The Physiological Society Magazine

Spring 1995
No 18

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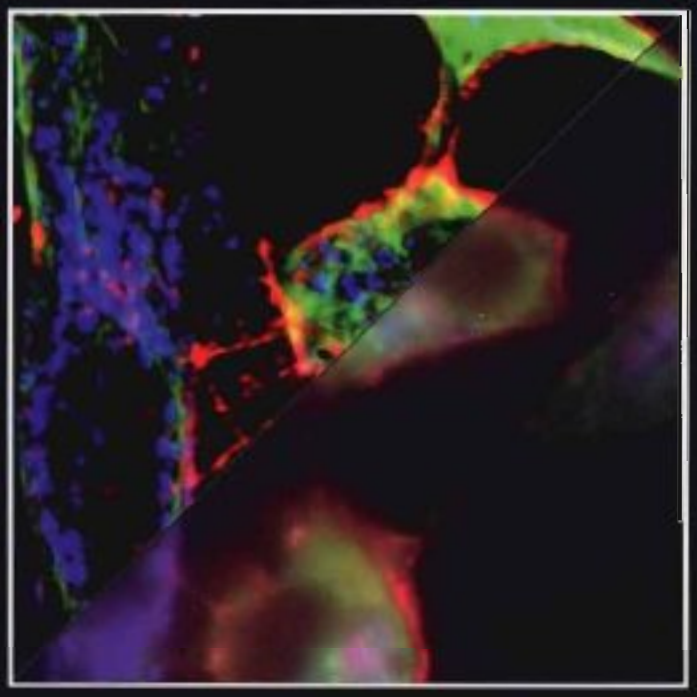

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Contents

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Action Points

- **Affiliate Travel Grant Scheme** The next two deadlines for receipt applications are 31 March 1995 and 31 May 1995.
- **Committee Nominations** Nominations for new Ordinary members of the Committee, signed by at least five Members of the Society, should reach the Committee Secretary by 22 May 1995.
- **Cork Meeting** Abstracts should be submitted to the Meetings Secretary between 19 and 29 June 1995.
- **Eastern European and Third World Grants** The next two deadlines for receipt applications are 31 March 1995 and 31 May 1995.
- **FEPS Congress (Maastricht)** The deadline for submission of abstracts is 10 April 1995.
- **Magazine** Letters and articles for inclusion in the next issue should reach the Editor by **21 April 1995**. Advertisements and items for the Committee News, Special Interest Group Forum, Noticeboard sections should reach the Administration Office by 30 April 1995.
- **Membership Proposals** Proposal forms for new Members to be elected at the AGM in July should reach the Administration Office (Membership) by 30 April 1995.
- **MSc Bursaries** The next deadline for receipt of applications is 31 May 1994.
- **New Lecturers Support Scheme** The next deadline for receipt of applications is 31 March 1995.
- **Oxford Meeting** Abstracts should be submitted to the Meetings Secretary between 3 and 13 April 1995.
- **Vacation Studentships** The deadline for receipt of applications for the summer of 1995 is **31 March 1995**.

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GUIDELINES FOR CONTRIBUTORS

These guidelines have been drawn up by the Editor both to assist authors in writing their contributions to the *Magazine* and to reduce the subsequent editing process. The *Magazine* Editorial Group is trying to ensure that all submissions are written in a journalistic style so that articles will have an immediate interest value for a wide readership and will be readable and comprehensible to non-experts.

Format of articles

The main message or question posed by the article should be introduced within the first two or three sentences. The background for the topic should then be established leading up to the final *dénouement* or conclusion of the article.

Length of articles

This will be determined by the subject matter and agreed between the contributor and the commissioning editor. Articles will vary in length from 200 words to a maximum of 800 words.

Submission of articles

Authors should submit text in the form of a disk accompanied by a printout wherever possible. Use of disks reduces the risk of introduction of errors during re-typing. When disks are submitted, it is helpful to give brief details of the computer, operating system and software package(s) used (DOS formatted Wordperfect 5.1 files preferred, but not essential).

Deadlines for submission

If in doubt, see Schedule of Meetings Publications Deadlines for 1995 or contact the Editorial & Production Office. Late submissions will not be accepted or publication will be deferred to a later issue.

Illustrations

Authors are encouraged to submit diagrams, drawings, photographs or other artwork to illustrate their articles or, if they cannot provide these themselves, to suggest what artwork might be appropriate. Photographs may be colour or black & white, prints or transparencies.

Author photographs

The *Magazine* normally includes photographs of the authors of articles. These may be colour or black & white; prints are preferable if cropping is required.

References

Authors are requested to keep the number of references to a minimum (preferably no more than two or three).

Suggestions for articles

These should be made (in writing, by phone, or in person at Scientific Meetings) either to the Editor, to the Editorial Assistant or to the relevant member of the *Magazine* Editorial Group (see below).

Magazine Editorial Group

Saffron Whitehead ..... *News from Abroad, Letters*
Phil Harrison ..... *Science News & Views*
Malcolm Segal ..... *Teaching & Technology*
Laurence Smaje ..... *Policies & Politics*
Tilli Tansey ..... *Traces of the Past*
Susan Wray ..... *Special Features*
Valerie Cox ..... *Young Physiologists*
Heather Dalitz ..... *Committee News, Special Interest Group Forum, Notices & Advertising*

PHYSIOLOGY AT KEELE

The Research Department of Communication was founded in 1960 by the late Professor Donald M MacKay. Since then, it has established a unique international reputation in the study of normal and impaired sensory communication, and has attracted substantial outside support, particularly from the SERC, MRC, Wellcome Trust, Hearing Research Trust, Multiple Sclerosis Society, DoH, DRA, EU and the Royal Society. From the outset, its interests have focussed on the sensory systems, particularly vision and hearing, and on exploiting multidisciplinary approaches. Initially, psychophysical, theoretical and evoked-potential studies were dominant, largely under SRC support. Then, in 1967, a MRC Research Group in Sensory Neurophysiology was formed, and the Department's title was subsequently modified to acknowledge this broadening of its activity. In the late 1960s, links were established with clinical departments of the North Staffordshire Hospitals Centre, and these have grown into an extensive collaboration. In 1981, an animal behaviour laboratory was established.

In 1983 the Department was awarded a 'New Blood' appointment in Neuroanatomy, to enable it to expand the interdisciplinary range of its research by exploiting some of the novel techniques becoming available in the neurosciences, and in 1986 it was awarded a Wellcome Lectureship in Cell Biology. In 1993 a joint lectureship in vision was established with the Department of Psychology.

In 1988-1989, large grants and contracts enabled the Department to expand vigorously its computational effort in modelling vision, hearing and speech. In 1993-94, the Department was reorganised to house a new University Electron Microscope Unit and its undergraduate teaching links with the Departments of Biological Sciences, Computer Science and Psychology were put on a formal footing.

Over 70% of the Department's income comes from external grants and contracts. With seven full-time staff, grants worth about £600K were started in 1993-94, bringing the total over the last five years to £2.2M.

Research Direction

The mix of disciplines reflects the Department's purpose: to investigate, in an interdisciplinary manner, sensory communication and the consequences of its disturbance by disease. To this end, it has brought together researchers from a wide range of backgrounds: neurophysiology, psychophysics, electrophysiology, neuroanatomy and computer science, working together in a purpose-built establishment.

Research Organisation

The Department comprises three large Research Groups, dealing with (a) Visual Neurophysiology, Psychophysics, Electrophysiology and Modelling, (b) Auditory Physiology, Psychophysics, Speech and Modelling, and (c) Cochlear Cell Biology, Biophysics and Auditory Neuroanatomy. There is a strong emphasis on interaction within and between the groups, and with the North Staffordshire Hospital Centre, including Neurology, Ophthalmology, Endocrinology & Diabetes Mellitus, Audiology, ENT, and with Postgraduate Medicine. Clinical interaction is facilitated by the Department having specialised vision and hearing (Development Trust) laboratories on the hospital site.

The different disciplines within the Department interact in three main ways. First, investigations of the morphology and behaviour of single neurones in animals are related to human evoked potential, anatomical and psychophysical studies, particularly using the same stimuli. In this way, we seek to establish the anatomical and neurophysiological bases of auditory and visual perception. Second, collaboration occurs in order to apply fundamental research results and techniques to the study of human and animal visual and auditory disorders; for example, in developing new diagnostic tools in clinical neurology, ophthalmology and audiology, in constructing rehabilitative aids including hearing devices and cochlear implants for the profoundly deaf, and in testing experimental drug treatments in demyelinating disease. Third, researchers are collaborating within the Department and with Computer Science and Mathematics in the building of hardware and software models of visual, auditory and speech processing, including those based on neural networks.

Research progress is reviewed at six-weekly intervals, with separate meetings on vision, on hearing and speech, and on computational and mathematical modelling. The Department also maintains a programme of weekly seminars by speakers of international standing, whose visits are supported by The Physiological Society.

The Department has always been committed to a systems approach to neuroscience, with a strong computational basis for its experiments and theorising. This approach found its natural expression in the Department becoming, in 1988, a member of the newly instituted School of Computational, Mathematical and Neuro-Sciences within the University. Established links with other Schools in the University have, however, been maintained: links with Electronic Engineering and Physical Sciences and with

Biological Sciences, Computer Science and Psychology have been formalised by joint appointments, and increasing participation in undergraduate and postgraduate courses in addition to its own. Links with Postgraduate Medicine have been strengthened by clinical Honorary Research Fellow appointments and contributions to courses within Postgraduate Medicine.

Staffing

Reflecting its origins, the established staff comprises five Professors (Visual Neuroscience, Physiological Optics, Auditory Neurophysiology, Theoretical & Applied Vision Sciences and Speech Communication), one Reader (Auditory Neuroanatomy), two Lecturers (Cell Biology and Vision, the latter a joint appointment with Psychology) and two Senior Research Fellows (Visual Electrophysiology and Auditory Psychophysics, the latter a joint appointment with Electronics). It has seven Research Fellows, six supported on research project grants, together with eleven Honorary Research Fellows mainly from the North Staffordshire Hospital Centre. Currently, it has six full-time and three part-time research students, with BBSRC, EPSRC and MRC studentship support. It also has many international collaborators who spend varying periods of research leave in the Department. Essential support services are provided by a computing officer, seven technicians (two on external funds) and three secretaries (one part-time).

Some of the Department's established staff: left to right, standing, Ted Evans, Dave Furness, David Foster, Peter Hammond, Jack Moreland; seated, Aled Jeffreys, Bill Ainsworth, Carole Hackney, Pat Wilson.

Facilities

The Department is housed in purpose-built laboratories, opened in 1966 by Lord Adrian. It is well equipped with sound-proofed chambers, vision laboratories, an Electron Microscope Unit, screened rooms and photographic dark-rooms. It has a networked suite of 10 Sun Workstations, high-performance graphics displays, and numerous mini- and micro-computers extensively used for on-line control and analysis of experiments. It has its own workshop and facilities for electronics development and a modern shared animal house.

The Electron Microscopy Unit is housed largely in five laboratories added to the main Departmental building under the auspices of the University Development Trust. The Department also has two laboratories at the North Staffordshire Hospitals Centre, specifically equipped to carry out specialised audiological, neurological, and ophthalmological investigations on patients. In 1989, another building adjacent to the Department was refurbished to accommodate new contract research and research in Physiological Optics.

Research Training and Teaching

Training of PhD students is an important part of the Department's activities and it has established a successful in-house induction programme for students entering with first-degree training in disparate fields ranging from engineering to medicine. This induction programme has now been extended to a postgraduate training course in research methods for the whole Science Board, although the Department has retained its programme of more specialized lectures.

The Department has a substantial teaching commitment. Staff contribute to undergraduate and postgraduate courses in the Departments of Biological Sciences, Computer Science, Psychology, Postgraduate Medicine, Electronics/Physics and Music. Recognition of the Department's role in this area has led to its launching a full undergraduate course in Neuroscience from September 1996.

Since 1991, the Department has offered - in conjunction with the Departments of Mathematics and Computer Science - a taught Masters course in Machine Perception and Neurocomputing. This course has an advisory board consisting of representatives from British Telecom, British Aerospace, GEC Marconi, Ensigma and DRA (RSRE).

Research Programme

Major research projects in progress include the following: neurophysiological characterisation of visual cortical suppression (Peter Hammond); physiologically based modelling of the peripheral auditory system (Ted Evans and Bill Ainsworth); cochlear hair-cell ultrastructure, transduction channels and functional properties (Carole Hackney and David Furness); visual function in demyelinating disease and abnormal colour vision (Jack Moreland and David Foster); viewpoint-invariant recognition, image

segmentation and colour constancy (David Foster); and perception and modelling of speech gestures (Bill Ainsworth).

The Keele Meeting in April 1995

The last visit by The Physiological Society to Keele was in 1979. The Department of Communication & Neuroscience, again acting as host, is delighted to welcome the Society on its return in 1995. The key components of the meeting - the Vision & Hearing Symposium and Designated Sessions, and the Annual Review Prize Lecture on the cerebral cortex by Professor Colin Blakemore highlight the Department's *raison d'etre* and its commitment to multidisciplinary research on the special senses.

David H Foster
Head of Department

QUEEN'S 150!!

Queen's University Belfast, along with its sister colleges, University College Cork (venue for the Society's Meeting in September 1995) and University College Galway, is celebrating the 150th anniversary of its founding by Act of Parliament in 1845, when the three colleges were launched as the Queen's University in Ireland.

After metamorphosing into the Royal University of Ireland in 1879, the institutions went their separate ways in 1908. Queen's College Belfast became Queen's University Belfast, and the colleges in Cork and Galway joined with the more recently established University College Dublin to form the National University of Ireland. A lavishly illustrated volume has been produced, tracing the history of Queen's, Belfast, during this period. The book, entitled "*Degrees of Excellence*", is available from The Bookshop at Queen's, price £19.50 plus postage. For further details, please ring (01232) 666302.

Incidentally, Physiology in Belfast predates the University with the appointment of a professor of Anatomy and Medical Physiology at the Belfast Academical Institution in 1818. However, formal recognition of the discipline of Physiology, as we now know it, was delayed until 1893 when the Dunville Chair of Physiology was founded. The third holder of this chair, Professor Henry Barcroft, celebrated his 90th birthday in London in October 1994 (notice elsewhere) with the help of the fourth and fifth holders (David Greenfield and Ian Roddie) and many other friends from The Physiological Society.

William F M Wallace
Belfast

PETER BAKER FELLOWSHIP

Applications are invited from postdoctoral scientists interested in research in Marine Biology for the first Peter Baker Fellowship. In the first instance, one fellowship will be awarded each year. The Fellowship may be held at any time during the year and will provide living and travel expenses for the successful applicant to spend approximately two months working at the Laboratory of the Marine Biological Association, Plymouth. Bench fees will be waived and a small sum may be available to assist with research expenses. Applications are particularly encouraged from those interested in physiological research.

Applications should be made by letter, indicating the research that the applicant wishes to undertake, together with a CV and the names of two academic referees and sent to:

Dr M Whitfield
Director
The Laboratory of the Marine Biological Association
Citadel Hill
Plymouth PL1 2PB

from whom further information, including a list of those currently working at the Laboratory, may be obtained.

Closing date for applications: 31 May 1995

The Peter Baker Fellowship Scheme has been established to commemorate the scientific contributions of PF Baker FRS, whose untimely death robbed the scientific community of one of its brightest stars. Peter carried out much of his important scientific work at the Laboratory of the Marine Biological Association in Plymouth and was a Member of the Council and Physiological Society Governor of the Association. The Fellowship is provided by funds contributed by individuals and scientific societies from all over the world. It is the intention of the Trustees that the Fellowship be held in Plymouth, to encourage the interest of young research workers in marine biological research, particularly fundamental physiological research, to which Peter himself contributed so much.

The Fund is held in trust by The Physiological Society, The Company of Biologists and the Marine Biological Association. The Fund continues to welcome donations. Anyone wishing to contribute should contact Richard Skaer, The Company of Biologists, Bidder Building, Cambridge Commercial Park, 140 Cowley Road, Cambridge CB4 4DL, tel (01223) 420482 / 420500, fax (01223) 423353.

NEXT TREASURER AND SECRETARY: NOMINATIONS INVITED

By the summer of 1996, John Widdicombe will have served the full maximum term as Honorary Treasurer of the Society and a successor must be identified in time for nomination for election at that year's AGM. A successor will also be required for Richard Boyd, who plans to step down at the same time after his three years as Honorary (Committee) Secretary.

Members are encouraged to contact the Committee Chairman, Roger Green, in confidence, if they would like to suggest suitable candidates for either of these offices or to discuss the extent and nature of the responsibilities involved. His address is: School of Biological Sciences, University of Manchester, G38 Stopford Building, Oxford Road, Manchester, M13 9PT, tel (0161) 275 5408, fax (0161) 275 5600.

1995 AGM: COMMITTEE NOMINATIONS AND AGENDA ITEMS

The 1995 AGM will be held in conjunction with the Oxford Meeting in July. Members are reminded that nominations for candidates for election as Ordinary members of the Committee can be made in two ways: (i) by the Committee and (ii) with the agreement of the nominee, by five Members of the Society. The Committee will be considering its nominations at its next meeting, so anyone wishing to suggest an individual for Committee nomination should write to the Committee Secretary, Richard Boyd, by 5 April. Details of the Committee's nominations will be circulated to Members at the end of that month.

It is the Committee's policy to make fewer nominations than the number of vacancies arising and it hopes that Members will ensure that there is a reasonable field of candidates proposed. Nominations made by five or more Member, and any items for the AGM agenda should reach the Committee Secretary no later than Monday 22 May.

GRANTS SUB-COMMITTEE

Vacation Studentships: Closing Date 31 March

Members are reminded that the closing date for receipt of applications for Vacation Studentships for the summer of 1995 is **31 March** (two months earlier than last year). If more than three applications are received from any one department, that department will be asked to rank them, such ranking being for information only and not binding on the Sub-Committee.

Affiliate Travel Grant Scheme: Revised Guidelines for Applicants

The Grants Sub-Committee has revised the Guidelines for Applicants to include the following:

- The meeting to be attended must be of clear relevance to Physiology.
- The applicant **must** be the first or presenting author of the abstract, unless a strong case is made.
- **Retrospective applications will not be considered, so Affiliates are advised to apply as early as possible; there is no need to wait for confirmation that the abstract has been accepted.**
- Credit will be given to applicants who have made attempts to secure funds from other sources. All awards are made on the understanding that successful applicants will keep the Society informed of additional funding subsequently received from other sources. If the total funds obtained from all sources exceeds the amount required to attend the meeting, the balance of the Society's grant will be returned, for the benefit of other young physiologists.
- Successful applicants will be required to make a brief report within one month of returning from the meeting. No subsequent application for support from Society funds will be considered until a satisfactory report has been duly received.

VACATION STUDENTSHIP SCHEME

The Physiological Society has agreed to allocate £30,000 to provide vacation studentships in 1995.

Eligibility

Students who have completed at least two years' full time study in a higher education institute or equivalent. This includes second year students and third year students wishing to do research projects in the vacation following completion of their course and intercalating medical, dental and veterinary students, provided that the research project is physiological in nature. The research project must be of good quality, of a physiological nature and undertaken in the laboratory of a Member of The Physiological Society, in any institute of higher education or equivalent (regardless of whether or not it is the one in which the student is normally registered).

Awards

The maximum award allowable will be £500. An award is intended to cover maintenance only: no funds can be provided by the Society for consumables and other research expenses.

Applications

No Member may make more than one application per year. Application forms are available from The Administrator (Vacation Studentships), The Physiological Society, PO Box 506, OXFORD OX1 3XE, tel (01865) 798498, fax (01865) 798092, Email hkdalitz@vax.ox.ac.uk

CARDIOVASCULAR/ RESPIRATORY CONTROL

A review of 1994

During 1994 our Special Interest Group had two Designated Sessions: in September we met in Aberdeen and in December in Birmingham.

The Designated Session in Aberdeen was a joint one with the Autonomic Function Group. There were two Designated Lectures: Bridget Lumb told us about "Brainstem Integration of Cardiovascular and Pain Control Systems" and Tom Cunnane entertained us with both a talk and movie on "Neuroeffector Transmission in the Sympathetic Nervous System". There were 25 Oral and 22 Poster Communications. A wide variety of topics was covered. Work was presented which utilised *in vitro* and *in vivo* techniques. Results from animal and human studies were presented. Our Sessions made a major contribution to the success of the Aberdeen Meeting.

We met three months later for Christmas celebrations in Birmingham. The character of this Meeting was very different: there were very many parallel sessions and an exceedingly high attendance. In the Designated Session 13 Oral and 20 Poster Communications were presented.

Our annual Business Meeting was held in Birmingham - the attendance was rather low, as usual! It was decided that for 1995 Julian F R Paton and I would be joint convenors. Designated Sessions are planned for Oxford and Cork (1995), UCL and Leeds (1996) and Bristol (1997) and a research symposium at UCL (1996) to run concurrently with the Society Meeting.

