

## LEICESTER RESEARCH GRANTS AND BOOKS PRESS COVERAGE OF RESEARCH GRANTS

The *Bulletin* is sent to the media as well as other external contacts. As a result, details of grants appearing in this section may stimulate press interest. The Press Office may also actively seek media coverage of particular grants detailed in this section. It is therefore the grantholder's responsibility to request that any grant of a sensitive/confidential nature be excluded from the *Bulletin*.

This can be done by contacting the Research Office, which has responsibility for compiling this Research section (2495).

### ARCHAEOLOGY

**Prof G W W Barker**

**Archaeology and Desertification in Wadi Faynan, Jordan**

£13,535 *British Academy*

**Prof G W W Barker, Prof D Mattingly**  
**Archaeology and Desertification in Wadi Faynan, Jordan**

£5,000 *Council for British Research in the Levant*

The description below is for the above two awards:

The Wadi Faynan Landscape Survey is an interdisciplinary study of the landscape evolution of the Wadi Faynan in southern Jordan, as a contribution to understanding processes of desertification and environmental degradation in arid lands. These processes have been much debated from single-discipline perspectives by archaeologists, historians, and geographers, but the rationale of this project has been to bring together an inter-disciplinary team of archaeologists and environmental scientists from a dozen UK universities within a single integrated research framework. The Wadi Faynan was the scene of some of the earliest farming (c10,000 BC) and metallurgy (c5000 BC) in the world, the effects of which had small-scale impacts on vegetation. Roman mining, however, was on a massive scale, the huge workforce being fed by intensively managed systems of floodwater irrigation farming. Palynology has shown that the Roman landscape was stripped entirely bare of timber, and geochemistry that it was massively polluted by the mining, the residues of which still poison the flocks and crops of the Bedouin who live in the area today.

The fieldwork took place between 1996 and 2000. The present grants are towards the final publication of the results of the project as a series of monographs, particularly for library and editing work in Amman and GIS analysis at Leicester.

### BIOCHEMISTRY

**Prof D R Critchley**

**Role of Cytoskeletal Protein Vinculin in Focal Adhesion Dynamics and Cell Motility**

£45,954 *Cancer Research Campaign*

**Dr A Munro**

**Structure and Function of Sterol Demethylases from Mycobacterium Tuberculosis and Streptomyces Coelicolor**

Tuberculosis has re-emerged as a major threat to human health, prompting the World Health Organization to declare the rapid spread of multi-drug resistant strains a "global emergency". Recent outbreaks in Leicester demonstrate this deadly disease is no longer as a third world problem. Novel drug strategies are desperately required to combat *M. tuberculosis* – the pathogen that causes TB. It was discovered recently that both *M. tuberculosis*

and *S. coelicolor* (a "safe" model organism for the pathogen) contain enzymes involved in sterol metabolism. Sterols were considered to be found only in higher organisms. Since the best known anti-fungal drugs inhibit sterol synthesis pathway enzymes, the possibility that a similar strategy might be used to fight *M. tuberculosis* becomes clear. In this work, we will investigate binding of known drugs to the bacterial enzymes, and evaluate their potential as anti-mycobacterials. We will determine structures of the sterol pathway enzymes from both bacteria, and use this information for the design of new, improved drugs that may provide the solution to TB.

£147,392 *BBSRC*

**Dr M Pfuhl**

**Structural Investigation of the Interaction of Cardiac Myosin Binding Protein C with  $\gamma$ -myosin S2 – A Site of Mutations Linked to Familial Hypertrophic Cardiomyopathy**

£112,585.81 *British Heart Foundation*

### BIOLOGY

**Prof P Helsom-Harrison**

**Molecular Analysis of Chromosomal Functional Elements**

The centromere of chromosomes is a critical structure where the microtubules bind and direct chromosome division and assortment during mitosis and meiosis. While the function, morphology and key protein components are virtually universal among higher organisms, there is tremendous variation in the DNA sequence. With partners from Universities of Okayama, Yokohama and Kyoto, we are investigating the nature and organization of the DNA sequences at the centromeres of plant species. Together, we are studying the sequences in a range of different plants, and hope that this comparative approach will reveal the critical and common features required for function. Our work in Leicester will use a combination of bioinformatic approaches with Arabidopsis and other sequence data with experimental methods to investigate DNA conformations and DNA:protein binding. We aim to identify and characterize DNA motifs or domains that are critical for centromere function, leading to development of key components of artificial chromosomes.

£29,388 *Japan Science and Technology Corporation (CREST)*

**Dr R P Jarvis**

**Bursary – Fine Genetic Mapping of the *iae2* Mutation in Arabidopsis**  
**Student – Sandu Bala**

£1,500 *Nuffield Foundation*

### CARDIOLOGY, CHEMICAL PATHOLOGY

**Dr A M Gershlick, Prof Samani, Dr Goodall**

**Localising Thrombolytic Agents by Targeting Recently Formed Thrombus: In-Vitro Studies to Develop Effective Antigen Directed Conjugates**

When a patient has a heart attack it is usually because one of the coronary arteries has become blocked with clot and the heart muscle becomes starved of blood. Although thrombolytic (so-called 'clot busting') drugs have improved the outcome for patients after heart attacks, they are not always optimally effective in that they don't always open the coronary artery up. Attempts to make them more potent can lead to side effects such as bleeding, and may even cause strokes. These studies will attempt to maximise the value of the clot busting drugs by targeting them to the coronary artery which will not only increase their concentration at the site of blockage and therefore increase their potency, but also means that the clot busting drug will not be active elsewhere reducing the risk of bleeding side effects. We plan to do this by raising antibodies against the fresh clot in the coronary arteries which we will then combine to a standard 'clot busting' drug to see whether the combined agent localises to the fresher, heart attack causing clot. The older clot elsewhere in the body should be unaffected by the localised 'clot busting' drug combination with a potential reduction in unwanted bleeding.

