



The Institute of Physics

**ENVIRONMENTAL
PHYSICS
GROUP**

NEWSLETTER NO 1

JANUARY 1991

Introduction

In July 1990, the Council of the Institute of Physics formally approved the formation of the Environmental Physics Group. This newsletter aims to sketch out significant happenings so far in the Group's short history, to indicate activities and events of possible interest to Environmental Physics Group members, and to give you, the member, a clear idea of the aims propelling the Steering Committee. In this way, we hope you will feel able to contact any one of the Steering Committee members to tell us what the Institute's Environmental Physics Group should be concerning itself with.

Steering Committee

<u>Name</u>	<u>Institution (area of interest)</u>
Dr R A Coffee	ICI (applied technology)
Dr Peter Dagley	University of Liverpool (geophysics)
Professor J E Harries	Rutherford Appleton Laboratory (atmospheric science)
Mr Peter Hughes	Kingsway College (education)
Dr Alastair McCartney	Rothamsted Experimental Station (ecology)
Dr Wyn Morgan	Queen Elizabeth Medical Centre (medical physics)
Dr Douglas Peirson	recently retired from Harwell (physical models of environmental processes)
Dr David Pugh	IOSDL (oceanographic science)
Professor Michael Rycroft	Cranfield (atmospheric physics)
Dr Ranjeet Sokhi	University of Birmingham (transport processes in the environment)
Dr John Stewart	Institute of Hydrology (fluids)
Professor Michael Unsworth	University of Nottingham (agriculture and global impact)
Ms Susanna Lithiby	Public Affairs Dept, IOP (public awareness)

The following statements have been agreed by the Environmental Physics Group as its aim and objectives:

Aim

To promote physics within the context of environmental science.

Objectives

1. To provide a forum for discussions of physics as it applies to the environment.
2. To encourage application and development of physical methods to environmental research.
3. To encourage the education and training of physicists in the environmental sciences.
4. To foster cooperation with other national and international organisations and activities, be they:
 - (a) scientific;
 - (b) economic and social;
 - (c) industrial.
5. To advise Council as and when requested on environmental issues.
6. To inform the public, in an accessible manner, about the contribution of physics to the environmental sciences.

Chairperson

Dr Douglas Peirson
formerly Environmental and
Medical Sciences, Harwell
18 Nuneham Square
Oxon OX14 1EH
tel: 0235 520454

Deputy Chairperson

Professor Michael Unsworth
School of Agriculture
Sutton Bonington
Loughborough
Leicestershire LE12 5RD
tel: 0602 484848

Honorary Secretary

Dr Alastair McCartney
Rothamsted Experimental Station
Harpenden
Herts AL5 2JQ
tel: 0582 763133
fax: 0582 760981

Chair, Education sub-committee

Peter Hughes
Kingsway College
Sidmouth Street
London WC1H 8JB
tel: 071 278 0541

Please feel free to contact any of the Steering Committee members. The next Steering Committee meeting will be on 21 January. Items for possible inclusion should reach Dr McCartney by 12 January.

Formation

The Environmental Physics Group formed in record time. In less than six months, sufficient support from both within and without the Institute had emerged to justify Council formally ratifying the EPG as the Institute's 31st group.

And not before time, many would say. Feedback from members suggests that many would like the Institute to take an active role in furthering research in the environmental sciences. More often than not, environmental physicists work in multidisciplinary teams, with them as the only physicist in the group. This can lead to a feeling of isolation and could explain why it has taken until now for the group to form.

Collaboration policy

In environmental science, physicists work alongside scientists from many other disciplines, engineers, chemists and mathematicians to name but a few. This aspect is reflected in the EPG's Steering Committee, which includes representatives of the Royal Meteorological Society, the Institute of Mathematics and its Applications and the Joint Association for Geophysicists. The Steering Committee also mirrors the wide range of sectors EPG members might find themselves working in, from industry to education, and from pollution abatement technology to solar-terrestrial physics.

As a matter of policy, the Steering Committee decided the EPG should collaborate wherever possible with other bodies when organising meetings.

Launch

The group was publicly launched by Sir Hermann Bondi at the British Association's Annual Meeting in Swansea on 23 August. The launch followed "Physics Probes the Environment", a half-day meeting organised by the IOP where it was difficult to see who were more enthusiastic, the speakers or the audience. It illustrated the high level of interest from all members of the public, physicist or non-physicist, scientist or non-scientist, in the part played by physics.

Sir Hermann's help and support in the development of both this and the new group was invaluable.

Membership

The group is now well past the 100 member mark! As members return their 1991 subscription form, it remains to be seen how many more will join. There is almost an equivalent number of non-IOP member supporters of the group. Anyone else interested in joining should contact the Records Manager at the IOP, stating whether they are an IOP member or not.