We participated in a new venture in 1994. I was approached by Prof Gianni Losano (Torino, Italy), who is a Member of the Society, concerning the participation of our Special Interest Group in a joint workshop with Associazione Scienze Cardiovasculari (Italy). The meeting "An update of Cardiovascular Control: Interplay between Central and Peripheral Mechanisms" took place at Castel Ivano (Trento, Italy) from 29 September to 1 October. There were four sessions covering affective behaviour and cardiovascular control, sympathetic control, vagal control, reflex control and haemodynamics. The presentations had both a strong basic science and clinical content. The invited speakers from the Society included John Coote, Roger Hainsworth, David Jordan, Michael Spyer and Pierre Izzo. Other invited speakers were Profs Ghelarducci (Pisa), Cevese (Verona), Calaresu (W Ontario), Gattullo (Torino) and Federici (Bari). I found the presentations by Prof Ghelarducci on cerebellar contribution to cardiovascular control and by Prof Gattullo on the role of nitric oxide in the control of general and coronary haemodynamics particularly interesting. Future collaborations were also discussed.

I think that our Special Interest Group will continue to make a valuable contribution to The Physiological Society. It definitely did in 1994!

Don't forget the deadlines for the Oxford (13 April) and Cork (29 June) Meetings.

See you there

Michael Gilbey

COMPARATIVE & INVERTEBRATE NEUROSCIENCE

Birmingham Meeting

A successful joint Designated Session between the Comparative Physiology and Comparative & Invertebrate Neuroscience Groups was held at the Birmingham Meeting. In his Designated Lecture, Dr Steve Soffe (Bristol) presented an interesting account of neuronal mechanisms underlying behavioural switching in *Xenopus* embryos, raising a variety of issues of relevance to the whole group, including the invertebrate contingent and non-neurophysiologists. Presenters of Oral and Poster Communications represented labs from six European countries, providing an excellent forum for discussion.

Future Designated Sessions of the Comparative & Invertebrate Neuroscience Group will be held at King's College London (December 1995) and Edinburgh (July 1996).

Cathy McCrohan

EPITHELIA & MEMBRANE TRANSPORT

The Special Interest Group held a Designated Meeting in Newcastle upon Tyne on 9-10 November 1994. The Meeting consisted of several novel, experimental features. This was a Designated Meeting where only Communications in the scientific area, interpreted in the widest sense, covered by the Special Interest Group were accepted by the Meetings Secretary's office. The Meeting was jointly organised with and sponsored by the Membrane Group of the Biochemical Society (represented in the organisation of the Meeting by Dr Soraya Shirazi-Beechey) and also consisted of the annual meeting of the Epithelial Transport Club. A research symposium was held in conjunction with the Meeting but, in place of the normal timing before or after the main Society Meeting, the invited lectures were interleaved with the free Communications throughout the Meeting.

A Designated Meeting comprising the interests of but one Group with the Society might be expected to attract a rather limited, albeit informed audience. Our predictions were completely awry. Over 250 Members and guests, including the majority of those active in this research area in the UK and Eire as well as several continental European and North American colleagues, registered for the full two day programme. There were 88 Communications (26 Oral and 62 Poster) presented at the Meeting, making it as large as some general Meetings of the Society. The Poster sessions were particularly lively and certainly appeared to generate more interest than at the recent Biophysical Society meeting, as judged by the illustration in the last issue of the *Magazine* (sorry but no photographic evidence of this is available).

We were treated to five superb lectures during the Meeting from our invited speakers: Mark Donowitz (Baltimore), Matthais Hediger (Boston), Thomas Jentsch (Hamburg), Andy Morris (Houston) and Chris Higgins (Oxford). For those not fortunate to be present at their lectures, or for those who would like a permanent record of the lectures, each lecture has, as another experiment, been published as a part of the Proceedings of the Meeting. The rapid publication of these reviews, within eight weeks of the Meeting, ensures their timeliness and topicality.

The Meeting was also the venue of the (first) Alfred A Harper Lecture. Fred Harper was Professor of Physiology and Chairman of the Department in Newcastle from 1949 until his retirement in 1972. He is an Honorary Member of the Society and was Secretary between 1954 and 1960. Maynard Case was an apt choice to deliver this first lecture in Fred's honour. Maynard was both a student and later a colleague of Fred's and his own notable contributions to pancreatic physiology made him the obvious choice to highlight Fred's seminal contributions to exocrine pancreatic function. In a magnanimous gesture at the end of his lecture, Maynard requested that any appreciation be directed towards Fred Harper, who was a guest of the Society at the lecture.

This Meeting was full of experiments: a Meeting Designated to a single Special Interest Group; a Joint Meeting with the Biochemical Society; invited lectures interleaved with free Communications; symposium lectures published with the abstracts in the Proceedings. As with all experiments, it is important that we learn from them. I would be interested to receive the views of any Members of the Special Interest Group on any aspect of the Meeting but, in particular, whether we should consider similar formats for Meetings in the future. Any comments received will be passed on to the Meetings Secretary so that the Committee can be fully apprised of our Group's views.

Next Designated Session: Cork, 20-22 September 1995

This Meeting will be preceded by a research symposium on "Ion Transport in Health & Disease", organised by Brian Harvey. Invited speakers at the symposium include:

Fran Ashcroft	Oxford
Horatio Cantiello	Boston
David Dawson	Ann Arbor
Clive Ellory	Oxford
Kevin Foskett	Toronto
Gerhard Giebisch	Yale
Andrew Hall	Oxford
Joseph Hoffman	Yale
Malcolm Hunter	Leeds
Kiaran Kirk	Oxford
Erik Larsen	Copenhagen
Ole Petersen	Liverpool
Luis Reuss	Galveston
Stanley Schultz	Houston
Jacques Teulon	Paris
Carol van Os	Nijmegen

Barry Hirst

GASTROINTESTINAL TRACT AND AUTONOMIC FUNCTION

Oxford Meeting 1995

The next GI Tract Designated Sessions will be held at the Oxford Meeting (12-14 July). This Meeting and the British Pharmacological Society meeting will run in parallel, which should ensure a lively Meeting with considerable GI interest. The Autonomic Function Special Interest Group has also planned Sessions in Oxford, which provides us with a chance to set aside a part of the Meeting to address specifically autonomic control of the GI tract.

Combining forces offers a number of advantages: not least is the financial support which enables us to offer two Designated Lectures. Joe Szurzsewski, Professor & Chairman of the Dept of Physiology & Biophysics at the Mayo Medical School in Rochester, Minnesota, will give a Designated Lecture on "The Intrinsic Nervous System of the Mammalian Pancreas". Joe Szurszewski was Burn Fellow in Pharmacology at Oxford in 1970, working in the laboratory of Prof Edith Bulbring, and so he is returning to familiar territory. There has been relatively little work on enteric neural control of the endocrine pancreas and Joe's laboratory is breaking new ground in this area. Prof Peter Holzer from the

University of Graz Dept of Experimental & Clinical Pharmacology also straddles the Autonomic Function and GI Tract Special Interest Groups and will present a Designated Lecture entitled "The Role of Peptidergic Afferent Neurones in the GI Tract". This area of research encompasses gut inflammation and the role of visceral afferents in mucosal protection - currently a topic of intense interest.

The first date for receipt of abstracts for this Meeting is 3 April and the closing date 13 April. Two prizes are available for oral communications presented at GI Tract Designated Sessions. The Glaxo Prize is for postdoctoral candidates and the Pfizer Prize for postgraduate students. Both prizes are designed to recognise and promote good quality abstracts, their presentation and discussion. The rules and regulations for both prizes are reproduced below and on page 12.

David Grundy

HEART/CARDIAC MUSCLE

Thanks to everybody who attended the last Designated cardiac meeting in Birmingham and contributed to the lively Session! The excellent lecture by Dr Mark Cannell on the measurement of "Ca sparks" in isolated cardiac myocytes proved to be popular.

The next two Meetings will be in Oxford on 12-14 June and King's College London on 18-20 December. Both Meetings are going to be particularly busy, with 12 Designated Sessions at Oxford and at least seven Designated Sessions at King's. The Oxford Meeting is to be run in parallel with a meeting of the British Pharmacological Society. The British Society for Cardiovascular Research is to hold its annual meeting at St Thomas' Hospital on 18-19 December (details from Dr Susan Coker, Dept of Pharmacology, University of Liverpool) and it is hoped that the Cardiac Designated Session of The Physiological Society at King's will not overlap (*ie* will be on 20 December).

Godfrey Smith

HISTORY OF PHYSIOLOGY

There is to be a Designated Session on the History of Physiology at the Oxford Meeting in July 1995. The Historical Studies & Archives Sub-Committee would like to encourage the submission of Posters, Communications and Demonstrations on historical themes and this advance notice is to alert you to the possibility of contributing to such a Session. Anyone wanting particular advice or to discuss a suitable project is asked to contact any current member of the Sub-Committee as listed in the *Grey Book*. Additionally, we are intending to hold a short workshop, in which the value of history to practising physiologists and the ways and means by which it can be studied will be explored. To register an interest in attending such a workshop, or for further information, please contact Dr Tim Horder, Dept of Human Anatomy, South Parks Road, OXFORD OX1 3QX, tel (01865) 272189, fax (01865) 272420.

Tilli Tansey

GLAXO PRIZE

Glaxo Group Research Ltd (GGR) has made a grant to The Physiological Society to fund a single prize for a number of years. The prize will be awarded to suitable postdoctoral candidates within five years of their doctoral degree. Awards will be made for oral communications presented at Gastrointestinal Designated Sessions according to the following guidelines:

- A Glaxo Prize will be awarded annually on the basis of an Oral Communication made at the Gastrointestinal Designated Session.
- Candidates for a Glaxo Prize should be based in (or allied to) a department of a higher education institute in the UK or Eire. Normally the prize will not be awarded to persons more senior than those with up to five years' postdoctoral experience.
- The prize will be awarded on the basis of work in the field of gastrointestinal research. However, work from other fields which are deemed as likely to contribute to the further understanding of gastrointestinal physiology by The Physiological Society Prize sub-committee and a representative of GGR can also be included.
- Candidates for the prize should identify themselves to The Physiological Society Meetings Secretary by completing the appropriate form when abstracts are submitted. When an entrant is not the sole author, co-authors should provide a statement of their relative contributions. Successful candidates will be informed in writing.
- Submissions will be judged by a panel of three, consisting of one nominee each of GGR, the Meetings Secretary and the Gastrointestinal Special Interest Group convenor. A majority vote by the panel will be sufficient to make an award.
- The panel will take account of the quality of the abstract, oral presentation and discussion.
- The panel decision will be published by the Meetings Secretary and the successful candidate will be notified in writing.
- The Glaxo Prize will be awarded at a place and time agreed between GGR and The Physiological Society.
- The successful candidate may be invited to give an expanded view of the work to an audience from GGR.

HUMAN PHYSIOLOGY

The Designated Session and symposium at the Birmingham Meeting seemed to be a great success. A total of 23 Oral Communications (including a joint session with the Muscle Special Interest Group) and 21 Poster Communications were presented. Last year's injunction to maintain the high academic standard of all presentations accepted for publication led to some interesting discussion sessions. It also became apparent that a pressing need to have one more beer before attending the poster approval session was not acceptable to the Meetings Secretary as an adequate reason for absence.

The symposium on "Limits of Human Endurance" attracted a large audience. As at last year's meeting, the audience exceeded at times the seating capacity of the lecture theatre. Mike Stroud's lecture on his Antarctic and Sahara experiences proved particularly popular, but all sessions were well attended. The experiment of running five parallel sessions for part of the afternoon session also seemed successful. Although initially identified as "workshops", each of these sessions took on the form of a mini-symposium in its own right. Each of the five sessions was well attended and some stimulating discussion took place. The difficulty with this format is the clear inability of the group to support the costs of all of the speakers who were invited to present information at these sessions. Chairmen were therefore working under the limitation of being able to invite only speakers who were already committed to attend the Meeting or who were able to do so without incurring significant expense.

Mike Stroud, on the Antarctic Polar Plateau

Plans for 1995 include a Designated Session at the Cork Meeting to be held from 20 to 22 September (abstracts to be submitted between 19 and 29 June) and at the Christmas Meeting (King's College London, 18-20 December; abstracts to be submitted between 18 and 28 September). The Christmas Meeting will feature a symposium, and the control of tissue blood flow has been provisionally identified as a possible topic. It is clear that the number of papers being submitted exceeds the number that can be accommodated as Oral Communications: this led to a large number of poster presentations at the Birmingham Meeting, although most of the authors would have preferred Oral Communications. It is hoped that the inclusion of a second Human Physiology Designated Session will allow more authors their first choice of presentation mode, without taking away from the Christmas Meeting as the main session for the Group.

A request from Edinburgh to host a Designated Session in Human Physiology at the Meeting to be held there on 4-6 July 1996 was agreed to. The decision taken earlier to have the main Designated Session at the Christmas Meeting,

The Physiological Society
Human Physiology Special Interest Group

BLOOD SAMPLING AND ANALYSIS

A practical workshop for young scientists in human and exercise physiology

University Medical School, Aberdeen

6-8 April 1995

This will be an intensive three day course covering theoretical and practical issues relating to correct blood sampling and handling procedures and to analytical techniques relevant to workers in human and exercise physiology. Most of the course will be devoted to "hands on" experience and all participants will be expected to complete the prescribed schedule of laboratory practical work. Emphasis is placed on calibration procedures and on data presentation, as well as on safety aspects and good laboratory practice. The course is intended primarily for young scientists beginning a research career in human or exercise physiology. Further courses on aspects of respiratory and cardiovascular physiology and on muscle function as well as on other aspects of blood analysis will be organised at a later date.

The registration fee of £80 will be waived for Affiliates of The Physiological Society. Accommodation will be available in student halls of residence for Wednesday to Saturday nights, at a cost of £120 including dinner, bed and breakfast. A maximum of 24 places will be available on the course.

Practical sessions

Enzymatic substrate and metabolite analysis

Blood gas analysis - methods of measurement and physiological manipulation

Estimation of blood and plasma volume changes

Further information from and applications to:

Dr R J Maughan
University Medical School
Foresterhill
ABERDEEN
AB9 2ZD

Tel (01224) 681818 Ext 52482, fax (01224) 662990
Email oem023@abdn.ac.uk

and to include wherever possible a symposium, seems to have been successful and will continue.

There was a feeling in favour of holding one or more workshops on laboratory techniques relevant to human physiology and it is hoped that the first of these will take place in 1995. The intention is that these should be aimed at graduate students and at new postdoctoral workers. These events might be held jointly with other societies where appropriate. Further details will follow.

R J Maughan will continue as organiser of the Human Physiology Group for a further year.

R J Maughan
Email: oem023@abdn.ac.uk

ION CHANNELS

This note is to remind those with an interest in Ion Channels that there will be Designated Sessions at both the Oxford Meeting (abstract submission period 3-13 April) and the Cork Meeting (submission period 19-29 June) of The Physiological Society. There will also be a symposium at Cork on "Ion Channels in Health and Disease".

If anyone has comments regarding the number of Designated Sessions per year, joint sessions with other Special Interest Groups or suggestions for Designated Lectures, feel free to contact us.

N W Davies & A J Gibb

MICROVASCULAR & ENDOTHELIAL PHYSIOLOGY

At the Designated Session held at the University of Birmingham, 19-21 December 1994, 17 Oral Communications and 12 Poster Communications were presented. The Session opened with an informal Business Meeting at which we discussed venues for future Designated Sessions. Although we had received an invitation from Dr H M Snow to hold the next Designated Session at the University of Cork in Ireland (20-22 September 1995), Members felt that this may be too close to the annual Spring meeting of the British Microcirculation Society. It was agreed that a joint meeting of the Microvascular & Endothelial Physiology and Smooth Muscle Special Interest Groups would be scheduled for the King's College Meeting of The Physiological Society, 18-20 December 1995. Our provisional plans are to organise a symposium on endothelial and smooth muscle cell dysfunction in oxidative stress, which would complement Designated Oral and Poster Sessions. Lucilla Poston, Jeremy Ward, Jeremy Pearson and I hope to generate a preliminary symposium programme in the near future.

The Designated Session at Birmingham was preceded by an international symposium on the "Adaptability of Tissue Microcirculation", held in honour of Prof Olga Hudlicka. The symposium was extremely well attended and the keynote lectures given by Prof Renkin, Prof Gaethgens, Prof Duling, Prof Slaaf, Prof Gerova, Dr Brown, Dr Cotter and Prof Vrbova were followed by lively discussion, sherry and a symposium dinner.

I would like to remind Members that Dr N J Brown and Dr M W R Reed are organising the next meeting of the British Microcirculation Society at the University of Sheffield, 28-29 March 1995. Members interested should contact Prof Rodney Levick, tel (0181) 725 5354 / 5391 or Dr N J Brown, tel (0114) 276 6222, fax (0114) 273 9903.

Giovanni Mann

MOLECULAR PHYSIOLOGY

Ad Hoc Designated Session at the Oxford Meeting

Recent years have seen an explosion in the information obtained using molecular biology approaches. The primary structure of numerous genes of interest to physiologists have become available and this information leads to the opportunity to address questions of physiological importance. Techniques for expressing the proteins from these genes in new cells and organisms are now widely accessible. The ability to manipulate protein sequences and structure by modifying the relevant DNA sequence combined with its expression in cells and study of the functional consequences has provided a powerful tool to understand the mechanism of action of individual proteins such as ion channels. Transgenic techniques either to overexpress or knockout expression of genes *in vivo* combined with systems physiology has proved invaluable in deducing essential functional features. At the same time, molecular biology has frequently revealed a level of complexity in the gene products which require a functional explanation. It is as useful for molecular biologists to have a wider perspective of their work within the context of the cell or whole animal, as it is for physiologists to access these powerful new techniques. Thus, both molecular biology and physiology stand to gain by their increased interaction. However, the terminology associated with molecular biology is often seen as a deterrent to wider acceptance.

The *ad hoc* Designated Session "Molecular Physiology" at the Oxford Meeting is intended to promote access to the value of these techniques to physiology. We encourage abstracts addressing any aspect of physiology that has been approached using molecular biology. If sufficient

interest is generated by this Session, a Molecular Physiology Special Interest Group could be established. If you have an interest in this area, please notify the Society's Administration Office in Oxford, tel (01865) 798498, fax (01865) 798092, Email hkdalitz@vax.ox.ac.uk

Janet Allen

MUSCLE CONTRACTION

I was delighted with the strong representation of the Muscle Contraction Group at the Birmingham Meeting in December: there were 20 Communications on Monday covering a wide range of fields, from crossbridge mechanics and energetics to human muscle performance. Additionally, there were Communications and Posters on Tuesday in the joint Session with the Human Physiology Group. I hope the contributors received constructive suggestions for future experiments.

There will be a session on "Molecular Mechanisms of Skeletal Muscle Contraction" (UK organiser: Dr M Irving, London) as part of the Okazaki Symposium at the Joint Meeting in Japan. It promises to be an excellent meeting with contributions from renowned scientists in muscle research and I do hope that a significant number of Members have already made arrangements to attend.

The next Designated Session of the Muscle Contraction Group will be at the Oxford Meeting (12-14 July); the abstract submission dates are 3-13 April. Looking further into the future, I have requested Designated Sessions for the following Meetings: King's College London (December 1995), University College London (April 1996), Leeds (September 1996) and Bristol (September 1997).

K W Ranatunga

NEUROENDOCRINOLOGY

At the recent Birmingham Meeting of the Society there was a Designated Session for Oral Communications on Monday 19 December with a symposium on "Amino acid neurotransmitter regulation of the neuroendocrine hypothalamus" and a Poster Session the following day. For December meetings, there is always the question as to whether people will want to travel so close to Christmas, but the Sessions were very well attended. Although the Meeting got off to a bad start for some of us with delayed trains and traffic jams, it nevertheless turned out to be most successful. The 11 Communications provoked lively discussion which continued into the coffee and lunch breaks. In addition to studies on the control of anterior and posterior pituitary function in the rat, we heard of the work on chick neuroendocrine systems at the Institute of Small Animal Research at Celle in Germany.

The symposium, chaired by A Herbison, brought together many of the key workers in the field. W Wisden (Cambridge) opened the session with a review of the molecular biology of both excitatory and inhibitory amino acid receptors, focusing especially on the hypothalamus. This was followed by presentations on the rat magnocellular neurones. C Bourque (Toronto) described a series of technically complex studies on excitatory amino acid regulation, while D Voisin (Bordeaux/Cambridge) discussed the role of GABA. After coffee, H Jarry (Gottingen) and J Bouginon (Liege) spoke on the control of gonadotrophins, the latter speaker developing a model for the changes at puberty in the control of gonadotrophin releasing hormone (GnRH) via glutaminergic neurones, which lead to accelerated frequency of GnRH pulses. For anyone who missed the Session, the symposia abstracts provide a useful summary.

Plans are now well under way for future meetings of the Group. After the forthcoming Joint Meeting with the Japanese Physiological Society, there is a meeting in Cardiff in September, which was announced in the last issue of the *Magazine*. Next year, there will be a symposium on the effects of gonadal steroids on neuroendocrine function at the University College Meeting in April and a Designated Session at the Meeting in Edinburgh in July.