**Value Reported in June/July Bulletin**

### CELL PHYSIOLOGY & PHARMACOLOGY

**Dr N Brunskill**

**Mechanisms of Fatty Acid Induced Tubular Dysfunction in Proteinuric Renal Disease**

In many patients with kidney disease progressive failure of kidney function is observed, and eventually many affected individuals will require dialysis treatment. Dialysis treatment is an imperfect replacement for kidney function and if possible it would be desirable to prevent declining kidney function. Many kidney diseases are associated with a build up of fat in the kidney which is damaging to the cells of the organ. The result is the death of kidney



University of  
**Leicester**



cells which cannot be replaced. The aim of the grant is to explore how accumulating fats may injure the kidney, and to attempt to devise therapies to prevent fat induced kidney damage.

£82,845 National Kidney Research Fund

#### Dr J Mitcheson

##### **An investigation of Why some Drugs Block HERG Potassium Channels and Cause Drug-Induced Long QT Syndrome**

Cardiac arrhythmias are one of the major causes of death in the developed world. Of increasing concern to clinicians and the pharmaceutical industry is the realization that several commonly used drugs can, as a side effect, cause arrhythmias and sudden death. Ion channels in the cell membranes of cardiac muscle cells orchestrate the electrical activity that regulates normal rhythmical beating of the heart. Recent research has demonstrated the critical physiological role of a potassium channel called HERG and its importance as the molecular target for drugs associated with arrhythmias. The aim of this project is to understand the mechanisms of drug block, characterise the structural properties of HERG that make it a target and determine how to modify drugs so that they maintain a high potency for the intended therapeutic target but no longer block HERG. The work is to be done in collaboration with Pfizer with the clear aim of improving patient safety by eliminating unwanted cardiac side effects in new drugs.

£249,965 Pfizer Limited

#### **CENTRE FOR MASS COMMUNICATION RESEARCH**

##### **Mr A Hansen**

##### **Global Environmental Reporting in the Mass Media: A Comparative Study of Japan and the UK**

The purpose of the grant is to cover costs relating to the retrieval of media coverage and travel associated with joint research meetings and interviewing. The collaborative research is scheduled to run from April 2001 to April 2002.

£2,350 Hosono Bunka Foundation

##### **Dr K Jordanova**

##### **Reshaping Film Making in Eastern Europe Since 1989: New Image Markets**

£16,245 Leverhulme Trust

#### **CHEMISTRY**

##### **Dr S J Baker**

##### **Vacation Scholarship – Synthesis Evaluation of Protein-Protein Interaction Inhibitors – Student – Ms Vink**

£1,160 Wellcome Trust

##### **Dr P Dyer**

##### **Undergraduate Bursary – Guanidinate-Derived P-N Ligands for Metal-Catalysed C-C Bond Formation**

The purpose of this award is to give research experience to an undergraduate student in order to encourage them to consider and possibly pursue a career in research.

Project Background: Many large-scale chemical syntheses and transformations carried out industrially involve the use of well-defined, soluble transition metal catalysts not only to initiate the reaction, but to ensure that the desired product is obtained selectively, in an efficient manner, with minimal waste/by-product(s). The control these

catalyst systems afford is derived from the ligands, the often largely organic scaffold strongly bound to the metal, which confers both solubility and reaction selectivity. Thus, to 'tune' a catalyst to a particular transformation, chemists most commonly target their efforts at modifying the ligand periphery, either through variation in the organic backbone or metal-ligand binding. This project aims to combine these two areas and prepare a family of innovative aminophosphine-imine chelating ligands derived from readily available guanidates.

£1,114 Nuffield Foundation

##### **Dr S Handa**

##### **Bursary – A Novel Synthesis of Chiral Amino Acids – An Achiral Auxiliary with a Chiral Memory – Student – Mr Dominic Laventine**

£1,374 Nuffield Foundation

##### **Prof J Holloway**

##### **Supplement – Franco-British Joint Research Programme 2000**

£1,080(supp) British Council

##### **Dr P Monks**

##### **ENVISAT Data Use Programme**

In October 2001, the European Space Agency will launch ENVISAT. ENVISAT represents over a decade of work and is one of the largest and most fully instrumented satellites for monitoring the earth from space. The small contract from the British National Space Centre via ESYS consulting represents national efforts being made to ensure proper awareness, access and usage to data and products from this potentially ground breaking satellite. Work is being carried out by the multidisciplinary Earth Observation Science group to identify user communities and their requirements for ENVISAT data in the area of chemical species in the atmosphere.

£5,000 ESYS Consulting plc

##### **Dr A Stuart**

##### **Supplement – Fluorous-Derivatized Phase Transfer Catalysts (Expense Claim)**

£3,849(supp) Royal Society

##### **Bursary – Wittig Reactions of Fluorous Labelled Phosphonium Salts – Student – Mr Phillip Griffiths**

£1,300 Nuffield Foundation

#### **CHEMISTRY, PHYSICS & ASTRONOMY**

##### **Dr G A Solan, Dr C Binns**

##### **Paramagnetic Nano-scale Assemblies Based in Imido Ligand Scaffolds**

£66,137 EPSRC

#### **CHILD HEALTH**

##### **Dr S Kotecha**

##### **Supplement – The Search for Intrauterine Risk Factors for the Development of CLD**

£4,000(supp) Leicester Royal Infirmary

##### **Prof M Silverman**

##### **Supplement – Management of Asthma in Schoolchildren: Role of Montelukast and Salmeterol at Step 3 of BTS Guidelines: A Double-Blind Randomised Controlled Trial using Exercise-Induced Asthma as Outcome**