Normally only IOP members and subscribers can take part in group activities and receive group mailings. However, because the field is so multidisciplinary and information on it is of such significance to sectors like education, the EPG steering committee took the decision to ask the Institute to waive membership requirements whilst the group was in its infancy. By this means, non-member supporters will receive the first few newsletters at least to give them a chance to see if they would like to apply for Institute membership in order to participate fully in the group's activities in the future. For non-IOP supporters, the next issue of the newsletter will contain a leaflet on subscriber membership - the means by which those interested in an IOP group, but not wishing to apply for full or associate Institute membership, can keep themselves informed about that group's activities.

Activities

The first major meeting that the EPG will be organising is *Physics across the environment* and will take place on 14 March in London. Other activities planned include a session at the Education Group's Annual Meeting in March and a day visit in June to the Environmental Physics section of Nottingham University's School of Agriculture.

Further details of these and other meetings of interest appear together with contact names later in the newsletter.

The March meeting is intended to appeal to all who are interested in the environment as a research field. Other meetings will be held dealing with the latest findings, but this one is designed to give an overview of the wide spectrum of research currently being undertaken and to look into what the future might hold. Dr Keith Browning, Director of Research at the Meteorological Office, heads the list of keynote speakers. An important part of the meeting will be contributions from younger researchers.

Education sub-committee

Physics forms the bedrock of the major techniques exploring the earth's hidden secrets - and diagnosing the global challenges. Yet are there enough graduate physicists being produced with the requisite skill to meet this demand? Speak to any science recruiter, and the most likely answer will be a resounding "no". And are we giving students an opportunity to see how physics is relevant to the crucial issues of today? Despite almost saturation coverage, feedback suggests there is still a need for well thought-out material showing the principles of environmental physics. Recent research suggested, for example, that students, in particular girls, were turning away from science and technology as subject choices because they felt science and technology was responsible for the world's problems.

These will be some of the concerns of the EPG, and they form the focus for a small sub-committee on education. The sub-committee includes one member from the IOP's Education Group. At the moment all education sectors are represented apart from the primary level. If you know anyone who might be interested, please get in contact with the sub-committee's Chair, Peter Hughes.

IOP/NERC Video

"Physics and the Environment" is the title of the video the IOP is making with the NERC in 1991. Targetted at 15 - 18 year olds, and the general public, it will be a short, 20 minute video seeking to demonstrate the crucial role physics plays as a tool in trying to understand the living world. It will also seek to convey some of the excitement and fascination about being involved with this field.

The Steering Committee's views were sought at its last meeting, and Dr Peirson is collating these. If you have ideas about what might be included please send them to Dr Peirson.

News from Bristol

Environmental monitoring - meeting the technical challenge is the title of IOPP Short Meeting Series No 29. Edited by E M Cashell, it is the proceedings of the international conference held in Ireland on 8 May 1990, organised by ISA International (Ireland Section). It is split into 2 parts: *Trends in sensors and instrumentation* and *The challenge for industry*.

Cost: £24; plus 40% discount for IOP members.

Requests for copies: Distribution Dept, IOP Publishing Ltd, Techno House, Redcliffe Way, Bristol BS1 6NX. tel: 0272 297481 fax: 0272 294318

Newsletter

This newsletter exists to keep EPG members in touch with meetings and issues of interest or relevance to the environmental physics community. It will contain a digest of pertinent topics from the Steering Committee meetings, plus whatever information is deemed of potential interest. If you would like something included please send it to me here at the Institute of Physics. The next issue will appear in February/March, depending on the amount of material available.

Conclusion

It seems fitting to close this, the first newsletter of the Environmental Physics Group, with the closing paragraph of Sir Hermann's piece in the August issue of Physics World:

"If we are to understand the conditions for living and the resources available on our planet, more scientists of all fields must become interested and active in our environment. For physicists in particular there is a wonderful challenge in studying the complex phenomena determining conditions on our planet. Whoever responds will not have a dull time!"

Susanna Lithiby
Public Affairs Manager, IOP

Environmental Physics Group Meetings

1991

14 March **Physics across the Environment**
The Geological Society, Burlington House, Piccadilly, London

10.00 Registration / coffee

10.30 Introduction

10.40 Atmosphere

Dr Keith Browning (Director of Research, Meteorological Office)

Climate prediction and the physics of the atmosphere

Dr Keith Shine (University of Reading)

Radiative transfer

11.50 Hydrology

Dr Ian Calder (NERC Institute of Hydrology)

Physics of the hydrological cycle - problems and challenges

Dr Jim Wallace (NERC Institute of Hydrology)

Water and energy balances in the West African Sahel

13.00 Lunch

14.20 Oceanography

Dr Peter Killworth (Robert Hooke Institute)

Physics in oceanography

Dr Brian King (Institute of Oceanographic Studies, Deacon Lab)

Slip sliding away - how does surface water reach the interior of the ocean?