Mary Forsling

RENAL PHYSIOLOGY

The Renal Physiology Special Interest Group met at the Birmingham Meeting. Ten Poster Communications on Tuesday afternoon provided a good opportunity for individual discussion. A further ten Oral Communications were presented the following morning with Ed Johns in the Chair. At the Business Meeting, it was agreed that future Renal Sessions should be held at Cork in September 1995 and also at Leeds in September 1996, with the possibility that the Leeds Meeting be held jointly with the Epithelial Transport Group. It was also agreed that speakers should be invited to present Designated Lectures whenever possible.

Gerhard Giebisch has accepted an invitation to present the Designated Lecture at Cork.

David Potts

SENSORIMOTOR CONTROL

After several years' service as convenor of the Sensorimotor Control Group, Roger Lemon stood down at the Birmingham Meeting in

December. I am sure members of the Group would wish to join in thanking Roger for his role in the development of a strong and lively Group.

The next Session of the Group will be held at the Oxford Meeting in July and the submission period for this Meeting is close upon us (3-13 April). It is hoped that at least one Designated Lecture can be included in the programme though as I write arrangements are not yet concluded. In addition, John Stein is organising a symposium entitled "New Roles for the Cerebellum", so that there promises to be plenty to make the trip to the Oxford Meeting worthwhile.

Future Sessions of the Group are proposed for the UCL (April 1996) and Leeds (September 1996) Meetings of the Society. I would like to organise Designated Lectures and / or symposia to accompany these Sessions and would welcome suggestions from Members for topics that you would like to have discussed or for speakers you would like to hear. If you wish to make suggestions for future events or to be added to the Group's mailing list then please contact me at the Institute of Biomedical & Life Sciences, West Medical Building, University of Glasgow, Glasgow G12 8QQ, fax (0141) 330 4100, Email j.s.riddell@biomed.gla.ac.uk

John Riddell

SMOOTH MUSCLE

Designated Session at Birmingham, December 1994

The weather was typically cold and wet, with a touch of fog thrown in, so the warmth of scientific discussion was welcome. The Smooth Muscle Session started in the morning of Tuesday with a brief discussion led by Giovanni Mann (convener of the Microvascular & Endothelial Physiology Special Interest Group) on the possibility of a joint symposium between the two Groups in December. This was generally accepted as a good idea, considering the distinct crossover in subjects, and plans are now afoot to proceed.

The Session included 13 communications (it would have been more, but Poston's were Lost In The Post), of which somewhat over half were concerned with electrophysiology, and mostly to do with potassium currents of one sort or another. In contrast, Joanne Turner started the Session with an interesting talk on a new Ca^{2+} activated chloride channel in pulmonary arteries, which may prove to be important in the regulation of pulmonary vascular tone. One of the points raised by her co-author Roland Kozlowski in a later communication was that there are significant diversities in current depending on artery size, a fact that should be remembered in any investigation of artery function. There were several communications dealing with intracellular Ca^{2+} stores and Ca^{2+} buffering in artery and myometrium, including one from our beloved Society Secretary, Jim Gillespie, whose theories on the co-operativity of the ryanodine and InsP3 induced Ca^{2+} release mechanisms were received with interest by the majority, but with profound scepticism by one member in particular. The last presentation was of an entirely different tack, with the Dr O'Dowds and Miller from Glasgow who told us about zinc and carnosine, and how they need each other.

The poster session was well attended, but consequently rather crowded. Nine posters under our banner were presented, including three on the bladder, from the laboratories of Chris Fry, Jim Gillespie and Drs Hasan & Neal from the department of Surgery in Newcastle. We were delighted to have a trans-Atlantic presentation from Dr Guissani and colleagues (Cornell NY), who, using their model of pre-term labour, confirmed that foetal androgens may induce labour via oxytocin.

Notice of next Designated Session

We will be having Designated Sessions both at the Oxford Meeting in July and at King's in December 1995. The Oxford Meeting is likely to be large, as it runs in parallel with the British Pharmacological Society, and there will be a lot of material on smooth muscle as a result. At the King's Meeting we will also be having a joint symposium with the Microvascular & Endothelial Physiology Special Interest Group. More information will be available, hopefully in time for the next issue of the *Magazine*.

We look forward to seeing as many of you as possible at both these Meetings.

Lucilla Poston & Jeremy Ward
j.ward@umds.ac.uk

SOMATOSENSORY PHYSIOLOGY

The Group met at the Birmingham Meeting of the Society in December. The festive season was marked by a well attended social event organised by Thelma Lovick at a local Balti house. Through the alcohol-fogged haze of my memory the "bash" lived up to the hyperbolic promises made in the Birmingham *Magazine* and involved the consumption of some first rate grub. Everyone in attendance seemed to be enjoying themselves. Many thanks are due to Thelma, and Brian Key, for their hard work in organising the event, and to the Society for financial assistance. Thelma's lucid account of proceedings is below.

The scientific proceedings for the Group consisted of a Poster Session on Tuesday and an Oral Communication Session on Wednesday morning, of which the highlight was Malcolm Roberts' excellent Designated Lecture on the anterior pretectal nucleus. Malcolm's talk was that rare treat: a concise but comprehensive review of a coherent and compelling body of work on an important topic. The case for the APtN as a possible important site for descending control of sensory transmission was well made: it seems that the area deserves more attention than it has received heretofore. I must mention once again that we were honoured by the presence of Group members from overseas: Dr Baumann and his group made the long journey from Hong Kong to make two fine presentations on Merkel cells and their role in the transduction process for slowly adapting mechanoreceptors (their evidence suggests that the Merkel cells do have a role), and Drs Rees and Sluka from the Willis laboratory in Galveston, who were talking on the involvement of tachykinin receptors in nociceptive transmission in states of inflammation. I hope the other communicators will forgive me for not mentioning them specifically, although I would like to say that the standard of communications was uniformly high.

The Group will be convened again at the meeting with the Pharmacologists in Oxford this July. The submission dates for abstracts for this Meeting are 3-13 April, not February as stated in the Birmingham Programme. I expect there will be another Designated Lecture at this Meeting: any suggestions for a speaker will be received gratefully. In December 1995, at the King's College Meeting, I am planning to run a workshop on "Techniques in Somatosensory Physiology" and there will be another Designated Session of the Group. Watch this space.

Rob Clarke

The Somatosensory Physiology Brummie Balti bash

Group members and a number of other interested Members of the Society dedicated themselves to an evening's study of somatosensory input to the gastrointestinal tract at a local Balti House. In agreement with generations past, they confirmed the stimulatory effects of capsaicin on the gastrointestinal tract, leading to a reduction in gut transit time. More importantly, they noted an extraordinary synergy between the acute effects of the aforementioned spice and ethanol, taken orally, in a convivial atmosphere, in large and frequent doses, chilled and prepared by methode champenoise with the brut formulation. The Group is planning more investigations into this phenomenon.

Thelma Lovick

PFIZER PRIZES

Pfizer has given the Society a one-off payment of £10,000 to fund a number of Pfizer Awards. Awards, with prizes of £150 each, will be made to postgraduate students for oral Communications presented in the Designated Sessions of the Society's Special Interest Groups, according to the following rules:

- Up to six Pfizer Prizes will be awarded each year on the basis of oral Communications made in the Designated Sessions of Special Interest Groups.
- Candidates for a Pfizer Prize should be registered for a higher degree by research in a department of a higher education institute in the UK or Eire. Normally, prizes will be awarded not more than four years from the date of the initial registration.
- The convenors of Special Interest Groups will be invited to bid for a Prize in one of their Designated Sessions. The Prizes Sub-Committee, in consultation with a representative of Pfizer, will select Designated Sessions in which there will be a Prize competition. Normally, not more than one Prize will be awarded for Communications in a particular Session or to one Special Interest Group each year. The list of successful bids will be published in September for the following calendar year.
- Entrants should identify themselves when they submit their abstracts to the Meetings Secretary. They may submit only one abstract for consideration for a Prize. When the entrant is not the sole author, the supervisor should provide a statement of the relative contributions made by co-authors.
- Submissions will be judged by a panel of three, consisting of one nominee each of Pfizer Ltd, the Meetings Secretary and the Special Interest Group convenor. Panel members shall not belong to the same department as any of the entrants.
- The panel shall meet immediately after the completion of the Designated Session and reach a decision at that time. A majority vote by the panel will be sufficient to make an award. An award will not be made if in the opinion of at least two of the panel members it was not justified by the quality of science in the submitted abstracts.
- The panel will take account of the quality of the abstracts, oral presentations and discussions.
- The panel decision will be published by the Meetings Secretary as a written notice displayed at the Registration Desk.
- Awards will be made at a time and place each year to be decided by the Committee Secretary in consultation with a representative of Pfizer Ltd.

Nominations for Pfizer Prizes are invited for Designated Sessions at the Oxford Meeting.

ELECTION OF SOCIETY OFFICERS

Dear Editor,

I should like to draw attention to the fact that the membership has no direct voice in the election of the Society's Officers *eg* Secretaries, Treasurer, Foreign Secretary. Only the Committee is permitted to place names on the ballot paper for these posts and, not surprisingly, only one person is nominated.

It need not necessarily be so. One of the problems is that Officers take office immediately after the AGM. It would clearly not be practicable to continue with this practise if there were a genuine election, because of the need to set up an office and appoint staff. A second difficulty is that Officers are re-elected annually, and it would be unfair on their support staff if they were subject to the annual risk of not being re-elected.

I suggest that the constitution of the Society should be changed as follows. Elections of Officers should only occur at the intervals specified for those posts, unless an office-holder retires prematurely or dies. This would mean that the Secretaries and Treasurer would serve for six years, as at present. Whenever a vacancy is expected, the Committee should form a view as to who the best successor should be, and notify the membership of the Committee's nomination at least six months before the AGM. The membership should then be allowed six weeks to make alternative nominations. If any nominations are forthcoming, a postal ballot of Members should be held, with the result being known at least three months before the AGM, so that the successful candidate has time to set up an office.

This would make the Society much more democratic. If this idea receives support, perhaps we could also consider allowing the membership to nominate members of the Editorial Boards. I may return to this subject in a future letter.

Timothy Simons

Roger Green Replies

Dear Editor,

Thank you for allowing me to see Dr Simons' letter and giving me the chance to respond. It highlights the important role that the *Magazine* plays in keeping open communication channels within the Society.

In general, I prefer more open government and so would like to go along with, at least, some of the views expressed. Unfortunately, it is not quite as easy as that. The Articles of Association are very specific in that the nominations come from the Committee and Officers are elected at the AGM. In parenthesis, I suppose it is possible that the Society might vote No on the proposal, but what the constitutional position would then be, I do not know. I do know that modification of Articles is a long process, but perhaps in the long term this may need to be undertaken.

There are changes in the Officers which will take place over the next two years. In 1995, the Meetings Secretary will change and the Committee propose Chris Fry as the new Meetings Secretary, as announced in the December issue of the *Magazine*. In 1996, John Widdicombe will have served his six years and Richard Boyd has indicated that he will be resigning after serving for three years. The plan for 1996 was to place a notice in the *Magazine* reminding Members of the position and inviting them to forward ideas for the new posts to the Committee Chairman. This would give the membership, at large, a voice in the selection process. The proposed nomination would be announced early to allow for comments, but of course, will have been agreed by the Committee which contains a significant number of members elected by ballot at the AGM. I know that this does not go quite as far as Dr Simons would like, but I would welcome comments.

On a more personal note, more thought needs to be given to the Committee Chairman's position. Because of changes in Charity Law, this is becoming a more significant position than in the past, and we may need to define his/her role and the method of selection.

The whole question of succession of Officers and overlap period with incumbents and methods of recruiting, cajoling, persuading people to be Officers has been discussed by the Officers at a recent meeting, and the above suggestions merged. My interpretation of them and setting them down represents my own view, personal responsibility and not the considered view of the Committee.

Roger Green

How Other Societies Elect Their Officers

Due to the interest and indeed, concern, of the election of the Society's Officers, the *Magazine* decided to investigate how other Societies go about electing their Officers. We approached the Biochemical Society and the British Pharmacological Society, of which both were extremely helpful.

The *Magazine* spoke with Sarah Jane Stagg, Executive Officer of the British Pharmacological Society. It was interesting to find out that the committee makes their nominations, and then writes to all members of the Society in order to allow counter nominations to take place. The BPS opens the election of officers with a letter from the General Secretary, approximately eight weeks ahead of the annual AGM, which is held

in July. The members then have four weeks in which to send in their counter nominations. In this instance, the nominations go to ballot, either by postal ballot or personal ballot at the AGM. Appointment of the Officers are announced at the AGM. The only position which is elected soley by the Committee, is that of the Committee Chairman, who is not an Officer of the Society.

The Biochemical Society have a similar approach, but a slightly different infrastructure. Alison McWhinnie, Assistant Director of Personel and Administration, was able to provide us with the following information. The Society is run by two Committees, the Executive Commitee and the Council. The Executive Commitee is made up of eight members who deal with the day to day running and strategy of the Society. These eight members also sit on the larger "Council" - which heads up the Society and takes the strategies forward. This council is made up of between 30 - 40 members and it is this committee which puts names forward for the election of Officers. However, in the Spring, The Biochemical Society announce through their Magazine, *The Biochemist*, that elections for officers will be taking place. Members of the Society are at this time able to put names forward, with the understanding that any name put forward must have three nominees. Each nominee is then asked to submit a short article on themselves, accompanied by a photograph, which appears in the following issue of the Magazine.

New officers are voted in at the AGM, which is held in September, with the elections being recorded in the Minutes and results published in *The Biochemist*.

Deborah Paul

ETHICS OF THE KIDNEY TOUR

Dear Editor,

I would like the following article *(see box)* to be drawn to the attention of your readers, in hope of sparking some debate on the ethical issues involved. More importantly - suspecting that Members of The Physiological Society are likely to be broadly in agreement on the ethical issues raised, I hope to stimulate some discussion of whether, where and how any pressure could or should be brought to bear to reduce the incidence of unethical practice.

At the official exchange rate, ten thousand rupees is just over £200. This is somewhat more than the monthly pay-check for a senior academic in India, or could represent several years' income for a poor family. It would buy an enormous pile of rice and vegetables, but wouldn't go far buying consumer goods or fuel.

"Kidney drain" India's latest affliction

New Delhi, Jan 15 (UNI).

India is suffering from a silent "kidney drain" with donors now being enticed to go abroad for removal of the commercially valuable organ.

The "kidney tour" racket was uncovered recently by customs officers who conducted body searches on people suspected of smuggling contraband in pouches sewn into their abdomen.

After X-rays and other methods failed to reveal anything incriminatory on a group of travellers who had suspiciously identical stitches on their bellies, a Delhi-based doctor was called in for expert examination.

The doctor, who works for a leading non-governmental organisation (NGO) here said after hard interrogation the suspects confessed to have allowed themselves to be taken to a Latin American country for removal of their kidneys in return for hard cash.

According to the doctor, the "donors" told him that their kidneys were actually destined for organ-failure victims in the United States and hundreds of others had gone on the "kidney-tour" before them.

Social workers are campaigning against the large-scale trade in kidneys say the "kidney tours" are a reaction to the Organ Transplantation Act passed by Parliament eight months ago.

"There is a heavy demand for kidneys from India because of a shortage of the organs in most other countries where it is illegal to remove a kidney from a live donor," says Shahajilal Tamboli, executive member of the Indian Society of Organ Transplantation.

However, the new Act, which is expected to be implemented this week by the Union Health Ministry through notification, will make the donation of kidneys, except between proven blood-relations illegal.

Broadly following guidelines laid down by the WHO, the new Act redirects brain-dead cadavers as the proper source of kidneys and other transplantable organs.

So far, organ-failure victims from the Middle East, Europe and Japan have been taking advantage of lax Indian laws, willing donors and unscrupulous nursing homes to flock to India by the thousand giving the country notoriety as a "kidney bazaar".

"Doctors would receive hefty dollar payments in accounts maintained abroad from a foreign client while the donor gets a paltry five or then thousand rupees (£100 or £200) for risking his life and losing a valuable organ," Mr Tamboli alleged.

According to a report prepared by the Voluntary Health Association of India (VHAI), the multimillion dollar nation-wide kidney racket depends on a nexus of brokers, doctors and donors.

But at the heart of the racket were thousands of unregulated nursing homes which exist only to conduct the organ trade and are little more than "meat shops", says Dr Unnikrishnan of the VHAI.

This article has been reprinted with permission of the Hindustan Times, Jan 16th, 1995

Plainly any Indian for whom £200 or less is sufficient inducement to part with a kidney is not likely to be one who would be able to afford an international air fare, which is a little more expensive to buy in India than it would be here. On first reflection, one imagines that such travellers would instantly raise suspicions at airports. However, many Indians - in absolute numbers if not as a percentage of the whole population - travel at the expense of foreign employers (or other organisations such as

charities), who think nothing of paying air fares many times larger than the salaries of their employees (delegates *etc*).

Lastly, if any complications arise later, these people will not be able to afford the kind of medical care that they might need. The same goes, of course, for any poor person in any 'developing' country with any kind of medical problem. The difference is that in these cases the West must bear particular responsibility.

Clive Semmens
The Journal of Physiology, Cambridge

FIGHTING THE TEACHING BATTLE

Dear Editor,

I have just returned to teaching after three years on research leave and it feels like I have stepped into the trenches at the Somme to find that while I have been away the "opposition" has grown and the facilities to cope with them are unchanged.

I have always thought that the Society has a responsibility to support teaching but symposia and study guides are not enough. The Society has been rightly using more of its income to support physiology but this has been largely directed towards what one might loosely call research. It is therefore time to resurrect the ideas that led to the Education & Information Sub-Committee producing the Video and Film catalogue some years ago. I do this now, because the need for teaching help is clearly greater, the Society has the funds to support a new initiative, technology has advanced sufficiently to make it possible to produce computer based schemes and that the Society's input would dovetail with the Wellcome initiative to update the Medical Slide Bank to included images suitable for pre-clinical teaching (outlined in *Magazine* No 16 p 16).

What are the immediate needs?

Help with examinations

This could be achieved by the creation of libraries of exam questions. Particularly useful would be tried and tested multiple choice questions suitable for preclinical and science students and worked data interpretation questions suitable for honours students. These might be in a format that could be read from CD discs.

Help with teaching aids

This would involve a new catalogue of what is available on film and video together with a library of computer based tutorials also on CD. An area for the future would be a similar library of computer based practicals which might include actual results. These "worked examples" could be tailored for use by ancillary students as an alternative to real experiments and would be accompanied by a structured analysis (or a system where the student "asked" for the results of further experiments in order to answer a question). Once this was done the Society should investigate the possibility of setting up a central facility that might be accessed in due time via Super Janet.

To encourage participation, there may be a need initially to arrange some mechanism for royalties. Perhaps departments that placed items in the collection would have free access or a simple annual royalty payment, as with the medical Slide Bank, could be made. Eventually, new items would be commissioned to fill gaps in the various collections and to update those already there. This would tend to reduce the problem of copyright which would revert to the Society. The end result would be a really valuable and marketable resource.

The realisation of this proposal is not a simple or easy task and would require someone to be employed by the Society to co-ordinate the scheme. I am sure there would be a variety of persons who might be interested in a challenge of this sort. The Society already employs over 20 people, one to help our teaching would be a relatively small increment. The real work would be done in the departments and some support would be needed. Perhaps those departments that wished to become involved in the setting up period, might receive financial support akin to the Seminar Scheme to cover expenses.

It may be a few years before this scheme reaches its full potential and it would require the goodwill and co-operation of Members of the Society. I hope that enough Members will agree that it would be a valuable resource. I know that many are quietly working away on their own schemes, but we need the co-ordination, drive and funds that the Society could and should provide.

Life in the trenches is not going to get any easier unless we do something about it now. Can we survive the next gas attack?

RA Chapman

THE SECOND COMING?

Dear Editor,

I have recently received a semi-official paper which includes a reference to our probable next Meetings Secretary, referred to as "Christ Fry". This has a lot of serious implications, mostly sacrilegious and unprintable. Perhaps when he becomes Meetings Secretary, we should offer him five loaves and two fishes before his first Society Meeting dinner, and later ask him to turn water into wine.

John Widdicombe

HOW DO THE SURVIVING NEPHRONS COPE WHEN FUNCTIONAL RENAL MASS IS REDUCED?

All forms of chronic renal failure are characterised by reductions in the number of functioning nephrons. Yet, due to structural and functional adaptations by the surviving nephrons, electrolyte homeostasis is generally well maintained until the disease has reached a very advanced stage. Likewise, following the removal of a single kidney, for organ donation or because of unilateral renal disease, the remaining kidney is able to do the job of two.

Just how the surviving nephrons are able to adapt so successfully has been studied in rats subjected to partial nephrectomy. The two most commonly used models involve the removal of a single kidney (unilateral nephrectomy, UNX) or partial (usually 2/3) ablation of one kidney followed, usually after one week, by removal of the other (5/6 nephrectomy, 5/6NX). The latter procedure results in uraemia and is generally taken to be a model for chronic renal failure. Although a substantial amount of information has been generated using these rat preparations, most of it has been obtained from studies in anaesthetised animals; moreover, little account has been taken of possible changes in the compensatory response with time. What is needed is a conscious rat model in which the time course of the changes in renal function following partial nephrectomy can be documented.