£10,000(supp) Glaxo Wellcome

#### **CHILD HEALTH, HAMMERSMITH HOSPITAL**

##### **Prof D J Field, Dr M Horan, Prof D Edwards**

##### **Supplement – Pilot Investigation of**

##### **Hypothermia in Neonates Receiving Extra Corporeal Membrane Oxygenation (ECMO)**

For the last 18 months we have been investigating the safety of cooling babies who require ECMO (prolonged support from an artificial heart lung machine). Babies referred for this type of care are very ill and we know that there is a significant risk they will show signs of brain damage as they grow older. Research carried out has suggested that mild cooling can help prevent such damage. The work to date, which has all been funded by The British Heart Foundation, has gone well and no problems have been encountered. This extension of funding provided by this new grant will allow us to complete this phase of the work and enable us to plan for the next stage during which we will compare children who either have or who have not been cooled, to see whether later outcome really is better.

£18,721(supp) British Heart Foundation

#### **ECONOMICS**

##### **Prof P Demetriades**

##### **Money, Macro and Finance Research Group (MMF)**

£12,000 ESRC

#### **EDUCATION**

##### **Prof P Cooper**

##### **The Effectiveness of Nurture Groups**

£40,752.47 Nuffield Foundation

##### **Dr R J Watling**

##### **Managing and Researching Urban Partnerships – Research Seminar Series**

This new seminar series is seeking to provide a forum where practitioners and academics working in the fields of education, health, housing, social policy and urban regeneration can debate relevant theory and practice.

We will be holding six seminars, which will enable core members to work with an appropriate set of specialist practitioners, researchers and service users in order to debate the key themes of: Partnership Agendas; The Nature of Partnerships; Partnerships, Professionals and Public; Measuring Impact; Equality and Equity in Partnerships; and the Future of Partnerships.

The series will have a range of outputs suitable for a variety of academic and practitioner audiences including briefing papers, professional and academic journal articles, a book proposal and a website.

We would be pleased to hear from others working in this field.

£11,816.64 ESRC

#### **ENGINEERING**

##### **Dr S K Spurgeon**

##### **Development of an Intelligent Variable Structure Control Technique and its Applications**

Sliding mode control has received wide coverage from both the control theory and industrial application perspective. Its advantages in terms of performance specification, robustness to system uncertainty and insensitivity to external disturbance signals are well known. In addition, the design procedure is systematic and defined in terms of the inherent two-phase control motion: the sliding phase (where the system is constrained to exhibit dynamics specified by the designer) and the reaching phase (which occurs before the system state attains



the desired dynamics). However, some crucial issues relating to the application of sliding mode control remain.

In this project, practical issues relating to implementation of these control strategies will be considered.

£9,350 Royal Society

**Dr S K Spurgeon, Dr C Edwards**  
**Open Problems in the Area of Sliding Mode Control of Uncertain Possibly Nonminimum Phase Systems Using Output Information**

This research is concerned with the development of novel, theoretically sound nonlinear control techniques for application to nonlinear, complex and uncertain industrial processes. The theoretical research will focus on the further development of sliding mode control strategies based upon output information alone to enable the methodology, with its proven robustness properties, to be applied to systems which do not satisfy the criteria imposed by the results currently available in the literature. An investigation of associated problems in the sliding mode control of discrete time systems will also be undertaken. The applied research will focus on the production of a significant case study to demonstrate the efficacy of the underlying philosophy and the new design algorithms. The development of control laws for a nonminimum phase HIRM aircraft system will be considered with the goal of implementing them on a flight simulator.

£164,454 EPSRC

**ENGINEERING WITH VARIOUS INDUSTRIAL COLLABORATORS**

**Prof C Pollock**

**High Speed Generators for Micro Turbine Applications**

This project will develop a new flux switching generator system which is specifically designed for use with a high speed gas turbine at rotor speeds of up to 60,000 r/min. The proposed flux switching generator system will be a unique combination of an inductor alternator (dc field winding and ac armature winding both on the stator) and a new electronic regulation circuit for control of the output voltage.

The proposed generator system will overcome many of the disadvantages of alternative generators offering improved fault tolerance, greater mechanical rigidity, higher temperature operation and lower cost.

The project is in collaboration with Newage International in Stamford, Semelab plc in Lutterworth and Industrial Capacitors in Wrexham.

The project will run from 1/10/01 to 30/9/04.

£225,361 EPSRC

**EPIDEMIOLOGY & PUBLIC HEALTH**

**Dr S Ablett, Dr G Levitt, Ms C Weston**

**Assessment of Gonadal Function in Childhood Cancer Survivors**

The late sequelae from cancer treatment are becoming important issues for the increasing numbers of long term survivors and for newly diagnosed patients and their families who are seeking early information about the late effects of treatment.

The studies aims are threefold. Firstly to assess the gonadal function of patients treated with protocols containing Ifosamide as the only gonadotoxic agent,

from this assessment to define the risk factors for Ifosamide induced gonadal toxicity in both sexes. Lastly to obtain cohort to enable the collection of longitudinal gonadal function data.

The completion of this study will give unique information on the effect of this useful alkylating agent on gonadal function.

