

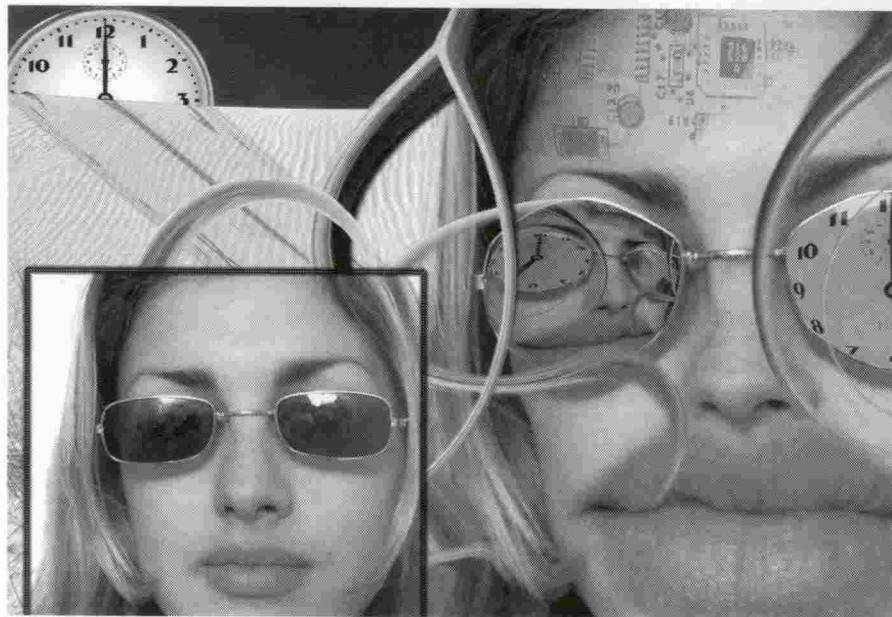
## Psycho shrimps with psychedelic vision

**A** three-inch long psychedelic shrimp has the world's most sophisticated colour vision, reveals Sussex neuroscientist Justin Marshall. The mantis shrimp, which lives on coral reefs, has twice the capability for colour vision as any other creature – and over three times that of the lowly human being.

Justin first suspected that the shrimps had colour vision through the technique of spectrophotometry. By shining light through sections of the eyes and noting which colours were absorbed, he was able to show that the eyes contain twelve different visual pigment types. Previously, the greatest number of pigments found in any species was five. Human beings possess only four. "The discovery was a huge surprise, and we needed to confirm it behaviourally," says Justin. "This is the first time colour vision has been demonstrated in any crustacean.

For the last 400 million years, mantis shrimps, or stomatopods, have been out on their own evolutionary limb. Today, these extraordinary crustaceans are notorious for their aggressive nature. Known colloquially either as 'smashers' or 'spearers', they bash and stab their prey to death using a pair of raptorial front limbs. One Californian species can strike with the force of a small calibre bullet. Among Mediterranean fishermen, the shrimp is nicknamed the 'thumb-splitter'.

Justin took advantage of the shrimp's violent feeding habits to demonstrate its colour vision. He placed food inside coloured plastic cubes and trained the creatures to smash them when they wanted



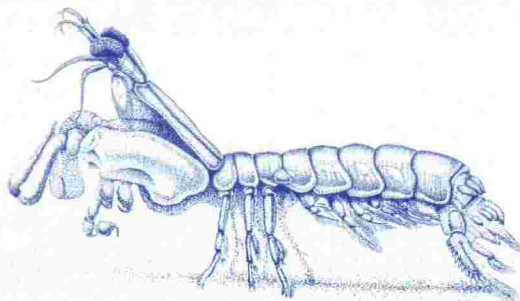
*Digital technology is set to revolutionise the University's Photographic and Design Unit. PDU now has the equipment to digitise, manipulate and re-touch images. Photographs are scanned into a computer and can then be altered on screen using an ordinary keyboard. For the photographic industry as a whole, digital technology represents the biggest change in working practices since the invention of celluloid roll film. PDU produced the picture above from four separate images – a girl with sunglasses (inset left), a clock, grass and a circuit board. You can see this image, which demonstrates the equipment's capability, in an exhibition of PDU's work, past and present – see back page for details.*

to eat. After a few weeks, he positioned the coloured cubes between several empty grey ones. Although the shrimps had a range of cubes to choose from, they selected the coloured cubes almost infallibly. They had learned to associate colour with food, and were able to distinguish a particular colour from grey tones.

Now the shrimp's unbeatable eyesight might help engineers design robots with colour vision. Further physiological work showed that the section of the eye which deals with colour is divided into six rows of cells, each receptive to a different colour. "Unlike human beings, whose eyes process colour in an integrated way, the mantis shrimp divides up the spectrum into simple units," says Justin. "This is a far more efficient system for

creatures which have only a small brain." Robots have been modelled on the shrimp's visual system of parallel – rather than integrated – processing.