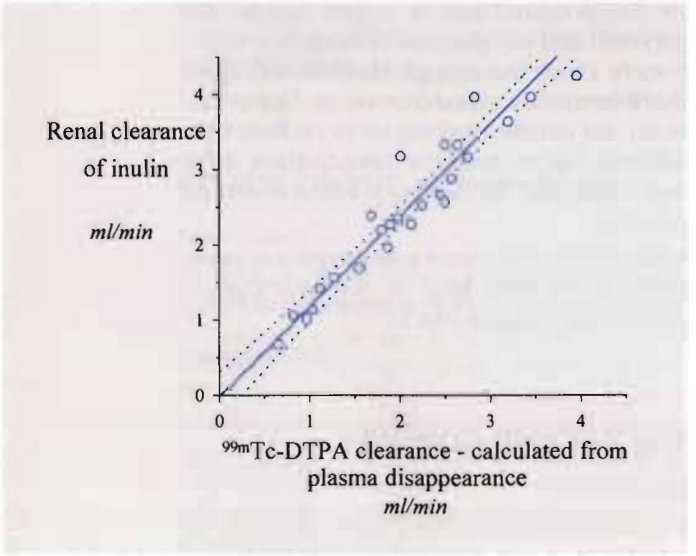

Fig 1
Relationship between ^{99m}TcDTPA clearance, calculated from the plasma disappearance of a single intraperitoneal injection of the isotope (Nankivell et al, 1992), and GFR, measured as the renal clearance of intravenously infused inulin. The two values were measured simultaneously in anaesthetised rats, some of which had been unilaterally nephrectomised in order to provide a wide range of GFR values. The regression line, ±95% confidence intervals, is shown. The equation of the line (y = 1.205x+0.002) can be used to determine values for GFR from measurements of ^{99m}TcDTPA clearance.

A New Model for Studying Renal Failure

A central requirement for assessing renal function is the ability to measure glomerular filtration rate (GFR). Most conscious rat models use standard renal clearance techniques for this, necessitating the cannulation of blood vessels for infusion of the marker substance (usually inulin) and for arterial sampling. However, implanted cannulae cannot be maintained in a functional state for the prolonged periods required for the assessment of the compensatory response to partial nephrectomy.

We have recently developed a model in which no cannulae are needed; rats are kept in metabolism cages and are allowed free access to food and water throughout the study period. GFR is measured from the plasma disappearance of intraperitoneally injected ^{99m}Tc DTPA (Nankivell *et al*, 1992). This method has been validated in anaesthetised rats against the "gold standard" for GFR measurement: the renal clearance of inulin (Fig 1).

Following Changes in Renal Function after Nephrectomy

Using this model, we have assessed the renal functional changes in conscious rats after UNX, 5/6NX or sham operations (the operations themselves being performed under short-term halothane anaesthesia). Compensatory increases in GFR occurred during the early post-operative period in both experimental groups (Fig 2). In UNX rats, GFR then stabilized within two weeks at approximately 70% of the total GFR (*ie* the GFR for both kidneys combined) of sham operated animals, representing a 40% increase in the GFR of the remaining kidney. In 5/6NX rats, GFR stabilised at approximately 35% of the total GFR of sham operated animals, representing at least a doubling of GFR in the remnant kidney (Chamberlain & Shirley, 1994). Since in both groups total sodium excretion was well maintained, the fractional excretion of sodium (*ie* the fraction of the filtered load excreted, FE_{Na}) increased - only modestly in UNX rats but by a factor of 2-3 in 5/6NX rats. Thus, changes in both the filtered load *and* tubular reabsorption are responsible for the maintenance of sodium excretion. Total water excretion increased slightly in UNX rats and doubled in 5/6NX rats. Consequently, increases in fractional water excretion (FE_{H20}) exceeded those in $FE_{Na,}$ particularly in 5/6NX animals. The increase in water excretion, after 5/6NX, which was associated with a reduction in urine osmolality, reflects the well known reduction in

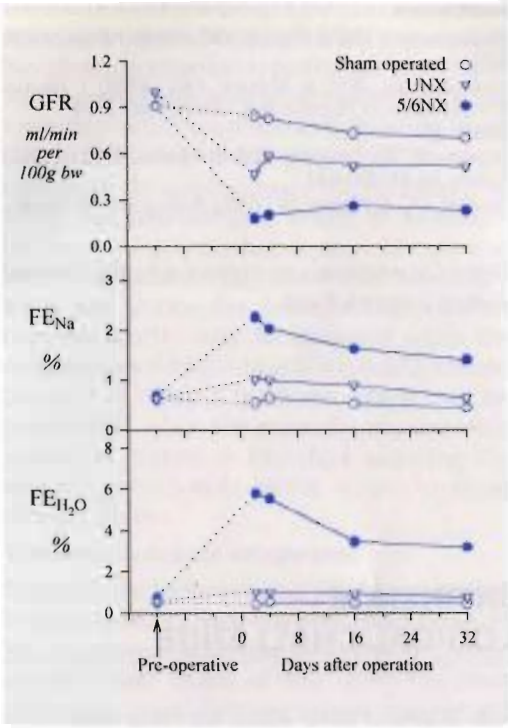

Fig 2
Renal function in conscious rats after partial nephrectomy or sham operations. Measurements were made before ("pre-operative" and after sham operations, UNX or two-stage 5/6NX. For the latter, one kidney was subjected to 2/3 resection (cortical tissue) on day -7 and the partner kidney removed on day 0. The other two groups were sham operated on day -7 and either unilaterally nephrectomised or sham operated (again) on day 0. For clarity, only mean values are shown.

urine concentrating ability in patients with severe renal failure. It appears to result from a diminished medullary interstitial osmolality, since the osmolality of papillary interstitial fluid was found to be substantially lower in 5/6NX rats (~600 mosm/kg H_2O) than in sham operated animals (~1800 mosm/kg H_2O).

Do Anaesthesia and Surgery Interfere with Kidney Funcion?

Having established the overall renal responses to partial nephrectomy (increased filtration and reduced fractional reabsorption in the surviving nephrons), the next stage is to examine the nephron sites responsible for the compensatory changes in tubular function. Unfortunately, no wholly reliable method of assessing the function of discrete segments of the nephron is available in conscious animals (or humans). The only *direct* way to do this is to use micropuncture, in which tubular fluid is sampled from well defined nephron segments by inserting micropipettes into surface nephrons. Since this technique requires anaesthetisation of the animal and surgical exposure of the kidney, the worry is that these procedures might themselves interfere with kidney function and, moreover, that any such interference might be exaggerated in partially nephrectomised animals.

In order to test this possibility, we have performed clearance measurements in conscious rats previously subjected to sham operations, UNX or 5/6NX, then repeated the measurements in the same animals surgically prepared for micropuncture (Fig 3). In sham operated and UNX rats, GFR after preparation for micropuncture was not different from that in the conscious animals, but a small reduction in GFR was observed in 5/6NX rats (Chamberlain & Shirley, 1995). Sodium excretion was considerably reduced following preparation for micropuncture. However, the reductions were similar in all three groups, so *differences* in FE_{Na} between the three groups of conscious rats were to some extent maintained. Differences in FE_{H20} were also still evident.

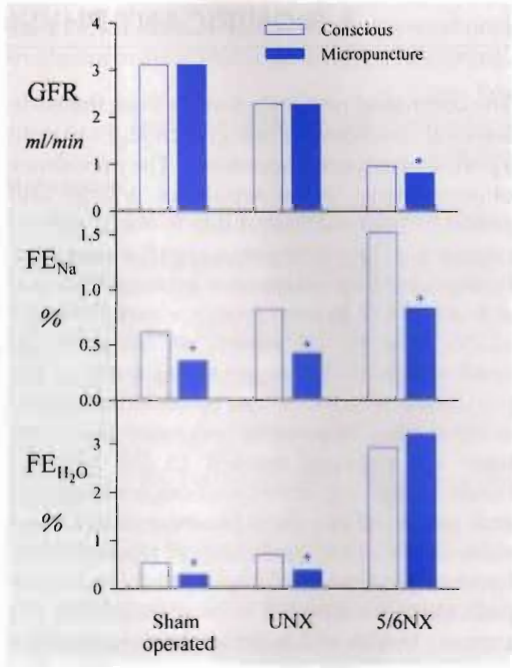

Fig 3
*Renal function in conscious rats 16-32 days after UNX, 5/6NX or sham operations, and in the same animals following anaesthesia and micropuncture surgery. Mean values are shown. *P<0.05 or less compared with the value in conscious animals.*

The Way Ahead for Micropuncture Studies

On this basis, there is some justification for the use of micropuncture to evaluate the compensatory changes in nephron function. A systematic micropuncture assessment of the changes following UNX has revealed that a feature of the early response is a reduction in fractional reabsorption in the proximal tubules. However, as the GFR continues to increase, there is a return of proximal tubular function to normal. In fact, at all stages, a major reason for

the maintenance of sodium excretion rates appears to be reduced sodium reabsorption in the collecting ducts (Shirley & Walter, 1991).

To date, no corresponding study of the (much greater) changes in nephron function which follow 5/6NX has been performed. Since, as seen above, differences in FE_{Na} and FE_{H20} between 5/6NX and sham operated rats still exist following preparation for micropuncture, the way seems clear for such a study, thereby allowing insights into the remarkable compensatory changes which enable the surviving nephrons to maintain homeostasis during advanced renal failure.

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Roger Chamberlain was supported by the National Kidney Research Fund

URINARY INCONTINENCE - A SIGNIFICANT PHYSIOLOGICAL CHALLENGE

The controlled removal of urine from the body is a vital function that few give thought to until a period of incontinence ensues. The prevalence of incontinence in the population is large, and probably underestimated due to social embarrassment and reluctance to accept the condition. In the elderly estimates vary between 15% and as much as 45% in some groups; even in younger adults it is by no means an insignificant condition. In Western countries 4-8% of the population as a whole can be considered to be suffering from urinary incontinence at any one time. The financial burden on the National Health budget is enormous arising from nursing and paramedical care, pharmaceutical and consumable costs, and surgical management. For example, the cost of disposable incontinence pads alone is estimated to be at least £46m per annum). In spite of this, little is known about the aetiology of the problem or its effective treatment.

What Causes Incontinence?

The causes are multi-factorial, but are commonly associated with an unstable bladder whereby there are uninhibited contractions of the bladder when the patient has been asked to inhibit micturition. This yields the distressing symptoms of urinary frequency, urgency, urge incontinence and nocturia. In some patients incontinence is accompanied by urethral obstruction, due to say enlargement of the prostate gland, or arises from nervous lesions, including spinal cord injury. However, in many patients, if not most, the cause is unknown. Treatment initially uses antimuscarinic drugs since the excitatory drive to the bladder in humans is predominantly cholinergic but the side effects of these drugs are often intolerable and major surgical intervention may be the only recourse (Murray & Mundy, 1989).

The lack of understanding of the condition reflects the paucity of research effort, despite the social and cost significance of the problem. No charitable foundations or public discussion of urinary incontinence exist as there are for say cardiovascular disease or oncology. Why might this be so? The condition is not in itself fatal (a persistent rise of bladder pressure due to retention of urine can, however, lead to a deterioration of renal function) and the social debilitation makes it a condition that is not admitted openly. A more sustained research effort will be the only way forward to manage this problem.

How is the Bladder Controlled?

There has been progress in the field of continence mechanisms and much derives from laboratories in the UK. Controlled micturition involves a sacral arc, regulated by higher regions of the central nervous system. Sensation of bladder fullness appears when vesical pressure exceeds about 15cm H_20 and the normally compliant bladder ensures that about 500ml urine can be stored. However, bladder compliance in many patients is greatly reduced so that only small urine volumes may be stored. Such poorly compliant bladders may result from increased passive stiffness of the bladder wall or an increase of resting smooth muscle tone - the relevance of these two possibilities remains to be evaluated.

The neural component

Micturition involves not only contraction of the detrusor smooth muscle comprising the bulk of the bladder but also reduction of urethral

resistance and reshaping of the bladder base. In some patients neural control of this process may have been damaged as a result of say spinal cord injury and considerable effort has been directed towards producing suitable external stimulators which could fairly selectively activate the neural outflow to the lower urinary tract (Craggs *et al* 1995). The ultimate goal would be to initiate bladder contraction when desired. The afferent arm of the sacral arc may also be affected. Recent work has shown for example that afferent nervous activity may be increased when the composition of the bladder filling fluid is altered (Jiang *et al* 1994); a condition which may be exacerbated when the normally impermeable urothelial barrier is breached allowing the urinary constituents better access to these sensory fibres.

The smooth muscle component

Neurological lesions cannot solely account for incontinence and there has been much work on the component muscular tissues of the lower urinary tract. Much of this effort has been directed towards detrusor smooth muscle and our knowledge of the other muscular fractions of the bladder, trigone and base, as well as urethral smooth muscle is less extensive. Human detrusor contraction is largely, if not solely, initiated by muscarinic receptor activation via parasympathetic fibres and the subsequent production of inositol-trisphosphate (Iacovou *et al*, 1990) can mobilise Ca^{2+} from intracellular stores. There also exists a large L-type Ca^{2+} current, which is sufficient to support an action potential and may also contribute to contractile activation (Montgomery & Fry, 1992). However, there are many features of detrusor cell physiology which remain unexplained. For example, the relative importance and interaction of these two facets of Ca^{2+} metabolism remains to be elucidated. Furthermore, it is unclear whether detrusor smooth muscle acts as a functional syncitium or if each cell is activated separately - *ie* can uncontrolled contractions be initiated by abnormal electrical activity, much as arrhythmias may initiate irregular contractions in the heart? Only when these and similar questions are answered will it be possible to control therapeutically detrusor contraction.

Research at Cellular Level

Several groups are also investigating the hypothesis that bladder instability results from specific changes to the cell physiology of the musculature of the lower urinary tract. *In vitro* experiments can be performed on samples of human detrusor muscle obtained from patients during either open surgery or cystoscopy. In addition, animal models of instability can be produced for *in vitro* or *in vivo* experimentation, sometimes by partially occluding the urethra (Speakman *et al* 1987). One current hypothesis is that obstruction results in a partial denervation of the bladder and it is this that results in bladder instability (Brading & Turner, 1994). Moreover, detrusor muscle from unstable bladder is more sensitive to the motor transmitter acetylcholine (Speakman *et al* 1987) so that although there are fewer motor nerves the sensitivity to the residual number is raised. Several other changes to detrusor muscle from unstable bladders has also been recorded, including an altered action potential configuration and changes to the voltage-dependent behaviour of the L-type Ca^{2+} channel (Gallegos & Fry, 1994). What is unknown is how such changes will actually result in unstable contractions of the whole bladder.

Bladder instability and incontinence remains a common and inexplicable condition. However, because our knowledge of the physiology of the urinary tract and its component tissues has increased considerably over the past few years there is increasing confidence that a more rational treatment of these problems will be forthcoming.

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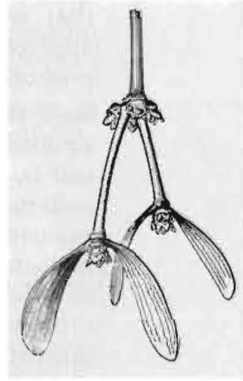
Oestrous Attraction



"...it is at the oestrus period that the female readily accepts a male for copulation (although this is not so in humans for the female can turn herself on or be turned on by environmental circumstances and the higher cerebral cortex power which resides in human beings. I remember a woman who would dress herself in the most suggestive way wearing perfumes etc if she wanted to get anything out of her husband and satisfy him - oestrus period or no oestrous period and get her things done in return."

Verbatim transcription from an exam script
Vernon Pickles

ASSESSING VASCULAR FUNCTION IN ISOLATED ARTERIES

Early studies investigating vascular function in isolated arteries were typically carried out on large conduit arteries because of technical feasibility and simplicity. However, it is the small arteries which are most physiologically relevant to the study and understanding of vascular function because they provide considerable resistance to flow and, therefore, effectively control local pressure. Techniques to investigate small resistance arteries were developed in the seventies and were based on the wire myograph. This apparatus provides an excellent and reliable method for the measurement of arterial function. Nevertheless, there are certain limitations to this technique and so more recently a system for pressurised cannulated small arteries has been designed - this method enables luminal flow through isolated resistance arteries and measurement of vessel pressure.

Organ Baths and Conduit Arteries

Most of the early understanding of the mechanism of action of vasoactive compounds was determined through the standard technique of tension measurement of isolated conduit arteries, mounted and perfused in organ baths as isometric preparations. Vessels are commonly mounted as arterial rings or helically cut strips. Arteries from pulmonary, renal, femoral, mesenteric, cerebral, coronary and ear circulation's amongst others have been investigated, but the thoracic aorta has been most commonly used. The arteries are generally stretched to give a 'pre-load' which effectively ensures optimal contractile filament cross bridge formation upon activation. However, the degree of stretch is often arbitrarily determined, based on that required to give approximately maximal responses to a contractile agonist, rather than that which (preferably) would achieve approximately physiological transmural pressure.

Since several sets of apparatus may be used simultaneously this technique has been, and still is, widely used in innumerable studies undertaken by the pharmaceutical industry to evaluate new vasoactive compounds. While multichannel pen recorders may be used for recording, the development of software packages to control the apparatus, record data and enable calculations of ED_{50}s etc is gradually leading to greater use of computer aided data acquisition.

The Wire Myograph for Resistance Arteries

The first apparatus that became commercially available to study small arteries is known as the *'wire myograph'* or *'Mulvany-Halpern myograph'* (Mulvany and Halpern, 1976), which was an adaptation of an earlier version used in the laboratories of Burlington University, Vermont (Bevan and Osher, 1972). The success of this technique depends, initially, on the careful dissection of the small vessel using a powerful light microscope. Once dissected the vessel is mounted as a ring preparation, being held by two wires passing through the lumen. This allows isometric force exerted circumferentially on the wires to be measured. Using this apparatus it is possible to stretch the vessel to a more accurately assessed 'physiological' stretch than that achieved in the conventional conduit artery preparations. Stretch is achieved by moving the wires apart using a micrometer screw attached to one of the two support jaws.

Assessing transmural pressure

The vessel mounted in the apparatus is not in a cylindrical shape, but lies in two flat plains. Despite this limitation, it is possible to assess the transmural pressure using the Laplace relationship which relates transmural tension and vessel circumference to the transmural pressure.

$$\text{Transmural Pressure } (P_i) = \frac{\text{Wall tension}}{(\text{internal circumference}/2\pi)}$$

The circumference may by measured at any given degree of stretch by measuring the distance between the wires, multiplying by two and adding the wire circumference. In practice the passive tension / pressure characteristics of the vessel are achieved by stretching the wires in small steps, measuring tension and changes in the distance between the wires, and the calculating P_i at each step from the Laplace relationship. The artery can then be set to the physiological transmural pressure required. Knowing the physiological transmural pressure can represent a problem and, in practice, the artery is often set to a circumference which gives 10-20% less than maximal tension upon activation. This has been based on data in which the active-force-circumference characteristics have been determined. These have demonstrated that, at this stretch, maximal active force is only slightly reduced whereas the passive force is substantially diminished. This leads to a reduction in error when active force is calculated by the subtraction of passive tension form the total.

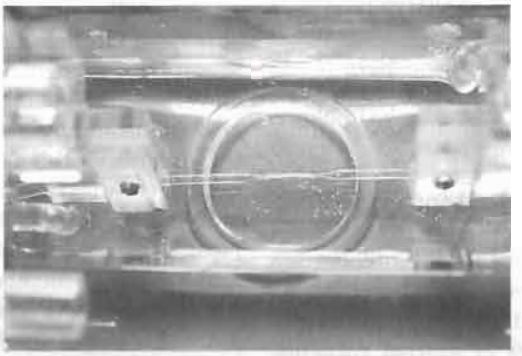
Estimating vessel wall thickness

The wire myograph may also be used to measure vascular smooth muscle thickness. Measurements are made with the aid of a calibrated eye piece, but must be recorded before the vessel is

stretched, as the artery then becomes disproportionately thinned around the wires. Estimation of the wall thickness in the stretched vessel is therefore necessarily derived and far from ideal. Values are calculated based on the assumption that the vessel does not change in volume or length when stretched. Essentially, the calculation assumes that the vessel is a cylinder of constant volume, so permitting calculation of the stretched wall thickness. Nonetheless, reproducible estimates have been obtained from laboratory to laboratory and the technique has been successfully used to determine vessel wall thickness in response to anti-hypertensive therapy.

How Physiological?

The wire myograph does have certain drawbacks in that chemical agents have to be applied to the external surface of the vessel rather than through the lumen, and the vessel, when stretched, is flattened and not cyclindrical. The absence of flow through the lumen is a further deviation from the physiological situation, and is particularly relevant in view of the now well recognised flow mediated vaso-dilatory responses. Additionally, myo-genic responses to variation in pressure cannot easily be investigated with a wire myograph.