£5,948 Challenging Childhood Cancer and Leukaemia

**Prof M Clarke, Mrs E Draper**

**Supplement – Paediatric Intensive Care Study (Funding 2001/2002)**

£30,000(supp) NHS Executive Trent

**Dr M Dixon-Woods, Dr R Hsu**

**Local Evaluation of the Loughborough Walk-In Centre**

Twenty NHS Walk-in centres have recently been introduced as pilot sites throughout the UK, aiming to enhance convenient and appropriate access to health care. An evaluation of the pilot Walk-in Centre at Loughborough in Leicestershire is being undertaken, using a mix of qualitative and quantitative methods, with three objectives: to compare patterns of use of local primary care and emergency health services before and after the introduction of the Centre; to compare users' perceptions of local primary care and emergency health services in Loughborough before and after the introduction of the Centre; and to investigate the hypothesis that the introduction of a NHS Walk-In Centre alters the patterns of use and perceptions of local health services in ways that are detrimental to the workload of GP practices.

£15,000 Leicestershire and Rutland Healthcare NHS Trust

**Dr J Kurinczuk, Mrs E Draper**

**Regional Co-ordination of Antenatal Screening**

£126,000 Leicestershire Health

**Dr C McGrother**

**Supplement – Information Officer**

£39,184(supp) Leicester Frith Hospital

**EPIDEMIOLOGY & PUBLIC HEALTH, EPIDEMIOLOGY & PUBLIC HEALTH (UKCCSG)**

**Dr S Ablett, Dr J Kohler, Dr K Abrams**

**Supplement – European Infant Neuroblastoma Study**

£10,000(supp) Challenging Childhood Cancer and Leukaemia

**EPIDEMIOLOGY & PUBLIC HEALTH (UKCCSG)**

**Dr S Ablett**

**Supplement – UKCCSG Support (Salary to 31.3.01)**

£4,114.34(supp) Lisa Thaxter Trust

**Funding for Clinical Trials Monitor (BUI2-Saporin)**

£30,000 Leukaemia Busters

**EPIDEMIOLOGY & PUBLIC HEALTH WITH UNIVERSITY OF SHEFFIELD**

**Dr S Peet**

**Models of Delivery of Health Care to Older People in Long-Term Care: A Systematic Review**

£56,931 NHS Executive Trent

**GENERAL PRACTICE**

**Prof R H Baker**

**Supplement – Replacement Costs for Dr Lakhani**

£4,999(supp) Royal College of General Practitioners

**Mr K Stevenson, Prof R Baker**

**Best Practice in Clinical Audit**

£9,582 National Institute for Clinical Excellence

**GENETICS**

**Dr M Jobling**

**Supplement – The Y chromosome as a marker for the history and structure of human populations – Senior Research Fellowship in Basic Biomedical Science**

In humans, women have two X chromosomes, and men one X and one Y, which is responsible for initiating male development. Y chromosomes pass from father to son mostly unchanged, except for the slow ticking of mutational clocks common to all chromosomes. These mutations define paternal lineages, and by mapping their distributions in modern populations we can learn about population histories and structures – for example, the genetic impact of admixture – information crucial to the success of current attempts to identify genes involved in complex disorders. Our research also aims to assess the effects of natural selection on Y-chromosomal lineages, through studies of patients with infertility, and with testicular and prostate cancers. This grant supplement provides equipment for the high throughput analysis of Y-chromosomal lineages.

**Value Reported in May Bulletin**

**GEOLOGY**

**Dr T S Brewer, Prof P K Harvey**

**Interpreting the Volcanic Architecture of Selected Emperor Seamounts, and its Role in Testing the Motion of the Hawaiian Hotspot**

Hotspots are used, as a reference frame for plate motions and of particular importance is the bend in the Hawaiian-Emperor hotspot track. This bend has been used to estimate plume diameters and to place bounds on the convecting mantle that may deflect plumes. The objective of this proposal is to test whether the hotspot was fixed. This will be achieved by a combination of drilling (Leg 197), palaeomagnetic measurements and core-log integration, including the use of whole round core images. Reorientation of core samples and knowledge of the volcanic architecture is essential for the successful interpretation of the palaeomagnetic data.

£60,301.56 NERC

**Prof J Tarney**

**Landslide Management Along Water Supply Pipelines Using Remote Sensing and GIS Techniques**

£2,700 The British Council

**HISTORY**

**Dr J Coffey**

**Persecution, Religious Violence and Toleration in 17th Century Britain**

During the 17th century, England and Scotland were convulsed by bitter religious conflict and persecution.



Yet the period also witnessed a seminal debate over religious pluralism and toleration. This project aims to further our understanding of religious violence and toleration in the 17th century by engaging in several case studies: a study of the assassination of the Archbishop of St Andrews by militant Presbyterians in 1679; a comparative discussion of the role of religion in the English Civil War and the American War of Independence; and an analysis of the writings of John Goodwin, a radical London minister who published many works in defence of the English Civil War and religious toleration. At a time when religious conflict and violence have reemerged as significant issues in world politics, this project revisits the era when they were central concerns in Britain itself.

#### Value Reported in June/July Bulletin

#### Dr D C Gentilcore

#### Medical Charlatanism in Early Modern Italy – Hannah Visiting Professorship

The award of a Hannah Visiting Professorship, to be held at McMaster University, Canada, affords the rare luxury of a year's uninterrupted writing. I intend to devote my time to preparing my research on "Medical Charlatanism in Early Modern Italy", for publication with Oxford University Press. The book explores the often-troubled relationship between the elites of the medical community and those on its fringes, the "charlatans". In early modern Italy (1400-1800), charlatans offered health care to an extraordinarily wide sector of the population and the medical elites regarded them as a specific category of healer. And yet they have never been studied in their proper historical context over a long period. The records of the Italian medical tribunals allow me to do just that. From the licences issued to them we learn their place of origin, the remedies they proposed to sell (including the ingredients used in them), and so on. My "Charlatans Database" is based on these records and allows me to explore the routes these practitioners followed, the patterns of sale, fluctuating fashions in remedies and ingredients, and the changing attitudes of the medical elites.