Justin is currently seeking to unravel why the mantis shrimp should have such complex vision. Colour may be crucial to the shrimps' communication, given that the creatures are themselves highly coloured. Or, colour vision may be necessary to cope with their vivid coral reef environment.



## Disaster Recovery Group

The University does not have a comprehensive disaster recovery plan. The existence of such a plan is increasingly a requirement of insurers and is regarded as good practice by the HEFCE. Accordingly, Barry Gooch, the Registrar and Secretary has established a Contingency Planning Group with the following terms of reference: "To undertake contingency planning for the University in order to develop and collate procedures for dealing with emergencies and for major disaster recovery, including insurance risk aspects. The Group will consult widely across the University, where appropriate commissioning elements of the Plan from others outside the Group."

Membership: Geoff Ivey, Deputy Secretary (Chair); Roger Bailey, Estates Manager; Peter Bushell, Dean SMS; Charles Dudley, Acting Business Director; Tricia Grassie, Insurance Officer; John Hinchliffe, Admin Computing Services Manager; A building & resource manager; Steve Pavey, Acting Head of Finance and Morag Stalker, Estates Planning Manager (Secretary).

The Group will meet first in early July, with a view to producing a detailed plan for approval by early in 1997. Any queries concerning the work of the Group should be addressed in the first instance to the Secretary, Morag Stalker, ext 3295, email: M.J.P.Stalker@sussex.ac.uk

## Reading Lists

The University Bookshop would be grateful if you could submit your reading list/s for the Autumn Term 1996 before the end of the Summer term even if exact student numbers are not yet known.

October may seem a long way off but during the summer vacation the Bookshop receives hundreds of reading lists with thousands of titles that must be checked title by title before being ordered, checked in, shelved and updated on our database. If this process is delayed we cannot guarantee that the books you require will arrive in time for the beginning of term. Publishers stocks are rapidly depleted over the summer months due to the heavy demand. The Bookshop should be advised of American and foreign texts as soon as possible to avoid shipping delays.

For reading list forms or further information please contact Sue Green-Innes, Assistant Manager, University Bookshop, Refectory, ext 3888.

## LETTER

Dear Editor,

In response to Nicolas Pittarello's letter of 7 June I would like to offer a more enthusiastic comment on the architecture of the new Innovation Centre.

When I visited it recently it was not yet fully furnished but it already seemed destined to be an outstandingly light and airy, pleasant working environment. The use of the site seemed to me inspired in terms of giving the building a stunning view while not itself intruding unduly on others' outlooks.

I don't know how serious Mr Pittarello can be when he criticises the building for being rectangular. His suggestion that its access needs might be met by a "monorail to ... the Refectory and Falmer Bar" seems almost a satire on the inward-looking, ivory tower academic mentality. Omitting a car park might be very 'green', but for the industrial/academic relationships the Centre was built to encourage it would clearly be an innovation too far.

Geoffrey Sampson, COGS

## Tell me about your toads!

In recent years, amphibian populations have dwindled throughout the globe. Many species of frog and toad have become extinct. In England a great number of our natural habitats have been destroyed and the wildlife in them lost forever.

Garden ponds are fast becoming one of the most important habitats for amphibians here in South East England. Garden ponds are also uniquely placed to help researchers, such as myself, to understand why our amphibians are declining. I am therefore looking for garden ponds in Lewes in which to monitor frog and toad populations.

If you live in Lewes, have toads breeding in your garden and would like to help, please telephone Gillian Baker in BIOLS on Ext 8923.

### Mollie Adams

We regret to report the death, on 9 June at the age of 83, of Mollie Adams, Reader in Education at Sussex from 1965 to 1978. She was a philosopher of education who developed, after retirement, an equally outstanding second career as a sculptor of distinction.

## PEOPLE

FOR GAVIN MICKLETHWAITE, Graduate Intern in the Publications Office, drawing cartoons is light relief after a heavy day of bashing prospectuses into shape. Now the talents of the Sussex House unsung Leonardo are on display in



public. A Micklethwaite original can be seen in the Gardner Centre's Cartoon County exhibition, on show until 28 June. Gavin's cartoon keeps illustrious company with the work of Raymond Briggs, Steven Bell and Trogg. It can also be seen on the Politics page of the undergraduate prospectus.

ERICA SMITH, Graphic Designer in the Photographic and Design Unit, also has a cartoon featured in the exhibition. Erica rediscovered comic art at the start of the 90s when she realised that it's not just for kids. "Anyone can draw cartoons if they want to," she says. "The secret of a good cartoon is always in the ideas more than the drawing itself."