Small placental artery mounted between glass cannulae in a pressure myograph

Pressurised Cannulated Arteries

In an attempt to further emulate the physiological situation, a system has been designed which permits luminal flow through the vessel and measurement of vessel pressure (for review see Halpern and Kelley, 1991). The vessel is mounted between two glass cannulae, which have been calibrated and matched for resistance. The proximal and distal pressures are measured by conventional pressure transducers. The pressure in the vessel is provided by the mean of the proximal and distal pressures and the distal pressure may be adjusted to maintain constant vessel pressure using a pressure servo control. Changes in activation of the vessel will affect the proximal, distal and perfusion pressures and the lumen size. These variables are monitored by the pressure monitor and a video dimension analyser respectively.

The video dimension analyser provides a continuous measurement of lumen diameter of the vessel which is visualised by a television camera attached to a microscope. The principle is based on sensing optical density changes of the vessel image at a chosen scan line which perpendicularly intersects the long axis of the vessel. Initially, the width of the two windows in the scan line are fixed to bracket the vessel wall. Trigger controls are then adjusted to sense the more optically dense wall. A highlighted scan line clearly allows visual verification of the measurements. This system facilitates experiments at constant vessel pressure and variable flow or fixed flow and variable vessel pressure.

Pressure myography has been used successfully in investigations of vascular function in animal and human arteries, and is gaining increasing acceptance as the most physiological approach to the study of small arteries. In common with all the techniques using small vessels, success rests upon an obsessional approach to careful dissection and experimentation. This system also necessitates the need for a length of artery without side branches, which in some circulation's may be an important limiting factor. Interestingly, Buus *et al* (1994) have shown recently that rat mesenteric small arteries are more sensitive to nor-adrenaline and phenylephrine when mounted on the pressure myograph than on a wire myograph - an interesting example of how differences in methodology can alter the accepted 'norm' for vascular function.

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Science in Parliament: Why Scientists Should Act

An article suggesting that scientists are to blame for politicians' ignorance and attitude to science. They must become more proactive in communicating science to Parliament if the issues involved are to move up the political agenda.

SPIN
Science and Public Affairs
Winter 1994

ELECTRONIC SIGNALLING: THE INTERNET FOR PHYSIOLOGISTS

The Internet age

What have physiologists and librarians in common? No, it's not a joke - I think there are some parallels. Physiologists pursue function and take care to explain that structure is only of interest inasmuch as it elucidates function. Similarly librarians pursue information and stand up for its right to be an equal partner with technology. Physiologists have taken pharmacology, neuroscience and biochemistry in their stride and are now shaping up to the age of molecular biology. Meanwhile, librarians have moved from traditional printed books, through microfilm, online databases and CD-ROM tools, to arrive in the Internet age of the 1990s. Roger Thomas mentioned in issue 16 of the *Magazine*, some uses of the Internet in his advocacy of e-mail communication (Thomas 1994). I hope to whet your appetite further by describing more of the information available via this technology.

What is it? / Why bother?

The Internet is a global computer network, linking most parts of the world. It is a channel for communication and for access to a collection of information resources large and small, good and bad. You can find specialist databanks, bibliographic databases of journal contents, catalogues of University Libraries, huge collections of software, directories of scientists and academics, graphics files and a vast miscellany of information - all effectively free. The variety can be a little daunting but two developments called gopher and World Wide Web (WWW) have made it much easier to browse, locate and view network information by imposing some uniformity on the variety. Using a gopher is as simple as choosing items from a menu. A gopher menu can contain pointers to simple text information, graphics, database searches or to other gopher menus. A WWW page can contain text and graphics, some of which act as links to other WWW documents, graphics, database searches or gopher menus *etc.* WWW is a more attractive interface than gopher. If you have access to gopher or WWW (*eg* through software called Mosaic) you can access hundreds of different sources. Mosaic in particular, by providing an attractive and intuitive interface, has made the Internet into a tool that can be readily used by all. Any scientist or educator needs to be able to use the Internet and to be aware of what it can do for them.

Resources for physiologists

It is not possible to enumerate here every resource that could be of interest to a physiologist. Instead this section concentrates on some gopher and WWW servers, ignoring the realm of software archives, library catalogues and the like. If you can master WWW and gopher you should be able to use these to access the rest of the information available. The table on page 24 lists addresses for most of these resources using the WWW standard notation - the Uniform Resource Locator (URL).

Several major national and international agencies and learned societies maintain servers in furtherance of their mission to disseminate information. They may contain press releases, staff or membership directories, information about the organisation's activities, meetings and publications. Examples include: the World Health Organization , US National Institutes of Health (NIH), the Physiological Society, the American Physiological Society (APS) and the Society for Neuroscience. Recently the UK Government has established a WWW server and several Departments are providing information via this means. Virtually all US and UK Universities have established servers, along with many Research Institutes and some Hospitals. These are often established primarily for local use by members of the institution and hence have much information of only local interest. Most will also try to present some information about the Institution and about its activities, while some have quite extensive services of wider interest. Staff directories are provided on many servers, though the information provided in each directory entry varies somewhat. Some give just an e-mail address, some a postal address, some a phone number. The NIH provides extensive information in a directory with details of all NIH-funded research projects. Co-operative efforts have also led to international directories of crystallographers, yeast researchers, protistologists and others. With a little persistence it is possible to locate contact details for many biologists around the world (especially in the USA). A very useful list of directories is "Searching for Biologists".

Learned Society publishers and commercial publishers alike have started to offer information for free via the Internet. Many journal tables of contents are provided, and some abstracts services. The APS server contains both. The biggest category of biological information is sequence-related - gene and protein sequences, etc. This has been well-described elsewhere (Harper, 1994). Catalogues of cell-culture collections and a few neuroscience resources are also available. BITMed is an interesting and fairly new resource from the University of California at San Diego's Biological Informatics and Theoretical Medicine group. This server

provides access to simulations of biological systems, including an immune system model called Cybermouse. The problem of locating something of interest on the network is well-recognised and several solutions are to hand. As yet no solution is quite perfect, but you will find services such as Veronica (an index to gophers), World Wide Web Worm (an index to WWW servers), BUBL (Bulletin Board for Libraries - a collection of gopher and WWW services plus much more information about the network) and NISS (National Information Services and Systems - another collection of services) to be of some help. Lists of servers by country and by region are also useful. In the UK the biological arms of the Computers in Teaching Initiative (CTI) and the Teaching and Learning Technology Programme (TLTP) are represented on and users of the network. CTI-Biol maintains a directory of computer-based teaching resources and an information service for the field. They also produce a printed newsletter. Two TLTP projects may be of interest - BioNet is a consortium focused on integrating computer-aided learning into the curriculum; PharmaCALogy (sic) is devoted to computer-aided learning in pharmacology. Members of these consortia are actively producing teaching materials which are freely available via the network. Another example is the Birmingham University Department of Physiology server. This is being used to test and demonstrate the delivery of teaching material to medical undergraduates via the network. Tutorials, lecture support material, self-assessment and formal assessment tests and more are being provided via WWW.

There is sometimes a suspicion that most information on the Internet is trivia. Be that as it may, some very diverting trivia is certainly available. Lists of restaurants and pubs in London, Cambridge, Boston and San Francisco, maps of London, BBC TV and radio schedules are among the less heavyweight resources available.

Communication Channels

E-mail can be used for sending a message to one person or to several people at once. Systematic communication on a larger scale is facilitated by e-mail lists and newsgroups. Both of these systems provide a means by which groups of individuals with common interests can take part in electronic discussions. Essentially the difference is that e-mail lists deliver messages to your e-mail "mailbox" whereas newsgroup messages are stored in a central area to which you must connect in order to view them. Newsgroups are more efficient for large groups, but you need special software to use them. E-mail lists are easier to set up and use initially but necessitate some maintenance. Using these communication channels you can:

- discuss current issues and problems
- distribute written material and statistical data
- advertise vacant posts
- publicise conferences and seminars

There are well over 2000 newsgroups, arranged in hierarchies. The most useful hierarchy for biologists is bionet, including groups devoted to ageing, neuroscience, microbiology and immunology among others. The sci hierarchy includes relevant groups under sci.bio, sci.chem, sci.med, sci.research and sci.techniques. E-mail discussion lists (often called Listservs, after the software used to run many of them) are a means of distributing e-mail from a central point. The e-mail addresses of group members are held on a mailing list; by sending one message to a central address all members of the group can be contacted. Usually messages sent to the list will be stored so that an archive of past messages is established. There are very many public e-mail lists in existence but it is also possible to establish a private or closed list for communication within a small group (e.g. a committee).

Mailbase is the UK's major electronic mailing list service. It enables groups to manage their own discussion topics (Mailbase lists) and files associated with the group. These lists may be public, accessible to all, or private. Mailbase runs over 800 lists on a wide range of subjects with over 50,000 members. It is very easy to join a Mailbase list and also very easy to propose a new list - Mailbase will consider any list that is of benefit to the UK academic community and is of a serious academic or research nature. Recently two physiological lists have been established, *Physiology* for discussions of all aspects of physiology in teaching and research, and *molecular-cell-speak* for discussions of signalling mechanisms. If you have access to e-mail using Mailbase could not be simpler - just send an e-mail message containing the words:

```
send mailbase user-guide
```

to the address

```
mailbase@mailbase.ac.uk
```

A guide to using the service will then be sent to you by e-mail. If you have access to gopher software you can also browse through any public Mailbase list by connecting to the Mailbase gopher.

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References

Thomas, R. Join the Information Revolution - use email! *The Physiological Society Magazine*, 1994, **16**:25.
Harper, R. Access to DNA and protein databases on the Internet. *Current Opinion in Biotechnology*, 1994, **5**:4-18

Further Information and Assistance

For assistance in accessing information on the Internet you should enquire at your local computing service or library. Once you have access, many resources and guides are available. Some of these are listed below but look on BUBL for more information.

Kovacs, Diane K, *Directory of Scholarly Electronic Conferences: Biological Sciences*. 8th revision, 1994. This is the most comprehensive listing of newsgroups and e-mail lists.

You can find it at this URL: gopher://ukoln.bath.ac.uk:7070/00/BUBL_Main_Menu/D/DD/DD05/KovBio

Smith, Una. *Biologist's Guide to Internet Resources*. A highly regarded overall guide. Use this URL: ftp://sunsite.unc.edu/pub/academic/biology/ecology+evolution/bioguide/

Gaffin, Adam.*Big Dummy's guide to the Internet*, 1994. This is a "non-threatening" but comprehensive guide to using the Internet. Use this URL: ftp://ftp.eff.org/pub/Net_info/Guidebooks/EFF_Net_Guide/netguide.eff

Krol, Ed. *The whole Internet user's guide and catalog*, 2nd ed, O'Reilly, 1994. ISBN 1-56592-063-5. The first Internet best-seller and still one of the best books on the subject. The catalog section of the book forms the basis of the Global Network Navigator service on the WWW (see below).

List of Resources

American Physiological Society
gopher://uth.tmc.edu:3300/1

AmericanTypeCultureCollections
gopher://gopher.gdb.org/11/Databaselocal/cultures/atcc

BBC
http://www.bbcnc.org.uk

Bioethics
gopher://post.its.mcw.edu:72

Bionet newsgroups
gopher://net.bio.net

BirminghamUniversityPhysiologyDepartment
http://medweb.bham.ac.uk/http/pages/home.html

BITMed
http://bmed.ucsd.edu

BUBL
http://www.bubl.bath.ac.uk/BUBL/GALLERY.html
gopher://bubl.bath.ac.uk:7070/
telnet://bubl.bath.ac.uk/bubl

Cambridge information
http://www.cs.ucl.ac.uk/misc/uk/cambridge.html

CTI-Biol
http://www.liv.ac.uk/ctibiol.html

Global Network Navigator
http://src.doc.ic.ac.uk/gnn/GNNhome.html

List of UK WWW servers
http://src.doc.ic.ac.uk/all-uk.html

Mailbase
gopher://mailbase.ac.uk

Medical Research Council
http://www.nimr.mrc.ac.uk/MRC/Home.html

National Institutes of Health
http://www.nih.gov

National Library of Medicine
http://www.nlm.nih.gov/welcome.html

Neuroscience Resource Guide
http://http2.sils.umich.edu/Public/nirg.nirg1.html

NISS
http://www.niss.ac.uk

The Physiological Society
http://physiology.cup.cam.ac.uk

Searching for Biologists
gopher://gopher.gdb.org/11/biol-search

Society for Neuroscience
gopher://gopher.sfn.org/1

Training Materials Gopher
gopher://trainmat.ncl.ac.uk:7070

UK Government
http://www.open.gov.ac.uk

Veronica (selection)
gopher://ukoln.bath.ac.uk/11/Index/Veronica

World Health Organization
http://www.who.ch

World Wide Web Worm
http://www.cs.colorado.edu/home/mcbryan/WWWW.html

STARTING AN E-MAIL DISCUSSION GROUP

Discussion about research and academic problems is the life blood of science but with the cost of travel and attendance at conferences becoming ever more expensive we are often limited to close encounters in the departmental coffee room. But there are encounters of the second kind and since there has recently been interest in the *Magazine* on e-mail, I would like to share with you my experience on starting an e-mail discussion list.

Electronic communications have dramatically changed the academic environment so that it is now just as easy to discuss problems and share interests with someone on the same campus as drop an e-mail line to someone in Canada or Cardiff. The other major factor is that this huge network of communications is accessible free of charge - at least to the user if not the College. E-mail is fine to communicate with individuals but it really becomes a powerful communication tool when you can address hundreds of like minded researchers with only one message. This is the basis of the e-mail list, which consists of a list of e-mail addresses held on a central computer with any messages being automatically distributed to all members of the list.

Large files of review material, comments, abstracts of discussions *etc* can also be held on the computer and accessed as required. Being able to direct a question at a whole group is great for problem solving, even for mundane questions such as *where can I get a piece of equipment*, as the replies often come back in minutes.

My main area of research is in the physiology and pharmacology of the upper airways and interest in this area is sparse and scattered world wide, making regular contacts with similarly inclined academics very difficult. I wanted to start an e-mail list to discuss research problems on the nose, and initially I looked towards the USA for Listserv systems that would let me start a list. However, I soon discovered that we have an excellent system already operating in the UK based at the University of Newcastle.

The system at Newcastle is the UK's major electronic mailing list service and is funded by the Joint Information Systems Committee (JISC) of the Higher Education Funding Councils for England, Scotland and Wales. The Newcastle system uses Mailbase software which is similar to the US Listserv system and is very user friendly with a very helpful team to sort out the inevitable teething problems. To quote the mailbase introduction "*Mailbase has combined the speed of the fax, the friendliness of the phone, the permanence of the post and the flexibility of the computer into one easy-to-use package*".

The Newcastle project is aimed at benefiting the UK higher education and research community and any new list should fit into this criterion before being accepted for inclusion on the computer. The list service enables groups to manage their own discussion topics (Mailbase lists) and associated files. Setting a list is easy and there is no charge. There are several hundred lists already on the Mailbase system from topics such as air pollution biology to neuropsychology and science education.

I started a list named "nose" on the Mailbase computer and it has proved very successful in joining a worldwide group together for discussion and exchange of information. I have found being a list owner an extremely interesting and rewarding task which brings me into e-mail contact with all sorts of people interested in my field of research. There is no real academic hierarchy for discussions and students can act as equals with professors - this stimulates some sparks at times.

The main focus of nose is intended for human research on nasal physiology, pharmacology, disease, common cold, hayfever, olfaction and nasal sensation, and the treatment of nasal disease, including nasal surgery, but any relevant contributions on animal research work are welcome. A longer term aim is to establish an electronic journal on the nose with contributions subject to peer review. Electronic journals are sprouting up at an amazing rate and this looks like being the major medium for disseminating scientific knowledge in the very near future as several large scientific publishers are now in the field.

E-mail lists provide a very powerful and easy way of exchanging information but they are also great fun!

Get mailing.

Ron Eccles
(eccles@cardiff.ac.uk)
University of Wales College of Cardiff

If you would like to start a list then send for information to -

`E-mail:mailbasehelpline@mailbase.ac.uk`

Post: Mailbase, University Computing Service, University of Newcastle, Newcastle upon Tyne, NE1 7RU Tel: (0191) 222 8080/8087

If you would like to join the "nose" list, then send the following message to:

`mailbase@mailbase.ac.uk`

`Subject`: Nothing in subject area as this is not read by the computer

`Message:join nose` < followed by your first name and last name>

You will then be added to the mailbase list. You will receive an introduction to the list giving further details and you will also receive a file giving information on User Commands and how to use the mailbase list.

No Contest

A survey of 50 countries carried out by the Institute of Employment Studies at the University of Sussex has shown that Britain has fewer engineers and scientists as a proportion of the population than most other industrialised countries. In the UK, 4.5 per cent are researchers compared with nearly 7 per cent in the US, and the rate of increase is much lower (only 4 per cent between 1981 and 1989, cf 40 per cent in France).

SPIN

New Scientist
17 December 1994 p.12

PHYSIOLOGY ONLINE: THE ELECTRONIC INFORMATION SERVICE OF THE PHYSIOLOGICAL SOCIETY

The Society now provides a free networked information service over the Internet using the World-Wide Web, which Members and other interested persons are invited to use. The information provided consists of:

- Lists of Society grants available to Members and Affiliates
- Details and ordering information for books, Monographs and study guides published by the Society
- A Noticeboard with details of forthcoming meetings and other announcements of general interest to physiologists
- An up-to-date Full Notice to Contributors for two journals produced by the Society - *The Journal of Physiology* and *Experimental Physiology*
- Online searching of up-to-date indexes for Society journals:

  The Journal of Physiology (1985 onwards)
  Experimental Physiology (1981 onwards)
  Proceedings of The Physiological Society (1988 onwards)

  You may search the journals of your choice for papers or abstracts using an author's name, specific keywords, words in the title, volume, or using more complex criteria and retrieve a full reference for that item
- A collection of links to many other useful physiology related online information sources, including physiology department servers worldwide
- An archive of files and software suitable for Physiology teaching purposes, including simulation programs which can be downloaded to your local computer

The World Wide Web (WWW)

The World-Wide Web (WWW, W3) project, started by CERN (the European Laboratory for Particle Physics), provides users on the Internet with a consistent means to access information around the world. It has created the first global hypertext network.The advantage of hypertext is that in a hypertext document, if you want more information about a particular subject mentioned, you can usually just click on it to read or see further detail. In fact, documents can be and often are linked to other documents by completely different authors - much like foot-noting, but you can get the referenced document instantly, just by clicking on it! To access the Web, you run a browser program. The browser reads hypertext documents, and can fetch documents from other places. Information providers such as The Physiological Society set up hypertext servers which browsers can get documents from. There are several thousand such information providers.

How to access the service

You will require a World-Wide Web browser, which should be available from local computing services. This software runs on PC, Macintosh and various Unix machines. The recommended software is Netscape, but most WWW browsers will normally be suitable. The computer must have a connection to the Internet. The URL (Uniform Resource Locator) that you will need to type into your browser in order to access The Physiological Society information server is:

`http://physiology.cup.cam.ac.uk/`

If problems are experienced accessing the service, and your local computer services have not been able to help then send me some email and I will try and help.

Andy Mell (amell@cup.cam.ac.uk)
The Physiological Society

STOP PRESS

Physiology Mailbase Discussion List

The first physiology e-mail discussion list has been started on Mailbase, the UK academic electronic mailing list service. The physiology list has been set up as a national forum for discussing all topics relevant to physiology whether teaching or research based. Although open to physiologists everywhere, the list will be heavily biased towards activity in the UK. To join the physiology discussion list, send an e-mail message to:

`mailbase@mailbase.ac.uk`

Leave the subject line blank and set the body of the message to:

`Subscribe physiology your name`
(*eg* subscribe physiology David Davies)

The physiology e-mail discussion list is maintained by David Davies from the Department of Physiology, Birmingham University.

New E-mail Addresses

A few Members of the Society will be pleased to hear that at last both the Editor, ***Saffron Whitehead*** and the Treasurer, ***John Widdicombe***, have finally got **email.** Their addresses are:

`saffron@sghms.ac.uk`

or

`s.whitehead@sghms.ac.uk`

and for John Widdicombe:

`widdicom@sghms.ac.uk`

PAY - HOW DO WE COMPARE WITH OTHER PROFESSIONS?

The salary structure of most academics is fairly typical of other public sector employees, being a stereotyped pay spine with individual entry point being based on age, qualifications and experience. Annual increments are then awarded irrespective of performance until a bar is reached. Getting over the bar then depends on the immediate snapshot of one's career over the past year or so. This can be quite arbitrary. Nevertheless, while the system has its warts, pay progression is usual for most people as their competence, efficiency and seniority increase. However, there are problems.

One is that the entry point for a given individual may be lower than what one might expect based on age, qualifications and experience. This individual is then behind in the pay league perhaps for many years. Similarly, new graduates are typically put on the lowest point on the scale, although over the past few years we have seen the abolition of several points from the bottom of the pay spine for Non-Clinical Academic and Academic Related Staff. This undoubtedly is an improvement to our pay structure and makes it easier to recruit new graduates.