£27,927 Associated Medical Services

#### LAW

#### Prof C Graham, Mr G Monti, Ms F Smith MLR Seminar Series

£7,051.70 The Modern Law Review

#### MATHEMATICS & COMPUTER SCIENCE

#### Dr J R Hunton

#### Fellowship – Homotopical Methods in Cantor Dynamics

In 1982 a mineral (an aluminium-manganese alloy produced by fast cooling) was discovered which showed perplexing behaviour in its atomic arrangement: it appeared crystalline in that it could be used to produce sharp X-ray diffraction patterns, and yet the rotational symmetries of those patterns showed that its atoms could not be arranged in any of the classical crystalline lattices. Such 'quasicrystals' have subsequently proved quite common and have led to the study of a new type of geometric pattern – so-called quasiperiodic patterns.

This Leverhulme Fellowship allows John Hunton to build on his existing research and on that of others, continuing a cross-fertilisation of ideas between

solid-state physics and several branches of pure mathematics. The research lies at the interface of these fields and studies both the classification of these new geometries and the quantitative and qualitative nature of such minerals.

£15,011 Leverhulme Trust

#### Dr M Marletta

#### Sifting Spectra of ODE and PDE Operators

ODE and PDE operators describe many naturally occurring phenomena. Many such operators have an associated 'spectrum', a set of numbers which reveal (for example) resonant frequencies of the underlying physical systems: for example, electrons in an atom, surface waves on water, waves in an optical waveguide.

Unfortunately the spectrum is often very sensitive to errors which may be introduced when the operator is approximated in order to carry out numerical computations, and so in addition to an approximation to the correct spectrum one often obtains – for so-called non-normal operators – other spurious numbers. In this project we will develop a method to sift out these spurious spectral points by comparing the computed spectra of slightly different operators.

£11,786 Leverhulme Trust

#### Dr M Marletta, Dr C Tretter

#### Operator Pencils with Lambda-Dependent Boundary Conditions

This project arises from earlier work with Professor Leon Greenberg at the University of Maryland and will fund a visiting fellowship for Professor Andrei Shkalikov of Moscow State University. The aim of the project is to use asymptotic and other theoretical estimates of the solutions of certain types of differential and block-operator equation to improve the efficiency of numerical techniques for finding the eigenvalues of such operators, and also to understand more fully the properties of the eigenfunctions. In particular, we wish to examine whether or not any square-integrable function can be approximated by a sum of eigenfunctions.

The answers to these questions will also allow us to determine how sensitive the eigenvalues may be to errors introduced by the numerical methods used for their computation.

£5,913 EPSRC

#### Prof R Raman

#### Highly-Efficient Data Structures

Ever-increasing volumes of data necessitate the development of efficient ways of representing and manipulating data on computers. We focus on searching a collection of keys that may change by insertions or deletions of keys. The first aim is to design data structures (representations) that make optimal use of hierarchical memory. This should lead to faster searching and also reduce power consumption if the computation occurs on a mobile or portable device. The second aim is to design data structures that occupy essentially only as many memory locations as can be mathematically shown to be necessary. This should enable their use in situations where memory is limited, e.g. on media with fixed capacity such as CD-ROMs or again, in mobile or portable devices.

Value Reported in June/July Bulletin

#### Dr C Tretter

#### Block Operator Techniques for Systems of Differential Equations and Applications in Mathematical Physics

£61,162 EPSRC

#### Dr N Yoshida

#### Foundations for Safe Mobile Software: Processes, Types and Semantics

The recent explosion of activity on Internet, the World Wide Web and Mobile Applications is calling for formal foundations of safe distributed software. In this world, software or code is transferred from one domain to another and upon receipt, a host initialises parameters and then executes it locally. Security, i.e. integrity of resources and privacy of data is the key issue for the safe development of network and mobile applications in the presence of such dangerous program mobility.

The aim of this project is to develop a theoretical foundation for access control of local resources for integrity and secrecy (information flow analysis) for privacy of data based on typed concurrent processes; more specifically, to contribute the field of semantics of concurrent processes and type-based approaches to security by extending the new typing system for the higher-order-calculus.

In this typing system, code can be represented as interacting processes, which are assigned different types depending on their intended use. This is in contrast to the previous work on typing processes where all processes are typed by a unique constant type, hence it is difficult to ensure host security by static type checking. Our fine-grained typing facilitates the management of access rights and provides host protection from potentially malicious behaviour. We will also apply the typed behavioural semantics of processes to reason about safety of mobile code. The potential benefits of this semantic approach are demonstrated by the preliminary results we have already obtained and by growing interest in the pi-calculus for security study.

£62,096 EPSRC

#### MEDICAL PHYSICS

#### Prof D H Evans, Prof R B Panerai

#### Neonatal Cerebral Blood Flow: Physiological Control Mechanisms and Patient Management

Disturbances in the blood flow to the brains of newborn babies can lead to permanent brain damage or death, but their origins and effects are still poorly understood. The Medical Physics Division of The Leicester Warwick Medical School has for many years been investigating techniques for measuring blood flow in patients, and has used these extensively in the study of healthy, and seriously ill babies. In continuation of this work, the funding awarded will permit further collaborative research with a public hospital in Rio de Janeiro, and the Biomedical Engineering Department of the Federal University of Rio de Janeiro in Brazil. The specific aim of this project is the development of improved methods of identifying babies with disturbed blood flow, with tests that may be used as routine examinations in neonatal intensive care units. Using these methods, we also aim to investigate the link between groups of patients with different degrees of blood flow disturbance, and their long-term development. It is hoped that early identification of babies with compromised blood flow may permit improved treatment and ultimately outcome.

