers of 'A' level Physics will be held at Daresbury Laboratory before Christmas. Places will be limited, so watch out for details.

Paperclip Physics Spring Term

The Paperclip Physics Competition has become a popular national event and once again the Merseyside Branch is planning to work with the Manchester Branch to run joint local heats at Daresbury. The competition involves groups of sixth-formers explaining basic physics to a well-known non-scientist, using only objects that can be found around the home for their demonstrations. The winning team goes on to the national finals in London. Last year's participants enjoyed the challenge as well as having fun. Watch out for more information.

Annual Schools and Colleges Lecture

The lecture will be held in Liverpool before Easter. Contact Professor Paul Nolan (pjn@ns.ph.liv.ac.uk) at the University of Liverpool for details.

Physics Teachers' Conference

The annual day for physics teachers is again being planned for the end of the Summer Term 2001 at the University of Liverpool. However this year it will be organised jointly by the IoP and UoL. This event is for you, and so if you have any suggestions for inclusion in the programme please contact Ann Marks or Steve Barrett.

2001 – A Space Oddity

Early in July 2001 an event organised jointly by the IoP, the University of Liverpool, John Moores University, Daresbury Laboratory and Jodrell Bank is being planned. There will be a wide range of events for both schools and the general public. Contact Andrea Fesmer (Andrea.Fesmer@talk21.com) for details.

STAR* Book of Poems Key Stages 2 and 3

"I often introduce scientific concepts through language, in poetry and stories, as it helps children to relate everyday phenomena to scientific knowledge and concepts. However it is not easy to find literature which is appropriate. I have found the resource is a very valuable asset." – A teacher

This inspiring book has a wealth of information to enable anyone involved with the primary age group to link the poems with relevant science. If you are interested contact Ann Marks.

Ann Marks
Education Secretary

Email: EdSec@amarks.co.uk

Venues and Times for Talks

Talks denoted 'UoL' will be in the Surface Science Research Centre at the University of Liverpool (building #47 on the map).

www.liv.ac.uk/UniversityPrecinct/premap.html

Talks denoted 'DL' will be at Daresbury Laboratory.

www.clrc.ac.uk/Maps

Talks start at 6:00 pm, with refreshments available from 5:30 pm, unless otherwise stated.