A new graduate with a good honours degree (aged 21) is appointed as a Ib Research Assistantship on a salary of £13,941 (£16,075 in London). On receipt of a PhD, a postdoctoral position and with the addition of regular increments, an aspiring physiologist would be on point 13 of the salary spine by the age of 30 and drawing an income of £20,953 pa (£23,087 in London). In addition, if the graduate was financed by the Wellcome, the ARC or one of the other institutions that award salary enhancements then he/she might be drawing a couple of thousand pounds more.

In line with Teachers and Solicitors?

How do these salaries compare with other professions? Well, they are broadly in line with school teachers. A newly qualified teacher with a good honours degree qualifies for a basic salary of £12,999 (£14,898 in London) though can qualify for additional increments if he/she teaches a 'shortage' subject such as maths or science, or takes on additional responsibilities *etc.* With annual 'experience' increments, a graduate teacher would have acquired the maximum of seven 'experience' increments by the age of 28 and would be earning at least £19,614 (£21,513 in London).

A traditionally highly paid group of people are solicitors. How do we compare with them? Any comparison of salary point for salary point is bound to be precarious given the sacrifices and risks taken in entering either profession. We all know of the difficulties of obtaining funding,

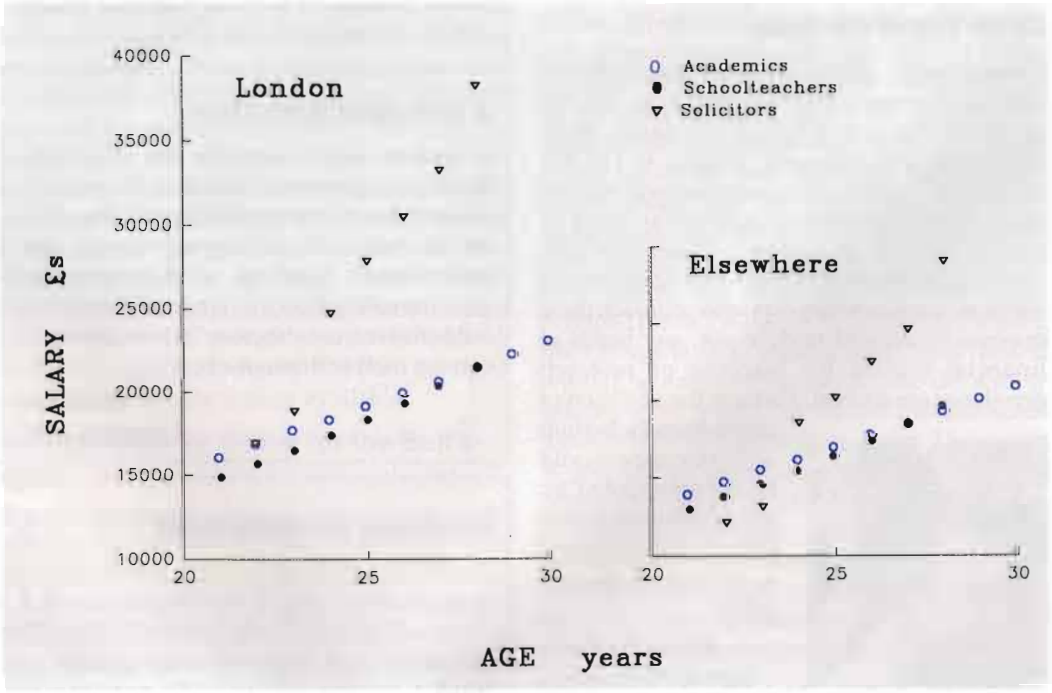

Fig1
Comparison of salaries with age for academics (○), schoolteachers (●) and solicitors (▽). Academic salaries have been ascribed to age as described in the text (viz the 27 age point has been ignored). Solicitors salaries were derived by averaging values quoted for the range of salaries for different regions taken from Chambers & Partner's Directory 1994/95.

getting that PhD and then a job in a good lab in the town or city appropriate to one's disposition. On the other hand, intending solicitors upon graduating have to do a one year full time course (the legal practice course), the fees for which are currently around £5,000 and for which there is no LEA funding. Having completed that they then have to do two years as an articled clerk (now called trainee solicitor). However it has been extremely difficult in the past few years to get a placement as an articled clerk - there are numerous stories of firms receiving a thousand applications for only a handful of places. Consequently aspiring solicitors are taking a serious financial risk if they embark on the legal practice course without having secured a traineeship.

Upon qualifying (at age 24 or 25) salaries are varied depending on the region, the firm and the type of specialism. They vary from £17,000 in provincial firms up to a maximum of £28,000 for certain city firms. Pay progression in the early years following qualification also varies enormously though by about age 28 (four years post-qualification) solicitors can earn between £25,000 and £45,000 (data from Chambers & Partner's Directory 1994/95). Obviously these salaries are much higher than academic salaries, but the main difference comes about on qualification. Equivalent milestones for academics might be in obtaining a PhD or the appointment to a lectureship. However, only rarely does either of these events lead to an increase in salary. Perhaps it should.

At the Top of the Scale

Comparison of salaries for senior people is more difficult. However, there are indicators. The top point of the Non-Clinical Academic scale (including discretionary points) is £33,007 (£35,141 in London). This compares with the top point of the Classroom Teachers Pay Spine of £31,323 (£33,222 in London). Given that both successful University academics and successful teachers can reasonably expect to approach these maxima by around middle age, any hopes of financial reward for teaching or research excellence are dashed. Perhaps the abolition of points from the bottom of the pay spine should be complemented by the addition of points (albeit discretionary) at the top of the pay spine.

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Dept of Physiology,
University College,
London

A Wellcome Brain Gain

A leading article says that the Wellcome Trust's programme of funding for medical research has demonstrated that "brain gain" can be achieved with good salaries and guaranteed funding, and warns the government against the "insecure, low-paid, ladderless career structure" which will only cause a further brain drain.

Guardian
6 January 1995

Reproduced from Science Policy Information News

Reversing the Brain Drain

The Wellcome Trust package which attracted 12 scientist to Britain offers secure funding between 5 and 10 years, reasonable salaries and a stable structure. Despite the Trust's efforts the brain drain will not be reversed until government-funded projects also provide more security and a proper career structure, and article says.

Lancet 345
21 January 1995

FUN IN PHYSIOLOGY

At the recent Meeting of the Society in Birmingham I was looking around the display of books when a title caught my eye: "Fun Physiology" I read. Sometimes the mind works very quickly and in the seconds which it took to reach the book several ideas of what fun might be intended crossed my mind. Pity it was then that a closer view showed that "Fun" was only the first three letters of "Fungal", the rest being hidden by the next book. I was disappointed, but also reminded of another bit of real fun connected with Physiology which I heard of many years ago as a student. An after-dinner wit illustrated the point that the way you tackle a scientific problem depends on your particular viewpoint.

Tackling the Problem from Different Viewpoints

The problem was the cause and proper treatment of flat tyres in motor cars. The Physiologist collected samples of air from many normal and leaking tyres and patiently analysed them. There was a minute difference in the concentration of carbon dioxide, but this did not reach statistical significance. The researcher concluded that a larger series of such tests needed to be undertaken using more precise and expensive equipment. A Comparative Anatomist studied the phenomenon in different species of vehicles and noticed that iron-wheeled tractors never suffered from the problem. He concluded that inflated rubber tyres were probably an atavistic characteristic. The Epidemiologist sent questionnaires to many car owners. She duly reported a significant correlation between the incidence of flat tyres and worn brakes and suggested that treatment of the latter might alleviate the former. Finally, the ever practical Orthopaedic Surgeon cut through all this theoretical stuff by devising a brace, which transferred the weight from the affected wheel to the others. His private practice flourished, and now, happily, a charity has been set up to make the treatment widely available.

Firing Blindly or Going for the Bull's-eye?

It is all very well to joke about the way in which workers in each branch of science make their own particular oblique approaches to problems, but how could they do otherwise? The benefit of hindsight, once a problem is solved, makes it easy to see how it could best have been confronted in the first place, but by then it is too late. Nevertheless, there may be some general lessons to be learned. If the different experimental approaches were likened to archery practice, then some would be like firing blindly with no hope of coming near the target. Others would at least be directed generally towards the target, but with little chance of hitting it, while just occasionally the aim is true.

Let us take as an example research on motor neurone disease (MND). The problem here is to understand why the victim's motorneurones die and hence to devise a rational therapy. In a collection of 35 papers published from a symposium on this subject ten years ago (*Research Progress in Motor Neuron Disease* , ed FC Rose, Pitman, London 1984), 29 appear to be of the first kind, *ie* firing blindly. The remaining six can be seen to have at least been directed towards the target, though none have been proved by events to has been aimed at the bull's eye.

How could we improve our aim? There are many valid lines of medical research which never seek to do more than provide the background data and fundamental knowledge, which might be applied by others. However, if a worker is dedicated to the solution of a problem such as the cause of MND, s/he must have a strong nerve, because anything less than a significant contribution will be interpreted as failure. Most of us, knowing this intuitively, opt for less presumptuous ends, though often adding a line or two of justification to our grant applications - that our work should provide help in elucidating the cause of a particular disease. Much of what we do is inspired by the urge to understand how things work. We derive much intellectual fun from this and should not be deterred in doing so by the accountants. Those bolder academics who aim for the bigger prizes would do well to declare their interest clearly. Then at least they must be taken seriously and at least they now face the target. There will be no excuse for them to do as the motorist did who, getting out of his car on a dark night, dropped his key. A passer-by found him looking for it 20 yards away under a street lamp. Asked why, if he dropped the key by the car was he searching for it here, he replied that the street light let him see what he was doing. Thus, even if you are an expert on neurochemistry and profess an interest in MND, there is little point in studying the amino acids in cerebrospinal fluid, because any changes observed are likely to be like the changes in carbon dioxide in flat tyres or at best a consequence of the disease rather than related to its cause.

Aiming in the Right Direction

If I knew how to improve my aim from generally facing the target to actually pointing at the centre, I would be working on that subject myself.

Occasionally, a scientist does seem to have the right idea and, at risk of being proved wrong in extending the example of MND, I would finish by quoting the recent work of Bostock and his colleagues (*Brain*, in press). They have used a development of a classical electrophysiological technique to study the excitability of motor axons in MND patients compared with suitable controls. They are facing the target because they are studying MND itself and not a model and they are looking at the actual cells specifically affected, that is the alpha-motorneurons. They may well prove to have been pointing at the bull's eye also, because their method reveals changes in membrane potassium channels which could be fundamental to the cause of cell death. Of course, such a result does not come as an isolated flash of inspiration. The work quoted was based on many years of well-directed work, much of it motivated by attempts to understand demyelinating conditions. Certainly, much of the background was provided by scientists encouraged by the fun of the intellectual pursuit as well as by practical objectives. So, what started as fun has turned a little serious, but with the promise of the more lasting satisfaction of success in dealing with a mortal disease.

Anthony Taylor
UMDS, St Thomas's Campus, London

THE JAPANESE EXPERIENCE

Richard Boyd discusses the Japanese experience with his brother Stephen, who has lived in Japan since 1970 and works at the University in Osaka (Handai). His house in Nishinomiya was destroyed in the Kobe/Hanshin earthquake in January, but he and his wife and their dog escaped without injury, unlike many of their friends.

There will be something like 100 physiologists from Britain arriving in Japan at the end of March and most of them will never have visited the country before. I am sure they will be given a lot of hospitalilty from their Japaneses hosts, but I wondered if there were any very simple comments you could perhaps make about traveling and living in Japan during their stay. So let's assume that somebody has arrived at Nagoya Airport, where most people will be arriving en route to Okazaki. Could you give them any advice after a long flight, as to what they should then do?

It is difficult to visualise the feeling of people arriving at the airport and not knowing what to do. I can't really remember that. The airport itself will be much like any other airport in the world, I think, although Nagoya is not one of the brand new, elegant airports. I think you can assume that the Japanese academics who are organising the Meeting will meet the plane efficiently and it should be fairly trouble-free. There is a regular bus service to Okazaki directly from the airport.

In terms of notices and advice about where to catch the bus; any comments about useful things for people to do in a culture that is largely written in a language that is not possible for them to understand?

There will be a Japanese academic who will meet them, who does speak some English and there will most likely be standard signs in English, for instance 'toilet' and 'buses', telling people where to go.

Would people be happy to help with language?

Well, give it a go asking them for help. Sometimes people are terrified of speaking English. However, if they can help you, they will.

How could a group of young, relatively homogenous uncouth British physiologists should make themselves seem less gauche in the Japanese context, following their arrival?

If they really are homogenous, uncouth and gauche, there's not a hope! If they are going to stay with Japanese families I think you can assume that the Japanese families will know enough about uncouth, gauche foreigners to assume they will get a good many things wrong. But nevertheless, there will be other respects which will make it interesting and fun to meet them and so I think the most important thing to say, and it may be particularly true in Japan, is that good intentions are the critical factor.

There are one or two things which are important not to get wrong, but even if you get them wrong, you won't necessarily be written off.

What are the one or two things?

Most people in Japan live in houses which are partly familiar and partly unfamiliar to the visiting Westerner. They are familiar in that they almost certainly have flushing loos, and kitchens which may be slightly smaller than British kitchens, but familiar in their functioning. They would probably have other features which are unfamiliar; one of those would be the bathroom, another would be tatami. Not all houses in Japan do have tatami - tatami are rush mats - perhaps one room in the average Japanese house, would have a floor of tatami.

I think it is true to say that every house in Japan would expect visitors or people who live there to take their shoes off when they enter the house. So, footwear is always complex to the visiting Westerner. When you enter the house you should certainly take your shoes off and then transfer to slippers which would be laid

out ready for you in most houses. You then wear the slippers in the house until you come to tatami where upon you remove them but leave your socks on. There is every conceivable lifestyle in Japan among minorities - it is quite conceivable in a place like Okazaki that you might even come across a Japanese household which has decided to abandon this custom and to wear shoes inside the house.

The assumption of most Westerners arriving in Japan is that they know that they have to take off their shoes when they come to the porch, but they do not know how to do it. When you are sufficiently skilled what you should do is get your foot from your shoe to the inner floor of the house without touching the ground. It is very polite to get your foot from your shoe and straight into the slipper without touching the floor.

What about the loos?

Most Japanese houses have a special pair of slippers to wear in the loo which you would change into on reaching the toilet.

What is the word that people would use for asking for the loo?

There are a variety of options, probably the easiest would be "toyde" which is a Japanese loan word for toilet.

Lets move away from these fundamentals to other horrors!

Good idea. As you know the original handkerchief in the West was a "hand-kerchief". In Japan, the handkerchiefs of the Western kind, the cloth kind, are not use for the nose, but you would usually carry a handkerchief in your left hand pocket and use it for drying your hands after washing them when you have been to the loo. Japan has very high humidity in the summer so handkerchiefs are also used to wipe away perspiration. In Japan, people also tend to carry a pack of tissues in their pocket - if you lived in Japan you would accumulate a large quantity of these as they are given out free as advertisements. So I would recommend taking them partly because public loos do not always have toilet paper and partly for blowing your nose. Nose blowing of the Western "trumpeting" variety is generally frowned upon - but don't worry too much as a Westerner you may be excused - but on the whole a Japanese wanting to blow their now would discreetly turn their head aside and would either blow very quietly or just wipe it, then put the tissue in a nearby rubbish bin.

Onto more pleasurable activities. What are the pleasures and special features of eating in Japan?

Japan is a wonderful country for food. I think that you can safely assume that all that the globe has produced is available somewhere in Japan. This makes it difficult to generalise about how you should behave in a given environment. If your hosts take you to an expensive French restaurant you would do exactly as in France. However, if they take you to an extremely elegant Japanese restaurant there are extremely complex rules of etiquette which you may find your Japanese hosts don't know themselves.

In the domestic context, it is likely for at least some of the meals that you would use chopsticks, although this depends very much on the family,. According to the household, you might have the meal in the tatami room, in which case you would sit on the floor at a low table, or in a Western style room, very much what we are familiar with. If people are young and flexible enough, they might try to sit in the Japanese style on the tatami, where you cross your legs in front of you and endeavour to keep the knees down. If you are in a very formal position, you may find that for the first few minutes people would kneel and then sit on their haunches. They would then move to a seated position. One complication is that the very formal way of sitting is more comfortable for Westerners then the informal one that your host invites you to sit in.

The use of chopsticks - if you can use them already, fine - if you can't use them already your Japanese host will have the great pleasure in showing you how to use them and then will congratulate you in an embarrassing way on how well you handle them. Or else, your host will bring you a knife and fork. Generally, you get good marks for battling on regardless with your chopsticks. When you start feeling the effects of protein deficiency, it's time to accept the offer of a knife and fork.

Do you serve yourself out of a shared main dish, or how does the serving of the meal work?

It depends entirely on the type of food served. This may sound like a problem in advance but actually you will see what to do by the way in which the table is laid. A single plate of food in the middle of the table would be shared.

For those who have eaten cornflakes and bacon and eggs for years, what should they expect for breakfast?

It depends on the family. Within the Japanese language, people would refer to "a Japanese breakfast" or "a Western breakfast". A Western style of breakfast would mean toast or coffee, possibly with cereal. A Japanese breakfast consists of a bowl of rice, a bowl of soup (usually fish stock and a fermented soy bean concoction called meson) and then some form of protein which might be fried fish, a fried egg or fish sausage. The other main constituent is pickles. If your host family comes from the central part of Japan, the Tokyo area, they will almost certainly have fermented soy beans which are rather like a kind of cheese.

On the basis of many years study I have concluded that worldwide, people are generally more conservative about breakfast than other meals. I therefore recommend that you should try a Japanese breakfast but not feel obliged to stick with it. There is recent evidence that deprival of caffeine leads to blinding headaches and this has been confirmed by my own experience. Sometimes it's advisable to have a canned coffee after your Japanese breakfast to bring your caffeine level up.

Thank you. How about travel in Japan? Can you give any advice to people wanting to go by public transport?

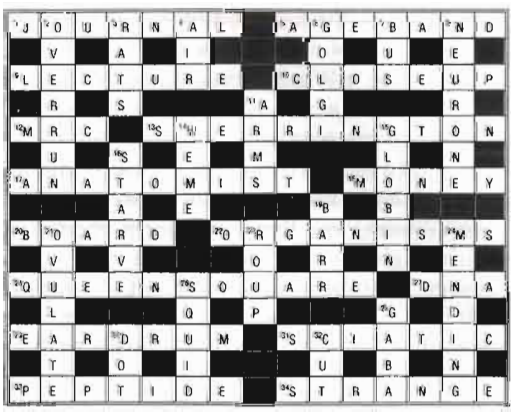
As a generalisation, to which there are certain exceptions, in the urban areas of Japan public transport is probably better than anywhere else in the world. A far larger percentage of the population travels by public transport than in any other country and the public transport system functions extremely efficiently. The options would be bus, tube and railway. Statistically speaking, the railway is the most important of these.

Richard & Stephen Boyd

Japan is likely to prove expensive for most Westerners, but one way of managing resources, particularly if you want to make the most of any free time, is to invest in a Japan Rail Pass. These cost Y27,800, approximately £180, for one week's standard class travel. To obtain a rail pass, you must buy a voucher from a travel agent outside Japan, which can then be redeemed for a pass at any JTB office or major railway station in Japan. The pass will allow unlimited travel on local, national and Shinkansen (Bullet) trains throughout its duration and will probably have paid for itself before you know it.

CROSSWORD COMPETITION

Four entries were received for the Christmas Cryptic Crossword competition, of which two were correct. The winner was Gillian Armstrong of the Gastrointestinal Drug Delivery Research Centre at the University of Newcastle Upon Tyne. The solution is reproduced below.



Howard Hughes Medical Institute

Johns Hopkins University School of Medicine

POSTDOCTORAL RESEARCH POSITIONS IN CELL/MOLECULAR PHYSIOLOGY

One or more postdoctoral positions in cell/molecular physiology, funded for several years, are available at the Howard Hughes Medical Institute, Johns Hopkins University School of Medicine. The positions can be occupied immediately or over the next year. Our current research interests are the mechanism of olfactory transduction, the structure/function relations of the cyclic nucleotide-activated cation channels mediating visual and olfactory transductions, and related problems. Our experimental approach combines molecular biology and cell electrophysiology. The individual has an opportunity to learn molecular biology. The applicant must have a strong background in electrophysiology. Please write to Dr King-Wai Yau, Howard Hughes Medical Institute, Room 900 PCTB, Johns Hopkins University School of Medicine, 725 N Wolfe Street, Baltimore, MD 21205, USA, tel (00 1) 410 955 1260 , Fax (00 1) 410 955 4857.

CAPTION CONTEST

"....and with the approval of the Local Ethical Committee subjects were confined to a small case...."