£15,100 Wellcome Trust



## HUMAN ERROR – BY DESIGN?

Dr Simon Bennett (Scarman Centre)

Perpetuity Press Ltd, June 2001, £14.95

ISBN 1 899287 72 8 (ordering information below)

"IN the media 'feeding frenzy' following an air crash the need to apportion blame can lead to the scapegoating of pilots", alleges Dr Simon Bennett in his latest book *Human Error - by Design?*

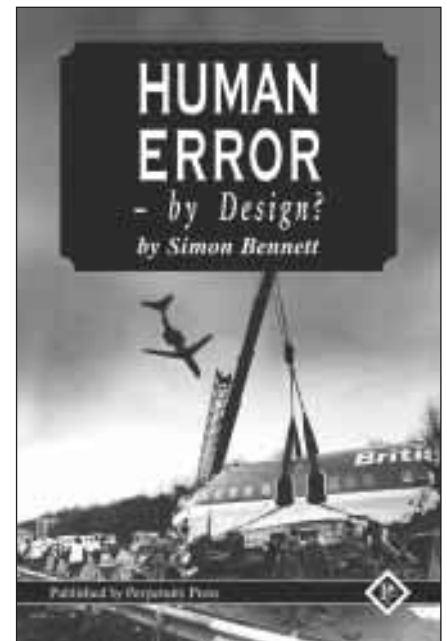
In his first major book on the subject Dr Bennett explores this somewhat unsavoury trait, suggesting as a solution the application of a 'systems' approach to air crash investigation. The systems approach, grounded in holism, holds that the underlying causes of an event can only be revealed through an examination of all possible contributory factors. These would include, in the case of an air crash; weather, cockpit design, flight crew, cabin crew and maintenance staff training, the quality of the aircraft's operations manuals and check-lists and fidelity of air traffic control instructions.

Asserts Dr Bennett; "Because the aetiology of an air crash is often highly complex, involving numerous factors that conjunct in obscure and unpredictable ways, the only acceptable response is to adopt a holistic approach. Systems thinking offers us the best chance of revealing the underlying causes of disaster. Unless we understand these causes, the same thing will happen again. That is

something the public does not want and the industry is desperate to avoid".

Dr Bennett's research in the field of aviation safety is sustained by his personal love of flying (he is a glider pilot) and in-situ research with a major British airline - research that involves him flying 'jump-seat' on numerous European services. "European airspace is damn crowded. It's a great place to learn!" says the Flying Doctor.

- *The book, which costs £14.95 (+£2.50 for postage and packing), is available from Perpetuity Press, PO Box 376, Leicester, LE2 1UP (info@perpetuitypress.co.uk, 0116 221 7778).*



## POLITICS, ARCHAEOLOGY AND THE CREATION OF A NATIONAL MUSEUM OF IRELAND: An Expression of National Life

Dr Elizabeth Crooke (Department of Museum Studies)

Irish Academic Press, May 2001, £35 (hardback)

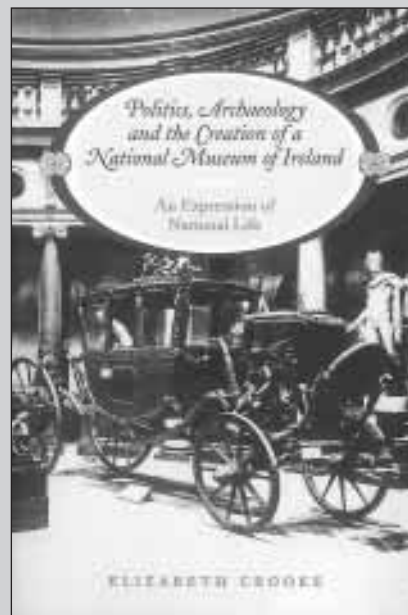
Available from the Medical Sciences Bookshop

ISBN 0 7165 2729 4

THIS book is the first study of the political and social values that underpinned interest in Irish archaeology and the establishment of museum collections. It provides an historical perspective on the value systems inherent in the museum building process and it shows that the complexity of Irish history and politics is reflected in the range of attitudes to the Irish past. These are revealed in the care and ownership of the material remains of antiquity.

By considering the significance placed on the care and preservation of archaeology and collections in political texts, new insights are

provided into the nature of Irish nationalism. These are then considered alongside the writings and addresses made by antiquarians, such as George Petrie and William Wilde. The discussion reveals how a certain vision of the Irish nation was brought into the evaluation and care of archaeology. The social and



political role of museum collections is demonstrated through the history of museum provision in Dublin. The imperial and industrial purpose of the Dublin Museum of Science and Art, as a branch of the London Department, was clearly stated in its early years. Later, with the creation of the Irish Free State, the institution was redefined, and it emerged as the National Museum of Ireland.

This book concludes with a discussion of how these social and political concerns continue to shape the care of archaeology and the work of museums in contemporary Ireland.