15.30 Tea

16.00 Geophysics

Professor R Hide (Director, Robert Hooke Institute)

Aspects of global geophysics

Dr Mike Warner (Imperial College)

Reflecting deeply - echoes from 50 km into the earth

17.10 General discussion

17.30 Close of meeting

Contact: The Meetings Department, The Institute of Physics (reply slip enclosed)

26-28 March EDUCATION GROUP ANNUAL CONFERENCE

University of Bristol

General theme: **The impact of computers on the teaching of physics**

The Environmental Physics Group will be arranging a session along the general theme of the conference for the afternoon of 27 March.

Contact: The Meetings Department, The Institute of Physics (reply slip enclosed)

26 June Visit to school of agriculture, University of Nottingham

A one-day visit to the Environmental Physics Section at Sutton Bonington to see the work of one of the key research establishments in the field. The section's work concentrates on environmental physics in relation to plants, animals and their environment. The use of remote sensing and the effect of air pollution are two key aspects.

To allow people to arrive, the visit will start from around 11 am and continue until about 4 pm. It will consist of laboratory and field exhibits, and posters and talks by staff and researchers in the section. It should be accessible to all from sixth form level upwards and is likely to be of particular interest to final year undergraduates considering further research in this area.

Since space will be limited to 30 people, we regret that it will not be possible to cater for large school groups. The visit will be free, although a small charge will need to be made for lunch.

Contact: Dr J A Clark, University of Nottingham (reply slip enclosed)
tel: 0602 484848, fax: 0509 674116

30 October Energy from the environment - the renewable alternative

The Society for Chemical Industry, 14 -5 Belgrave Square
cosponsored by the Royal Meteorological Society and the Challenger Society

Chair: Sir Hermann Bondi

Energy from the environment has rapidly risen up the political agenda recently. In this meeting we will focus on the physics behind the various options, whether it be wind and wave, or geothermal and solar. At the same time we will consider the policy implications. The intention is to provide a balanced overview from which researchers, research managers and policy makers can develop a coherent strategy for the future.

Meeting organiser: Dr David Pugh, IOSDL (reply slip in next newsletter)

Other meetings of interest

Thursday 24 January 1991

Institute of Arable Crops Research, Harpenden, Herts

Aerosols in agricultural crops: disease spread and crop spraying

The Aerosol Society will be holding a specialist group meeting to discuss current research topics related to the dispersal and deposition of aerosols in agricultural crops. The meeting will focus on dispersal of crop pathogen propagules and agricultural sprays. Topics will include: the dispersal of airborne fungal spores, the role of rain in plant pathogen spread; modelling aerosol dispersal within crops, modelling agricultural spray application, novel methods of crop spraying and drift of agricultural sprays. Speakers will include researchers from Agricultural and Food Research Council, the Ministry of Agriculture, Fisheries and Food, and Agricultural Development and Advisory Service research establishments.

Contacts: Dr John Lacey or Alastair McCartney, Dept of Plant Pathology, IACR, Rothamsted Experimental Station, Harpenden Herts AL5 2JQ;
tel: 0582 763133, fax: 0582 760981

Wednesday 30 January 1991

Institution of Civil Engineers in London

Energy and the environment, clean power for the future

Following publication of its recent report "Pollution and its containment" the Infrastructure Policy Group is organising a series of seminars to provide a forum for discussion on a number of key environmental issues. This, the first, will focus on power generation and energy conservation outside the field of transport. The intention is to look at the alternatives, review the current state of technology, look at costs, practicability and environmental impact, and the future research required. Political and financial implications will also be looked at. Speakers include Stephen Salter, Professor of Engineering Design at Edinburgh University and Andrew Warren, Director of the Association for the Conservation of Energy.

Contact: The Conference Office, Institution of Civil Engineers,
1 Great George Street, London SW1 3AA.
Fees: ICE member: £125; non-member: £136
Registrations close 16 January.

Wednesday 10 April 1991
Royal Society of Chemistry at Imperial College, London

Energy and the future environment - good or bad?

As part of the Royal Society of Chemistry's Annual Chemical Congress, the Professional Affairs Board has organised the above half-day symposium.

The speakers and topics for this afternoon session are as follows:

Mr F A Osborn (Department of the Environment)

Setting the scene

Mr J S Harrison (Coal Research Establishment)

Technology for the clean use of coal

Mr J Porritt (former Director, Friends of the Earth)

Sustainable technologies

Mr S C Maniatopoulos (Commission of the European Communities)

Future European legislation

Contact: Dr John F Gibson, Secretary (Scientific), Royal Society of Chemistry, Burlington House, Piccadilly, London W1V 0BN;
tel:071 437 8656, fax: 071 437 8883
There is a charge for this meeting.