The prize of a bottle of champagne was won by: Philip Harrison

The above winning entry was chosen by John Widdicombe

WHAT EVERYONE SHOULD KNOW BEFORE THEY AGREE TO ORGANISE A CONFERENCE

The 1994 Alternative Muscle Club

If anyone ever applies for a job with me and it says on their CV they have organised more than one conference I will assume they are too stupid to learn from their mistakes or a total masochist and instantly reject them. As you may have guessed I have just organised my first (and definitely last) conference and am likely to be in therapy for months.

The Alternative Muscle Club is an annual gathering of PhD students and postdocs from any field of muscle research. It is fairly informal, has a very friendly atmosphere and is infamous for copious quantities of science, food and beer. Having attended four of them, I was a real fan and easily persuaded that Leeds would be the ideal next venue. What I had never noticed during my attendance at these events was that the people actually responsible for the organisation were deathly pale and had bags under their eyes and a definite twitch when the valium was wearing off.

Ignorance is not Bliss

It all seemed deceptively easy; book the accommodation, get some sponsorship, send out some invites, photocopy the abstracts, sit back and relax.

Booking the accommodation then was the first step. Nicola and I set off clutching our comprehensive list of requirements to see the domestic bursar of Devonshire Hall (home of the best food anywhere in Leeds University). She smiled invitingly and started asking very obscure questions. Did we know where we were holding the talks, any satellite sessions, where would the posters be displayed, accommodation for the guest speakers? Needless to say we hadn't thought about any of that peripheral nonsense. We did, however, know exactly what we wanted for the conference dinner and had a full list of ale and spirits to be provided at the bar.

Getting sponsorship for the meeting proved to be fairly painless. The British Heart Foundation and the Wellcome Trust have both given funds for several years now and increased their contributions this time. A Leeds based group the National Heart Research Fund was also a major contributor. Other donations were made by The Physiological Society, Smith & Nephew and the University of Leeds. This meant that we could keep the cost per delegate down to just £50 a head, a major factor in attracting large numbers to the event.

Guest speakers were our next problem. My boss suggested that we invite Sir Andrew Huxley. We sent off the invite confident that a Nobel prize winner would have far better things to do the week before Christmas. I'd like to say we were delighted when he agreed not just to give a lecture but also to stay for the whole conference. In fact, having read his biography (and family history!) in the library, we were terrified. It didn't help that our other guest Professor Terry Partridge was also generally considered to have a brain the size of a planet. Various pacts were quickly made. 'Right you're chairing that session. If Sir A or Prof P stick their hand up to ask me a question IGNORE THEM !'.

Finding delegates to invite to the conference turned into a major task. All we had was a list of people who'd attended in the past few years. These were all PhD students and post-docs, a very mobile population. We also had a distinct lack of physiologists, sports scientists and cardiac muscle workers on the list. We therefore decided to set up a database of as many muscle scientists as we could find in Britain. We will make this available to future AMC organisers and other groups arranging muscle based conferences and seminars. If any one is interested in being added to this please see the information below.

The Last Minute Panics

The deadline arrived for the return of booking forms and abstracts and they came flooding in, all three of them. We quickly worked out that if everyone in the lab did seven talks and three posters we could fill all the slots. The prospect of managing 20 conference Dinners each was slightly more daunting. After a long lie down I began to phone people up and harass them. Slowly the faxes and forms began to arrive. We were also plagued with phone calls to book in, to change the booking from three to four, to cancel! We even had one at 5.00pm the Friday before the conference started to ask us to rearrange some of the talks onto a different day! I started to make deals with the Almighty "if we ever get the abstract book sorted out I will never ever ever book late for anything ever ever again".

Finally Sunday came, the conference began and I could just sit back and enjoy it. At least that was the theory. 4.00am Monday morning I was lying awake with a heart rate of 180 convinced that the buses to ferry the delegates to the talks were not going to arrive. 4.30am I thought the bus

would arrive but crash horrifically on the way to the lecture theatre. 5.00am I thought Sir Andrew would hate my talk and call me an imbecile in front of everyone. 5.30am I gave in and had breakfast.

And Finally, The Meeting

The first talk of the meeting was given by our principal guest speaker, Sir Andrew Huxley. He presented an overview of the history of muscle physiology and his ideas about the most exciting areas currently being explored. The rest of Monday was devoted to talks on muscle mechanics, fibre type transformation and molecular structure of contractile proteins. On Tuesday Professor Partridge gave a fascinating overview of the field of Gene Therapy in muscle in which he described his latest experiments where whole muscles can be regenerated in a mouse model from just a few genetically altered precursor cells. Sessions followed, devoted to sports science and growth and pathology. We also had a Cardiac Muscle session for the first time in many years, an area that we hope will increase at future meetings. The final day of the meeting was devoted to muscle Biochemistry and Molecular Biology.

It should not be assumed that the presentations given by the young scientists were in any way second rate. In fact quite the opposite is true. Everyone stuck to the time allotted, all talks were well rehearsed and clearly presented and all the slides and overheads were clear and informative. Older physiologists please take note! The guest speakers spent a great deal of time in discussion before announcing the winners of the prizes for best oral presentations as Paul Hatton from the School of Biological Sciences, University of Manchester and Elizabeth Veal from the Department of Medicine, University of Liverpool. The prize for best poster went to another 1st year PhD student, Kristina Warzynska of the Muscular Dystrophy Labs, University of Newcastle for her intriguingly titled "Palythoa, the deadly seaweed of Hana".

I decided to make a special presentation. "The Valerie Cox award for the talk most in keeping with the spirit of the AMC" went to David Timson of the School of Biochemistry, University of Birmingham. He gave a very clear and entertaining presentation on the function of mutant myosin molecules, and did not let a total absence of any useful results so far in any way hinder him. One of the many sources of stress during the meeting was that I'd forgotten to buy the prize for this. The problem was solved by stealing one of my beloved's Christmas presents from under the tree!

Probably the most important person in the whole conference turned out to be Chris Smith our projectionist. As ever it looked like a totally simple job requiring no skill whatsoever until he was called away. Within six minutes of him leaving the building I had succeeded in jamming a slide in the machine and no amount of desperately fiddling with the zoom control would focus the thing. Yet again it was proved that no number of degrees and qualifications is a substitute for some common sense. My excuse was that the failure of the chairman to turn up for the cardiac muscle session had caused me severe stress. This person, who shall remain nameless, had last been seen lying in a gutter outside the Phys Soc Meeting in Birmingham.

As ever at the AMC there were lively question times after many of the talks and the guest speakers turned out to be very friendly and not at all scary. Many more conversations took place over the copious meals that constantly appeared. My lab now have four potential collaborations as a result of contacts made at the meeting. We all also have a greater understanding of the techniques used in other fields of muscle biology. Next year's do will be at Wolverhampton and I'm really looking forward to just being one of the delegates and having a stress free time. My advice to Rick Morton the organiser.. start on the valium now !!!

In order to facilitate the organisation of future meetings of the AMC and other groups we made great efforts to trace as many muscle scientists (skeletal, cardiac or smooth) in the UK as possible. If you would like to be included in the Database (free of charge of course) contact Valerie Cox at Muscle Research, Level 11 Worsley Building, University of Leeds, Leeds, LS2 9JT Tel (0113) 233 5893.

Valerie Cox
University of Leeds

WELCOME TO ST PETERSBURG!

The 33rd International Congress of Physiological Sciences is to be held in St Petersburg, Russia 30 June - 5 July 1997. Dr S Medvedev, Chairman of The Congress Organising Committee recently visited the UK to meet members of The Physiological Society Committee and the British members of the International Scientific Programme Committee. I took the opportunity to interview Dr Medvedev about certain aspects of the future Congress which might be of interest to British physiologists.

What are the general arrangements so far made for the 1997 Congress?

"The Executive Committee of the IUPS Council (M Ito, ENeher, F Weibel, H Sparks, D Noble, S Orsoni) visited St Petersburg in May 1994 to discuss the organisation of the Congress with the Russian Organising Committee.

Two possible sites for the Congress are being considered at the moment: the Technical University and the Military Medical Academy (the former Emperor's Medical Surgical Academy). The Technical University, though located in a picturesque surrounding, is not very close to the city centre. The Medical Academy, on the other hand, is situated on the bank of the Neva River in the centre of the city very close to St Petersburg's most striking sights. I would personally prefer the latter site, but the final decision will of course be made together with the IUPS Executive Committee at a joint meeting in May 1995.

St Isaac's Square, St Petersberg

A contract has been signed with the Finnish company CONGREX which is now the official organiser of the 33rd IUPS Congress. A contract has been signed with Finnair - the official carrier of the Congress. St Petersburg is a well known world tourism centre and therefore has a well developed list of hotels of different categories (from very luxurious to very modest) with private facilities in all groups of hotels. Student halls of residences are also plentiful. So, we can easily provide accommodation for at least 6,000 participants in accordance with their requirements. Shuttle buses will be provided to take the participants to the Congress site."

St Isaac's Cathedral, St Petersburg

There is an agreement between the Russian and British Physiological Societies concerning reciprocal support for members at the Glasgow - St Petersburg Congresses. Can you tell us something about the accommodation arrangements for the British members to be supported in this way in St Petersburg?

"In accordance with our agreement with The Physiological Society we are ready to receive 40 British scientists and provide them with the registration fee, accommodation, subsistence money and a complete social programme at our expense. At this point in time it is difficult to estimate exactly the amount of our financial support due to the growing inflation. The payment will be made during registration. Those supported will have the option to use the given sum of money according to their wishes (if, for example, a more expensive hotel is preferred, there will be less money left for other purposes and vice versa). Accommodation options will range from halls of residence to reasonable hotels."

Many people in the UK are worried about the reports of rapidly escalating criminality in St Petersburg. What arrangements are being made to ensure safety for participants in the International Congress?

"No doubt the criminal situation has worsened in recent years. Yet, it has not reached, say, the New York record and people do manage to return from New York alive! And now quite seriously: proper security will be provided for all participants of the Congress both at their accommodation places and at the Congress site. We shall provide participants with a list of safe places to visit (*eg* a special list of restaurants will

be arranged). I am sure that if people stick to these and just use their common sense, there is nothing to be afraid of."

We have heard that Russia has introduced a new law requesting that each visitor to Russia should have had a recent HIV test. Do you think this law will be implemented and if so what are the consequences for the 1997 Congress?

"All sober-minded people in our country, including most official representatives, realize that the implementation of such a law would in reality mean the erection of a new "iron curtain" around the country. The country's economy would lose millions of US$. Many knowledgeable people expect the President to veto the law. All this gives us grounds for optimism."

We understand that an international Scientific Programme Committee has been established. When will we know details about the scientific programme?

"In May 1994 the International Scientific Program Committee was approved. *(see box)*

The Committee will meet on 25-27 May 1995. The main purpose will be to finalise the Scientific Programme of the Congress. I would like to encourage everybody with an interest in the Congress to write to me with suggestions concerning the scientific programme. Specifically I would be happy to receive ideas for symposia (topic, chairmen, invited speakers). Members of the Programme Committee will see these suggestions as well as all additional information about topics of symposia and poster sessions received from International Commissions and National Societies. This will then be considered as a basis for the first draft of the Congress Programme. The Programme Committee will consider all proposals received before its meeting in May. Thus the Scientific Programme of the Congress will effectively be ready in June 1995.

Please address all suggestions to:

Congress Secretariat
c/o CONGREX
PO Box 35
FIN-00621 HESINKI
FINLAND

Tel: +358 0 752 3611
Fax: +358 0 752 0899

Nina Burdakova

Exiles Flock Home Again

According to a study by the Royal Society, fewer British academics are leaving the UK and many who had left Britain are now returning.

SPIN
Mail on Sunday
11 December 1994 p.25

SCIENTIFIC PROGRAMME COMMITTEE IUPS 1997

Ito, M (Japan)	President, IUPS
Noble, D (UK)	Secretary General, IUPS
Simonov, P (Russia), Chair	Neuroscience
Schultz, S (USA) Vice-Chair	Membrane Transport
Cowley, A (USA)	Integrative
DiPrampero, U (Italy)	Respiration
Dockray, G (UK)	Gastrointestinal
Earm, Y (Korea)	Muscle
Efuni, S (Russia)	Respiration
Greger, R (Germany)	Renal
Lamb, T (UK)	Neuroscience (Peripheral)
MacKnight, ADC (New Zealand)	Cell
Medvedev, S (Russia)	Neuroscience
Mereer, J (Norway)	Thermal
Natochin, Yu (Russia)	Renal
Ostrovsky, M (Russia)	Neuroscience
Pfaff, D (USA)	Endocrinology
Sasaki, K (Japan)	Neuroscience (Central)
Tkachenko, B (Russia)	Circulatory
Weingart, R (Switzerland)	Cardiovascular

December 1994 Vol 481 Part 2

December 1994 Vol 481 Part 3

January 1995 Vol 482 Part I

January 1995 Vol 482 Part II

February 1995 Vol 482 Part III

February 1995 Vol 483 Part I

◆ Short Paper given rapid review

No notice is carried for more than three successive editions. Notices are starred so that readers can see at a glance whether this is the first (one star) or final (three stars) appearance of the notice. Notices for the Summer 1995 edition (to be distributed on 16 June) should reach the Administration Office by 30 April.

NEUROLOGY FOR NEUROSCIENTISTS
27-28 March 1995
Magdalen College, Oxford
A symposium to demonstrate how clinical neurology can illuminate neural function and help neuroscientists. Sponsored by the Guarantors of Brain, everything is covered, even some graduate students' travel expenses, for a nominal registration of £20. Further details from: Prof J B Clark, Neurochemistry, National Hospital, Queen Square, London WC1N 3BG, tel (0171) 829 8722 ★★★

SEROTONIN AND THE CONTROL OF EMESIS: A Decade of Progress
27-29 March 1995
Oxford
Further details from: Alexandra Carrington, Oxford Clinical Communications, 213 Barns Road, Oxford OX4 3UT, tel (01865) 747774, fax (01865) 772147, Internet address 6233532@mcimail.com ★★★

International Meeting
LIPOSOME BIRTHDAY CONFERENCE
27-30 March 1995
The Babraham Institute & St Catharine's College, Cambridge
Main speakers include: A Bangham (Babraham), D Papahadjopoulos (San Francisco), V Skulachev (Moscow), R Pagano (Baltimore), L Leserman (Marseille), C Alving (Washington), G Lopez-Berestein (Houston), L Huang (Pittsburgh). Poster space is available and workshops will be held on membrane topology, gene therapy, product developments, drug delivery, clinical dimension and skin care. Further details from: Zeller MacDougall, The Babraham Institute, Babraham, Cambridge CB2 4AT, tel (0223) 832312, fax (0223) 833676. ★★★

British & European Federation of Endocrine Societies
14th JOINT MEETING
27-30 March 1995
Warwick
Symposia to include: nuclear receptors, the calcium receptor, role of growth factors in mammary growth, global fertility control, neuroendocrine control by excitatory amino acids and nitrous oxide, the endocrinology of the desperately ill, intracellular signalling of metabolic peptides. Clinical management workshops to include: thyroid cancer, Turner's syndrome, hyponatraemia and diabetes insipidus. There will also be methods updates sessions and a molecular endocrinology workshop. Further details from: Janet Crompton, British Endocrine Societies, 17/18 The Courtyard, Woodlands, Almondsbury, Bristol BS14 4NQ, tel (0454) 619036, fax (0454) 616071 ★★★

International Symposium
CALCIUM SIGNALLING IN INFLAMMATORY CELLS
30-31 March 1995
University of Bath
Recent advances in molecular mechanisms that regulate intracellular calcium mobilisation and the influx of calcium across the plasma membrane in inflammatory cells will be the focus of this symposium. The programme has been structured to provide fora for discussion for both invited presentations and free communications. Further details from: Dr C T Murphy, Dept of Pharmacology, School of Pharmacy & Pharmacology, University of Bath, Avon, BA2 7AY, tel (01225) 826826 Ext 5644, fax (01225) 826114, Email c.t.murphy@bath.ac.uk ★

The Physiological Society
Human Physiology Special Interest Group Workshop
BLOOD SAMPLING AND ANALYSIS
6-8 April 1995
University Medical School, Aberdeen
An intensive course covering theoretical and practical issues relating to correct blood sampling and handling procedures and to analytical techniques relevant to workers in human and exercise physiology. Most of the course will be devoted to "hands on" experience. Further details from: Dr R J Maughan, University Medical School, Foresterhill, Aberdeen AB9 2ZD, tel (01224) 681818 Ext 52482, fax (01224) 662990, Email oem023@abdn.ac.uk *See page 8 for further information.* ★

International School of Biophysics "A Borsellino" - a NATO Advanced Study Institute
23rd Course
NEUROBIOLOGY
2-12 May 1995
Erice, Sicily
Topics: discussion and presentation of ionic channels, sensory transduction and information processing in the brain. Main speakers will include: B U Kaupp (Germany), W Stuehmer (Germany), E Neher (Germany), D Baylor (USA), T D Lamb (UK), J Ashmore (UK), J Nicholls (Switzerland), D Hubel (USA), S Zeki (UK). Deadline for registration: 20 March 1995. Further details from: Prof Vincent Torre, Dipartimento di Fisica, Universita di Genova, Via Dodecaneso 33, 16146 Genova, Italy, tel & fax (00 39) 10 353 6311, Email torre@genova.infn.it ★

Federation of the European Chapters of the International Association for the Study of Pain
FIRST MEETING
18-21 May 1995
Verona, Italy
A meeting of interest to clinical neurologists and neuroscientists involved in pain research and treatment. Further details from: Paolo Marchettini, MD, Centro di Medicina del Dolore, Istituto Scientifico H San Raffaele, Via Prinetti 29, 20127 Milano, Italy, fax (00 39) 2 2643 3394 ★

Royal Microscopical Society
CYTO 95
3-6 July 1995
University of Southampton
A new series of bi-annual international scientific meetings to take a fresh and critical look at areas of the life sciences currently under intense research. The new circular with provisional programme is now available. Further details from: The Royal Microscopical Society, 37/38 St Clements, Oxford OX4 1AJ, tel (01865) 248768, fax (01865) 781237 ★★

A Physiological Society Symposium
CA^{2+} STORES IN CELLS AND DEFECTS IN EC COUPLING
11 July 1995
St Catherine's College, Oxford
To include a contributed session, with speakers selected on the basis of contributed abstracts, as well as invited speakers. Posters are welcome. The symposium is open to anyone interested but a registration fee of £30 will be charged to participants who are not Members of The Physiological Society. Further details from: Dr C C Ashley, University Lab of Physiology, Parks Road, Oxford OX1 3PT, tel (01865) 272493, fax (01865) 272117 ★

International Union of Biological Sciences
4th International Congress of COMPARATIVE PHYSIOLOGY AND BIOCHEMISTRY
6-11 August 1995
Birmingham
Further details from: Moira Wilson, Universal Conference Consultants, China Court Business Centre, Ladywell Walk, Birmingham B5 4RX, tel (021) 622 3644, fax (021) 622 2333 ★★★

European Society for Photobiology
6th ESP 95
2-9 September 1995
Churchill College, Cambridge
The programme will cover all aspects of photobiology but there will be a very strong photomedicine content. Further details from: Dr Paul Heelis, Faculty of Science, Health & Medical Studies, The North East Wales Institute, Plas Coch, Mold Road, Wrexham, Clwyd, LL1 2AW, fax (01978) 290008, Email heelisp@newi.ac.uk ★

Marine Biological Association
MICROELECTRODE TECHNIQUES FOR CELL PHYSIOLOGY
6-20 September 1995
MBA Laboratory, Plymouth
This workshop, sponsored by The Physiological Society, is intended mainly for postgraduate students from any biological discipline who wish to learn these techniques for use in their research; postdoctoral workers will also be considered. Deadline for applications: 30 April 1995. Further details from: Dr D Ogden, Microelectrode Techniques, National Institute for Medical Research, The Ridgeway, London NW7 1AA. *See page 43 for further information.* ★

Federation of the European Physiological Societies
FIRST CONGRESS
9-12 September 1995
Maastricht, The Netherlands

Closing date for submission of abstracts: 10 April 1995. Further details from: Conference Agency Limburg, PO Box 1402, 6201 BK Maastricht, The Netherlands, tel (00 31) 43 619192, fax (00 31) 43 619020. *See page 44 for further information.* ★

Polish Neuroscience Society
2nd International Congress
13-16 September 1995
Cracow, Poland

Basic topics: neuroactive amino acids, neuropeptides, myelogenesis, brain & spinal cord plasticity, brain injury, neuroimaging, melatonin, memory & learning. Further details from: Dr K Ossowska, Institute of Pharmacology, Polish Academy of Sciences, 12 Smetna St, 31-343 Krakow, Poland, tel (00 48) 12 37 40 22, fax (00 48) 12 37 45 00 ★★

Journal Back Volumes

Dr John Kemm, a former Member of the Society, would like to dispose of his Member's copies of *The Journal of Physiology* (1975-1991) and his set of the *Journal of Endocrinology* (1973-1988). He can be contacted on (0121) 456 5600 and would be particularly pleased to hear from a Third World medical school. Merton College Library would also like to dispose of its copies of *The Journal of Physiology* (1949-1987); anyone interested should contact Dr Sarah Bendall on (01865) 276308.