- *Elizabeth Crooke is a Lecturer in Museum Studies. She is a graduate of Trinity College Dublin and Cambridge University.*
- *The jacket design, by Susan Waine, is based on a photograph of the exhibitions mounted in the rotunda of the museum c1900. The carriage in the foreground is the Lord Chancellor's coach (c1790s). Courtesy of the National Museum of Ireland.*



## MANAGING FURTHER EDUCATION: LEARNING ENTERPRISE

Jacky Lumby (School of Education)  
Paul Chapman Publishing, March  
2001, £18.99 (paperback)  
ISBN 0 7619 6559 9  
Available from the Bookshop

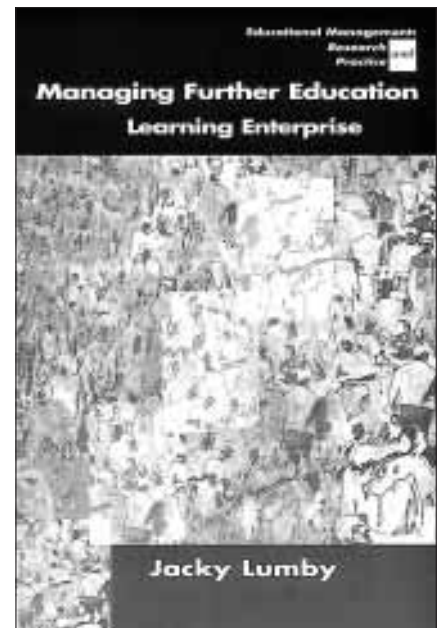
The incorporation of the further education sector in 1993 was followed by a period of extreme turbulence. Colleges plunged into the task of managing huge organizations while under pressure from cuts in funding and a steady expansion in the number and range of students. While financial scandals may have attracted attention, the success of the further education sector in providing a vital educational service for millions of people has been less recognized.

Despite the sector's significant contribution to education and training, practitioners struggle to find adequate research evidence on which to base reflection and practice. They need

material relevant to the specific situation of managers working within this very hybrid sector, part public sector education and part commercial organization, catering for a very wide age and ability range.

Based on a national survey of college managers, this book shows how managers are responding to the challenge to increase the numbers and range of students and to improve learning and teaching. The author shows what it means to lead in a college and how the culture has evolved. Each chapter focuses on an aspect of management. The author concludes that 'learning enterprise' is an apt description of a sector which has retained learning at its core and has learned to adopt an entrepreneurial spirit to shape its future.

*Managing Further Education* will be essential reading for professionals working in further education and all those interested in the management



of this complex and vital part of educational provision.

- Lecturer Jacky Lumby is based in the Educational Management Research Practice Development Unit at the University Centre Northampton.

## END IN SIGHT FOR 'ELITIST AND EXCLUSIVE' MUSEUMS?

*Museums and galleries should tackle social issues like crime, intolerance and poor health*

Museums should act as catalysts for change within their communities by responding to issues of social exclusion – states a new University of Leicester report, *Including Museums: Perspectives on Museums, Galleries and Social Inclusion*, written and edited by Jocelyn Dodd and Richard Sandell from the Research Centre for Museums and Galleries at the Department of Museum Studies, University of Leicester, and funded by Resource, the Council for Museums, Archives and Libraries.

The report affirms, "Museums can inspire, educate, inform; they can promote creativity, broaden horizons and expose people to new ways of looking at the world, all of which have a relevance to discussions about the museum's contribution to social inclusion. They also have the potential to deliver social outcomes less commonly assigned to museums – they can enhance individuals' self-esteem, challenge stereotypes and tackle intolerance.

Richard Sandell said: "The book reflects the authors' belief that museums have both the potential to impact upon issues around social inequality and indeed a responsibility to do so. The subject is very topical at present especially following the UK government's policy guidance on museums' and galleries' role in relation to social inclusion in 2000. However, the book

advances the debate about fundamental questions around the museum's social purpose and value – questions which are gaining increasing attention internationally."

The authors argue that while research suggests there are many ways museums and galleries can contribute meaningfully towards social inclusion – these are not always understood or accepted both within and outside the sector. Increasingly, traditional museum practices – and 'the systems and structures which perpetuate the elitist and exclusive museum' – will be open to question and scrutiny. The report argues that museum functions like collecting, preserving and displaying should not be undertaken for their own sake – but as a means to a number of social ends.

"The very idea that museums and galleries, especially those which enjoy public funding and support, might seek to be relevant to all those who pay for them or to work towards broader social goals – rather than narrowly defined cultural goals – remains alien, even abhorrent, to some," states Jocelyn Dodd.

The editors state: "With no blueprint for success at present, many uncharted opportunities exist for museums and staff in all areas of museum work to respond creatively to the social challenges and the issue facing the communities they seek to serve."

- Copies of *Including Museums* (price £15 plus £2, plus postage and packing, are available from RCMG, Department of Museum Studies, and the University of Leicester Bookshop (telephone 0116 252 3000).



## THE UNIVERSITY'S FUND FOR NEW TEACHING INITIATIVES

THIS fund was established to provide financial support for innovations and developments in learning and teaching. Since its inception, staff from a wide range of disciplines have made successful applications for grants.



The fund is administered by staff from the Teaching and Learning Unit, which is part of the Educational Development and Support Centre (EDSC) at the University. Working in close collaboration with both staff and students, the Unit's aims are to stimulate and support innovations across the curriculum and to disseminate best practice in teaching in higher Education.



### RECENTLY-FUNDED TEACHING PROJECTS:

**A study to introduce peer observation of teaching in the clinical setting**

**Project leaders:** Dr M E Preston-Whyte (General Practice and Primary Health Care) and Dr T Robinson (Medicine for the Care of the Elderly)

The main aim of this study is to test the feasibility and acceptability of peer observation of teaching in the clinical setting using approved observation criteria. Specific objectives for the study include: to observe volunteer clinical teachers teaching small groups in a clinical setting using trained observers and valid criteria; to provide oral and written feedback to each teacher after observing two teaching sessions; to seek the observed teachers' opinions of the assessment tool and the effect of the feedback on their teaching performance. This study follows on from a Faculty-wide survey of academic staff and clinical teachers' views of the criteria to assess teaching competence in the small group setting. As there is little published research on the peer observation of teaching in clinical medicine, a paper describing the results of the survey will be submitted for publication in a recognised peer-reviewed journal.