PROFESSOR OF EXPERIMENTAL Psychology Chris Darwin has just been made Chair of the prestigious Medical Research Council Neurosciences and Mental Health Grants Committee. Chris will chair the Committee, which considers around 100 grant proposals every time it meets, for two years from September. In addition, he has recently been awarded a grant of £177,000 from the Engineering and Physical Sciences Research Council to begin studying the auditory representation of speech sounds.

"MEMORIES ARE MADE OF...?" asks a forthcoming series on Radio 4. Expert on amnesia, Professor Alan Parkin, will appear in the series, which coincides with the launch of his new book, *Explorations in Cognitive Neuropsychology*.



*SPRU said farewell to four senior members of staff last week. Pictured above are Professor Michael Gibbons, Director of SPRU, and his wife Gill, admiring one of their leaving presents from SPRU staff. Professor Gibbons is now Secretary General of the Association of Commonwealth Universities. Andrew Barnett, SPRU Senior Fellow, has left to join the Intermediate Technology Development Group. Norman Clark, Reader, has been appointed Professor of Environmental Studies and Director of the Graduate School of Environmental Studies at the University of Strathclyde. Professor William Walker also moves north of the border to become Professor of International Relations at the University of St Andrews.*

## Writers-in-Residence

**T**he 1996 East Sussex Literature

Development Project will be well underway from 24 June when six major libraries across the county welcome their own Writer-in-Residence. For four weeks, the Writers-in-Libraries will hold on-site

readers' and writers' workshops and collect material submitted by writers and writers' groups. The libraries involved are in Hastings, Uckfield, Eastbourne, Lewes, Brighton and Hove. The writers are: Greg Daville, Martin Agombar, Robin Mellor, Catherine Feeny, Gwyneth Jones and Suzannah Dunn. Meanwhile, another six Writers-in-Schools will hold workshops in selected schools, gathering childrens' material.

Richard Crane, who teaches creative writing in the University's Centre for Continuing Education, is one of the team



*The six writers-in-residence*

masterminding the project. "This follows the success of the 1995 project, *The Last Minute Book*, and aims to extend the Last Minute network of writers," he says.

In October, all of the material submitted will be launched in six separate Pandora's Books in each of the locations. Early in 1997, the books will come together in one bumper edition to be launched at a media event including readings, music and performance. The Pandora's Books project is supported by South East Arts, East Sussex County Council and CCE.

## RESEARCH OPPORTUNITIES

*For more information, call Mylene Powell in the Research Office, ext 3812 (mornings only), email: M.G.Powell@sussex.ac.uk*

**ONE YEAR SCIENCE FELLOWSHIPS:** Nuffield Foundation invites applications for the academic year 1997/98. To enable established university lecturers (preferably under 40 years of age) to be freed from teaching and administrative duties for one academic year to pursue research. Closing date: 1 October 1996.

**MICROSTRUCTURED PHOTONIC MATERIALS:** EPSRC call for proposals 1996. To complement the IT programme in Next Generation Laser Diodes. Budget of up to 1M. Closing date: 19 July 1996. Applications on the standard EPS(RP) form, clearly marked 'MPM'.

**UK/SPAIN: ACCIONES INTEGRADAS 1997/98:** The British Council invites proposals for a research collaboration programme. To initiate collaboration between the UK and Spain which, if successful, they may wish to continue by applying for funding from other bodies, such as the European Union. Closing date: 15 October 1996.

**ENGINEERING FORESIGHT AWARDS:** The Royal Academy of Engineering call for proposals. Aimed at supporting the further international development of Technology Foresight networks and thereby encourage the uptake of globally competitive technology in the UK. No closing date given.

**MRC GULF WAR ILLNESS RESEARCH PROGRAMME:** call for outline proposals. The research will focus on the health of the Gulf War Veterans and their offsprings and will encourage the development of high quality and novel epidemiological proposals. Closing date: 28 June 1996.

### Staff Development On Site Courses

*There are some places still available on the following courses:*

**SUPERVISORY MANAGEMENT** (Non-teaching staff) – two-day course Tuesday 2 July AND Tuesday 9 July (9.30am-4.30pm).

**EQUAL OPPORTUNITIES AWARENESS SESSIONS** – one half-day session Thursday 11 July (9.30am-1pm).

**STRESS MANAGEMENT COURSE** (Non-teaching staff) – one-day course Friday 12 July (9.30am- 4pm).

**TIME MANAGEMENT COURSE** (Non-teaching staff) – one half-day course Wednesday 17 July (9.30am-1pm).

# What's on...

Monday 17 June - Sunday 23 June

## Lectures, Seminars, Colloquia

### Monday 17 June

1pm **Experimental Psychology Seminar:** *The child's discovery of the alphabetic principle: causes and consequences.* B. Byrne (New England, Australia). Biology Lecture Room.