One of the Remotest B+Bs in Britain

Members may be interested to know that Dr Peter Kohn, recently retired from the Sheffield Dept of Biomedical Science, will now be offering Bed & Breakfast in the Highlands at what his predecessors described as "the remotest B&B in Britain" at Kerrachar, Kylesku-by-Lairg, Sutherland IV27 4HW, tel (01571) 833 288 ★★

Overseas Members

Overseas Members receive their Meetings packets only a short time before a Scientific Meeting. As a consequence, making travel arrangements and reservations can be a problem. To help Overseas Members, booking forms for Meetings can be requested in advance of the usual delivery date from the Meetings Secretary's office.

Visiting Scientists

Foreign visitors of the status of at least postgraduate student, working in laboratories of Members of the Society, may be made "Visiting Scientists" by the Society. They are then eligible to receive details of the Society's Scientific Meetings and to attend those Meetings for one year. The names of such persons, with the dates of their visits and a letter of support, should be sent to the Foreign Secretary, Prof O H Petersen, The Physiological Laboratory, University of Liverpool, PO Box 147, Liverpool L69 3BX.

Designated Sessions at Scientific Meetings

The Society has agreed that part of each Meeting can be set aside in advance for a Designated Session on a special topic. Such Sessions will run in parallel with the other sessions of Communications. Suggestions from Members for Designated Sessions at future Meetings can either be made directly to the Special Interest Group organiser or to the Meetings Secretary.

The Benevolent Fund of The Physiological Society

The Fund is to be used:

"... for the purpose of assisting Members of the Society and staff and former staff (who by the nature of their employment can be considered to have contributed to the advance of physiology) employed at teaching research and industrial establishments concerned with the advancement of physiology who are in necessitous circumstances and the wives husbands widows widowers children and other dependants of such persons (hereinafter called "the Beneficiaries")..."

The Trustees have the powers:

"(i) to make weekly or other periodical allowances;
(ii) to make grants and loans (with or without interest) including grants and loans for training or other educational purposes of such amounts and subject to such conditions as the Committee shall from time to time decide;
(iii) to establish and maintain homes and hostels and make grants or pay subscriptions towards the establishment and maintenance of homes and hostels;
(iv) to make grants or allowances for the purposes of medical treatment or care;
(v) to pay subscriptions and make donations to hospitals homes or institutions having amongst their objects the succour of such persons"

Please contact one of the Trustees if you know of anyone whom the Fund might be able to help.

Animal Legislation

The Committee of The Physiological Society has an advisory group that monitors the working of the Animal (Scientific Procedures) Act 1986. Members are asked to provide any relevant information relating to its local implementation to:

Tony Angel, Dept of Biomedical Science, The University, Sheffield S10 2TN, tel (0742) 701442

Cecil Kidd, Dept of Biomedical Sciences, Marischal College, University of Aberdeen, Aberdeen AB9 1AS, tel (0224) 640618/273004

Stephen Lisney, Dept of Physiology, School of Medical Sciences, University Walk, Bristol BS8 1TD, tel (0272) 303461

Membership of The Physiological Society

The minimum criteria for consideration by the Committee for inclusion on the Membership ballot (as Ordinary or Foreign Members) are:

1 A candidate must have given at least one Communication or Demonstration in person to the Society.

2 A candidate must have published at least one full research paper on a physiological subject in a reputable journal. This paper will form part of the documentation considered by the Committee, so that in the case of a paper that has more than one author details of the contribution made by the candidate must be provided.

3 The candidate must obtain the signatures of SIX Members of the Society who will sign a statement declaring that the candidate is well known to them, is practising in physiology or a cognate subject and is likely to remain so, fulfils the criteria for Membership and is likely to benefit from Membership of the Society and take part in its activies.

There are currently two classes of Membership for which individuals can be considered. Candidates for Ordinary Membership will reside in the British Isles or have worked for a substantial period in the British Isles or have served the Society in some significant way. Candidates for Foreign Membership will normally reside outside the British Isles.

Full details and forms are available from the Administrator (Membership), The Physiological Society, Administration and Publications Office, PO Box 506, Oxford OX1 3XE, tel (0865) 798498, fax (0865) 798092.

UK Telephone Dialling Code Changes

The attention of Members resident overseas is drawn to the changes in UK dialling codes which take place with effect from 16 April. You will need to add the digit 1 at the beginning of the UK code. For instance, the Oxford code changes from 865 to 1865, so the Society's Administration Office number, as dialled from abroad, changes from +44 865 798498 to +44 1865 798498.

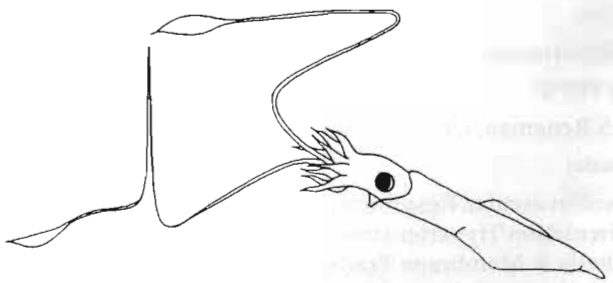
Five areas will have an entirely new code and an extra digit in front of the existing local number:

532 ****** becomes **113 2** **** Leeds**
533 ****** becomes **116 2** **** Leicester**
602 ****** becomes **115 9** **** Nottingham**
742 ****** becomes **114 2** **** Sheffield**
272 ****** becomes **117 9** **** Bristol**

There was a transitional period during which both the new and old codes could be used, so the 1994 edition of the *Grey Book* already shows the new codes for Members and Society offices.

MICROELECTRODE TECHNIQUES FOR CELL PHYSIOLOGY

12th Workshop 6-20 September 1995



Information for applicants

The workshop provides intensive practical experience of a number of microelectrode, patch clamp and optical techniques applied to single cells. It is intended for postgraduate students, postdoctoral workers or established scientists wishing to apply these techniques in their research.

The following basic techniques are offered:

Two electrode voltage clamp	Patch clamp
Single electrode voltage clamp	Dye injection
Ion-sensitive microelectrodes	Fluorescent indicators

There are also lectures and demonstrations of electronics, computing, microscopy, bilayer recording, flash photohysis and single cell RT-PCR.

There are 16 places. Participants work in pairs and have the opportunity to do three three-day experiments in the two weeks. In addition, lectures and practical sessions of electronics, data acquisition & computer analysis and microscopy will be given. Daily lectures given by teachers and visiting lectures cover the basic techniques taught and certain specialised topics. A copy of the *Plymouth Microelectrode Handbook* will be provided.

The course fee is £975. This includes tuition, accommodation close to the laboratory for 14 nights, breakfast, lunch (in the lab each day) and an allowance for an evening meal. Participants are responsible for their own travel arrangements.

Funding

MRC, BBSRC and NERC Studentships

Applicants with Research Council studentships are funded once accepted for the workshop. Simply state you have a studentship in your application. Do not apply to the Research Council directly.

Dale and Rushton Funds of The Physiological Society

Help with funding (up to £500) is usually available for young physiologists working in the UK. If you wish to apply, simply indicate this in your application to the workshop. Do not apply to the Society directly: application will be made on behalf of candidates accepted for the workshop.

Bursaries

The workshop can provide some half-bursaries. If you think you will have difficulty finding the full fee, please indicate this in your application.

How to apply

There is no form. Give a concise description of your research, your reasons for wishing to attend and your experience of techniques taught on the workshop. List in order of preference four techniques you would like to learn.

Provide a brief CV, including a list of your publications (two sides maximum, no reprints please).

The application must be accompanied by a letter of recommendation from an academic referee, preferably your PhD supervisor or head of your laboratory. This letter should indicate how your career, the laboratory in which you work and the area of research that you intend to pursue will benefit from your participation in the workshop.

Indicate your likely source of funding.

Applications will be acknowledged on receipt. Please provide two self-addressed envelopes. A meeting to assess applications will occur during May and all applicants will be notified of the outcome in May.

Apply to: David Ogden, Microelectrode Techniques, NIMR, The Ridgeway, London, NW7 1AA, UK

Closing date for applications: 30 April 1995

MICROELECTRODE TECHNIQUES

The Plymouth Workshop Handbook (2nd edition)

More informative than ever, this new edition includes both practical and theoretical aspects written by teachers at the famous and popular Plymouth Workshop, on the latest developments in electrophysiology. 450 pages of essential information. Casebound: Price £25 (US $38) plus £4 (US $6) postage.

Topics covered:

Using microelectrodes
Voltage clamp techniques
Separation and analysis of macroscopic currents
Patch clamp techniques for single channel and whole cell recording
An introduction to the methods available for ion channel reconstitution
Practical analysis of single channel methods
The interpretation of single channel recordings
Computers
Patch clamp recording from cells in sliced tissues
Analysis of whole cell currents to estimate the kinetics and amplitude of underlying unitary events relaxation and "noise" analysis
Ion-sensitive microelectrodes
Intracellular ion measurement with fluorescent indicators
Microelectrode techniques in plant cells and microorganisms
Techniques for dye injection and cell labelling
Flash photolysis of caged compounds
Microelectrode electronics

Order enquiries to: Subscriptions Dept, The Company of Biologists Ltd, Bidder Building, 140 Cowley Road, Cambridge CB4 4DL, UK, tel (01223) 426164, fax (01223) 423353.

The First Congress of the
Federation of the European Physiological Societies

9-12 September 1995

to be held in

Maastricht, The Netherlands

Organised by FEPS

Chairman, Organising Committee: **Robert S Reneman**, University of Limburg

Topics include:

- Autonomic Function & Dysfunction - Cardiovascular/Respiratory Control, Bioregulation - Cellular Neurophysiology - Circulation/Hypertension - Comparative Physiology - Developmental Physiology - Epithelia & Membrane Transport - Exercise Physiology - Gastrointestinal Physiology & Pathophysiology - Heart & Cardiac Muscle/Cardiac Failure - Higher Sensory Functions - Ion Channels - Microvascular & Endothelial Physiology - Muscle Physiology - Renal Physiology & Pathophysiology - Respiratory Physiology & Pathophysiology - Smooth Muscle - Somatosensory Physiology

Registration fee not more than Dfl 550

Students get discount of about 40%

The organisers invite submission of abstracts for oral and poster presentation
by 10 April 1995

Additional information including registration and abstract materials are available from:

Conference Agency Limburg
PO Box 1402
6201 BK Maastricht
The Netherlands
Tel: +31 43 619192
Fax: +31 43 619020

NORTHWEST AIRLINES TRAVELLING FELLOWSHIPS

Northwest Airlines have agreed to provide three Northwest Airlines Travelling Fellowships to The Physiological Society to encourage and enable academic biomedical interchange between the UK and USA.

The Fellowships are aimed at young research workers (up to and including lecturer travel) who wish to visit a centre of excellence in the United States. Travel must be made between 1 October 1995 and 31 March 1996.

These Fellowships will be awarded to young Members or Affiliates by the Grants Sub-Committee, in conjunction with Northwest Airlines. For ease of administration, candidates will be considered in conjunction with the Rushton Fund and Affiliate Travel Grant Scheme. These Fellowships are considered particularly prestigious, being awarded to those applicants achieving the highest ranking.

Academic Fares

Northwest Airlines have arranged special fares for academics travelling to the USA.

- **No Saturday night stay is required for a discounted APEX fare**
- **Purchase a full economy ticket for travel Tuesday to Thursday and upgrade to World Business Class**

For further information on these fares, or to make a booking, call Northwest Airlines on (01293) 561000 quoting the Academic Fares programme.

For Office use:		
A	R	L

Confidential

APPLICATION FORM FOR AFFILIATION TO THE PHYSIOLOGICAL SOCIETY

Surname (IN CAPITALS) ..... Forenames (IN CAPITALS) .....

Special Scientific Interest: (eg thesis title or postdoctoral project) .....

.....

Interests: IUPS classes ..... / ..... / .....
(See overleaf for codes)

Groups: .....
(See overleaf for codes)

Photograph of Candidate

Work address .....

.....

Tel ..... Fax .....

Email address ..... Date of Birth .....

Present Course / Postdoctoral Position .....

Qualifications:

Degree	Date	Subject	Awarding Institution

Please delete as applicable:

- I wish to receive Notices, Programmes & *Magazines* only.
- I wish to receive precirculated Abstracts as well as Notices, Programmes, & *Magazines*..

I enclose a cheque for £ ..... payable to The Physiological Society.

I confirm that the information given above is accurate and up to date and that I hereby authorise The Physiological Society to hold this, and such other personal information as is supplied to the Society by me or my authorised agents or representatives in future, in machine-readable form for use for the purposes registered under the Data Protection Act 1984.

Signed ..... Date .....

Members of The Physiological Society proposing Candidates should read the Guidelines overleaf and sign the following statement.

I hereby confirm that the Candidate:
(a) is either a postdoctoral worker or registered for a higher degree in Physiology or a cognate subject, and
(b) is a person suitable for admission to Society Meetings.

Name (IN CAPITALS) ..... Signature of Proposer .....

Tel ..... Fax ..... Date .....

Address .....

.....

On completion, please return this form to: The Physiological Society (Affiliation), PO Box 506, OXFORD OX1 3XE, (UK).

GUIDELINES TO MEMBERS OF THE PHYSIOLOGICAL SOCIETY

PROPOSING CANDIDATES FOR AFFILIATION

This form of association with the Society is intended for physiologists still in the early stages of their careers working in laboratories in the UK, Eire or **abroad**. It is open to postgraduate students registered for a higher degree in Physiology or a cognate subject and to postdoctoral workers who are not yet Members of the Society. **It is expected that postdoctoral workers proposed as Affiliates will normally be (a) within the first five years of attaining a first professional qualification (PhD or medical degree) or (b) awaiting the outcome of their proposal for nomination for election to Membership of the Society.**

The Committee has authorised the Committee Secretary to consider and accept or reject proposals for Affiliation to the Society as they are received throughout the year, so that these can be processed quickly. The Committee Secretary regards himself as free to withdraw a proposal and return the papers to the Proposer.

Affiliation is for a term of five years in the first instance . Affiliation must be renewed by payment of the appropriate fee at the start of each year (which for this purpose is the academic year, ie October to September). For administrative convenience, Affiliates registered after October will have to pay for the full year. The fees are determined from time to time by the Treasurer; they are currently:

	UK & Eire	Europe	Non-Europe
With Abstracts	£10	£30	£35
Without Abstracts	£5	£15	£20

All Affiliates receive copies of programmes, notices and the Society's Magazine. Affiliates can attend Meetings in their own right but must be introduced by a Member of the Society when giving a Communication or Demonstration. Affiliates are not Members of the Society and do not have the right to vote at its General Meetings.

Field of Interest:

You may specify up to three fields of interest.

01	Anaesthesia
02	Anatomy & Embryology
03	Biochemistry
04	Biophysics
05	Biomedical Engineering
06	Blood
07	Cardiovascular
08	Cellular & Tissue
09	Comparative Physiology
10	Electrolyte & Water Balance
11	Endocrines
12	Energy Metabolism & Temperature Regulation
13	Envirmonment
14	Enzymes
15	Gastrointestinal
16	General Physiology
17	Immunology
18	Liver & Bile
19	Lipids & Steroids
20	Microbiology
21	Minerals, Bone & Teeth
31	Molecular Physiology
22	Muscle & Exercise
23	Neuroscience
24	Nutrition & Food
25	Pathology
26	Pharmacology
27	Radiation
28	Renal
29	Reproduction
30	Respiration

Special Interest Groups Current Codes

AF	Autonomic Function
BB	Blood-Brain Barrier
CC	Cardiovascular/Respiratory Control
CI	Comparative & Invertebrate Neuroscience
CN	Cellular Neurophysiology
CP	Comparative Physiology
DP	Developmental Physiology
EM	Epithelia & Membrane Transport
GI	Gastrointestinal Tract
HC	Heart/Cardiac Muscle
HI	History of Physiology
HP	Human Physiology
IC	Ionic Channels
ME	Microvascular & Endothelial Physiology
MC	Muscle Contraction
NE	Neuroendocrinology
PP	Placental & Perinatal Physiology
RP	Renal Physiology
RE	Respiratory Physiology
SC	Sensorimotor Control
SF	Sensory Functions
SM	Smooth Muscle
SP	Somatosensory Physiology

11/94

The Medical School, University of Birmingham

At the reception for the Ukrainian Ambassador, (from left to right) Roger Green, Dr S V Komissarenko (the Ambassador) and Ole Petersen

Laurence Smaje and Janice Marshall

Martin Harris and Graham Dockray

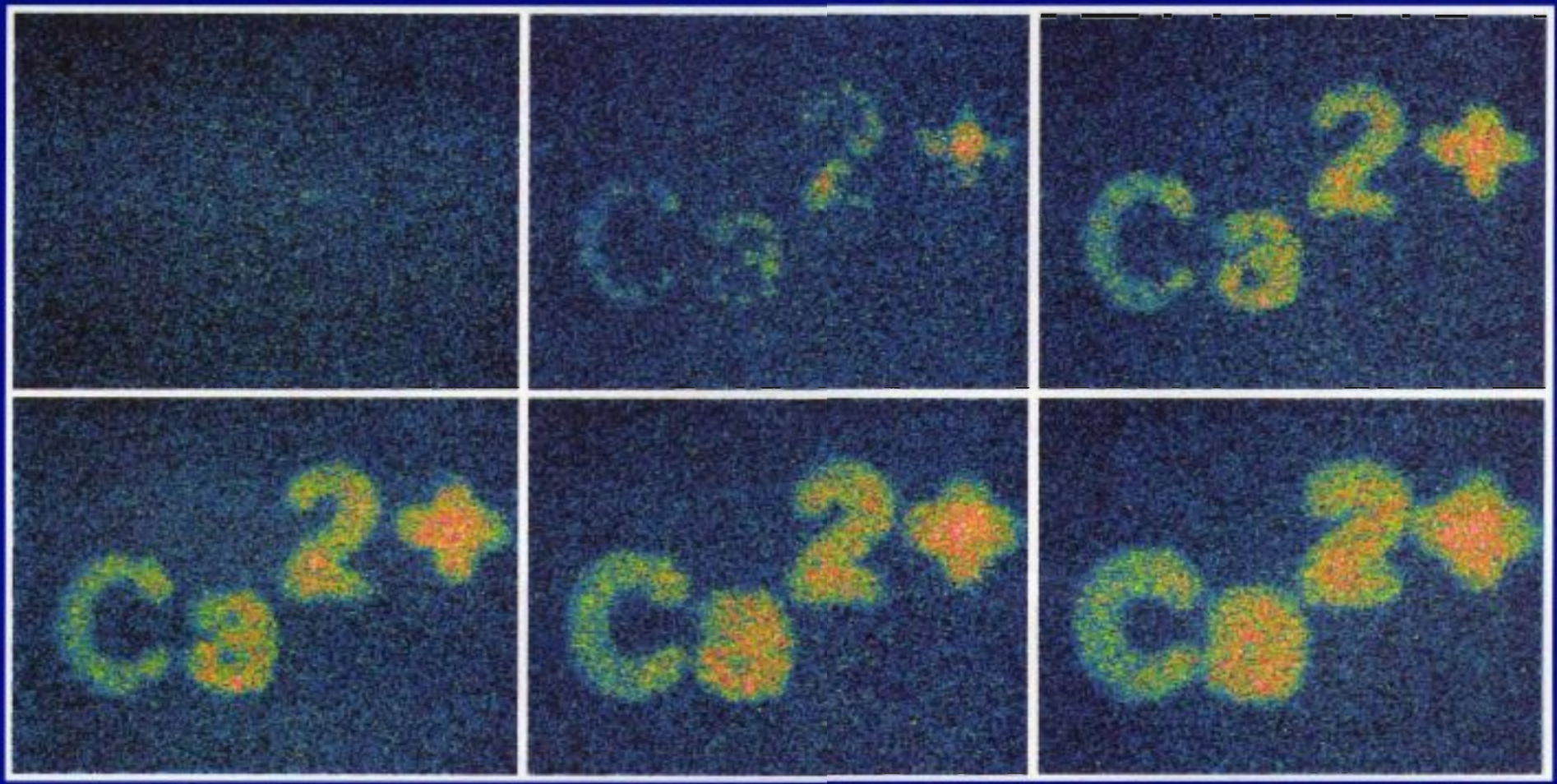
Photography by Deborah Paul and Saffron Whitehead

Posters and stands at the Meeting

.....with new concepts...

...and interesting demonstrations

And to finish off...a knees up at the Barn Dance, after the Society Dinner



Cell writing
The series of sequential video frames (30s⁻¹) shows liberation of intracellular calcium in a Xenopus oocyte in response to photorelease of inositol trisphosphate from a caged precursor. Ultraviolet photolysis light was focused onto the oocyte through a mask to form the characters "Ca^{2+}", and the resulting localised liberation of calcium ions from intracellular stores was imaged using a Noran Odyssey confocal microscope to monitor fluorescence of the indicator dye calcium green-5N. The resolution of the characters is in part determined by the spacing between calcium stores in the oocyte which, at about 6µm, is appreciably better than achieved by a 600 dpi laser printer!

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