**Amount granted: £7,776**

**A communication skills station in the clinical skills OSCE at the end of Year 1 MbChb**

**Project leader:** Dr Gary Aram (General Practice and Primary Health Care)

The aim of this project is to introduce a formal communication skills assessment station into the undergraduate medical degree programme utilising simulated patients as assessors. Students already undertake a compulsory communication skills programme in the first year where they are asked to

take a medical history from a simulated patient. Previous work with simulated patients has demonstrated high levels of accuracy and reliability when working within an OSCE. The assessment will involve the simulated patients role playing a standardised scenario with individual students. Following this, the patient will score the student's performance using a communication skills pro forma produced by the Department. The assessment will allow for the early diagnosis of students with weak communication skills prior to the introductory clinical skills course in the second year. The project leaders will monitor and evaluate the effectiveness of the assessment strategy, pairing the simulated patients with a professional assessor in the first instance.

**Amount granted: £2,944.50**

**English Department study skills programme: second stage**

**Project leader:** Dr Julie Coleman (Department of English)

Building on the Department's successful first semester study skills course, the aim of this project is to design a series of workshops that will introduce students to more of the key skills expressed in the University's Learning & Teaching Strategy. The workshops will form part of the first year course History of the English Language which is compulsory. Students will be introduced to the skills involved in team working and making oral presentations, equipping them to undertake assessed work involving these skills. The workshops will also introduce students to the sources of further support that are available to them in the University. The teaching format will emphasise the applicability of the students' skills and knowledge across modules as well as outside their academic lives.

**Amount granted: £2274.40**



# Teaching Initiatives

Bulletin SUPPLEMENT  
University of Leicester  
August/September 2001

## Pilot Student Learning Centre Learning Study Skills Web Site

**Project leader:** Ms Maria Graal (Student Learning Centre, EDSC)

The aim of this project is to extend the services of the Student Learning Centre through the provision of web-based study skills guidance. This will be achieved through the development of interactive web resources that mirror the diagnostic processes of a one-to-one guidance interview and incorporate elements of the Centre's published study guides. It is anticipated that the project will be of particular use to students when they are off campus (e.g. part-time students, students taking a year abroad and students re-sitting exams). The site will also make study guidance resources available for students whose course timetables make accessing existing drop-in services problematic. The pilot project will target guidance related to students' written work but it is hoped that the model will be extended to cover other aspects of study (e.g. oral presentations, reading & note making skills) following evaluation and subsequent development funding.

**Amount granted: £1664.80**

## Interactive teaching in ophthalmology on the web: a case study based approach with multiple choice self-assessment

**Project leader:** Prof Irene Gottlob (Department of Ophthalmology)



Professor Irene Gottlob.

This project aims to establish a novel teaching programme for students that will enable them to access teaching material in ophthalmology on the LWMS web site. As ophthalmology relies on visual information, an interactive, visually based learning resource is essential. Cases will be developed to include the patient's history and students will have the opportunity to choose the steps necessary to reaching a

diagnosis before making therapeutic decisions. Students will be able to learn examination techniques related to each case and about common surgeries. Video material will be used wherever possible. The resources will also provide access to more detailed readings on the diseases through links to other on-line resources and references. Multiple choice questionnaires will be used to help students assess their own learning and attainment.

**Amount granted: £3,631.40**

**Post-graduate science trainees (secondary PGCE): Development of self-audit materials, self-test items and Subject Development Record-keeping systems to aid progression in subject knowledge within less familiar areas of science**

**Project leader:** Mrs Jennifer Harrison (School of Education)

As part of a developing supplementary subject support

programme, PGCE science trainees will be encouraged to take full responsibility for independent learning, reflection and target setting with respect to their personal subject knowledge in less familiar areas of science. This will be supported through the development of revised and more detailed self-audit materials than currently exist within the School, by the addition of pre- and post-topic tests and the maintenance of a new item: the Subject Development Record. An exploration of the potential to place the test items and audit on-line will also be conducted.

**Amount granted: £3,445**

## STAFF TRAVEL FUND

This fund provides financial support for the implementation of the University's Learning and Teaching Strategy. It aims to support attendance at seminars and conferences or visits to other institutions where these will inform departmental and/or faculty-wide educational developments and innovations.

**Applicant:** Ms Maria Graal (Student Learning Centre, EDSC)

**Event/visit:** EATAW Conference: Teaching Academic Writing Across Europe

Groningen, Netherlands

**Amount Granted: £341.38**

**Applicant:** Dr Julie Coleman (Department of English)

**Event/visit:** Writing Development in Higher Education: Changing Contexts for Teaching & Learning, University of Leicester, 24-25 April 2001

**Amount Granted: £70.00**

- More details about the University's Staff Travel Fund can be found at <http://www.le.ac.uk/tlu/travelfundremit.html>.
- For further information about the University's Fund for New Teaching Initiatives, contact Richard Clark or Maria Graal on 0116 252 5090, email [teach.learn@le.ac.uk](mailto:teach.learn@le.ac.uk).

## EXTENDED SUMMER OPENING OF THE UNIVERSITY LIBRARY

FROM Saturday, June 30, until Saturday, September 1, the Main Library will be open until 9.00 pm on Tuesday and Wednesday evenings and from 9.00 am to 6.00 pm on Saturdays. Normal hours recommence on Monday, September 3. It is advisable to check in advance of a visit in case there are any alterations to these times: <http://www.le.ac.uk/library/>, telephone 0116 252 2042, email [libdesk@le.ac.uk](mailto:libdesk@le.ac.uk). The Main Library will be closed on the Bank Holiday weekend, Saturday, August 25 to Monday, August 27.

- For further information or to comment on the changes, contact Jo Aitkins in the Main Library (0116 252 5180, email [jua1@le.ac.uk](mailto:jua1@le.ac.uk)).