4.30pm **Neuroscience Seminar:** *Nowhere to go.* M. O'Shea, Biology Lecture Room.

5pm **Women's Studies Seminar:** *Mrs Seacole's wonderful adventures in many lands: imperialism, representation, race.* A. Rupprecht, Arts D510.

### Tuesday 18 June

5pm **International Relations & Politics Seminar:** *Politicians and bureaucrats as budget-maximisers? Implications for policy outcomes in Britain.* S. Hoopes, Arts A71.

5pm **Media and Culture Seminar:** *Montage and photogenie.* P. Keiller (film-maker), EDB Lecture Theatre.

### Wednesday 19 June

1pm **IDS Seminar:** *Language, power, and educational policy.* K. Watson (Reading), IDS Room 121.

2pm **Optical and Atomic Physics Seminar:** *Optical harmonic generation: 30 years of progress.* D. Hanna (Southampton), PB2A11.

2pm **QUEORY Seminar:** *"My beautiful wickedness": The Wizard of Oz as lesbian fantasy.* A. Doty (LeHigh), Arts D440.

2.30pm **South African Studies Seminar:** *South Africa's land reform options.* W. Beinart (Bristol), Arts C337.

### Thursday 20 June

11.30am **Economics Seminar:** *International trade, capital flows and economic growth.* M. Medellin, Port-acabin D.

5pm **Social and Political Thought Seminar:** *Subjectivity in political discourse: have psychotherapists anything to contribute?* A. Samuels (Essex), Arts A71.

### Friday 21 June

4pm **Astronomy Seminar:** *Iron-line spectroscopy of AGN: evidence for strong gravity.* A. Fabian (Cambridge), Arts PB1A7.

4.30pm **Philosophy Society:** *Meaning.* M. Morris,

## Photographic Exhibition

An exhibition of the work of the University's Photographic and Design Unit continues this week, featuring the history of PDU in the 60s, 70s, 80s and 90s, including their latest electronic imagining. The exhibition can be found in the following places:

17 - 23 June: Library Reception Area

24 - 30 June: Meeting House Entrance

## Golf Society Annual Meeting

1996 Annual Meeting on Wednesday 17 July at Pulborough West Sussex Golf Club. 36 holes. Scratch and handicap competition, lunch and dinner, £60. Tel: A. Turner x8488.

## Engineering School Yearbook

Would you like to contribute articles for publication in the first yearbook for the Engineering School? A group of ENGG students, funded by Enterprise on Campus, have been collating material. Deadline: 20 June. Contact ENGG School Office or David Firth (email: tau44@sussex).

## Meeting House

### Lunchtime Recital

1.20pm, Tues 18 June, Andrew Newberry (Organ), in the Chapel.

## Film at the Gardner

### Tuesday 18 June

6pm *Schindler's List*

### Wednesday 19 June

7.45pm *Hard, Fast and Beautiful*

9.30pm *Casablanca*

### Thursday 20 June

7.45pm *The Hitch-hiker*

9.30pm *The Big Sleep*

### Friday 21 June

7.45pm *Private Hell 36*

11.30pm *The Wild Bunch*

### Sunday 23 June

6pm *Waiting to Exhale*

## Philharmonia Concert

7.45pm, Monday 17 June.

Sussex University Philharmonia Concert

At the Gardner Centre.

Tickets: £5/£3/£2 (Music Fed. members).

Rachmaninov's *Paganini Variations* (Piano: Martin Butler), Tchaikovsky's *5th Symphony*, Mussorgsky's *Khovanshchina Overture*.

## Sports News

### Body Conditioning

Wednesdays 1.10 - 1.50pm, 3, 10, 17, 24 & 31 July. £2 per session.

### Circuit Training

Mondays 5 - 6pm, 1, 8, 15, 22, 29 July. 60p per session.

### Childrens Summer Courses

Activity Courses for 9 - 14 years. July and August. Multi-activities, tennis and multi-rackets. Fully qualified coaches. For further details tel: Karen Dunster, Sportcentre 678228, x3947 or email: sportservice@sussex.

### Autumn Registration

Early bird warning: registration for Autumn Term classes and courses will take place on Monday 7 October (first day of term).

## Small ads

**HOUSE SWAP WANTED:** retired American Professor & wife living in 2 bedroom cottage in Astoria, Oregon, seeks house swap for at least two weeks, perhaps several months. Astoria is at mouth of the River Columbia with spectacular beaches, fishing, walking etc. Use of car included. Contact: Professor Max Darnielle, 1331 Irving Avenue, Astoria, Oregon 97103, USA.

**AIRBRUSH COMPRESSOR WANTED:** good condition, low noise, automatic preferred for continuous running. Tel: Mark Garlick 705866 or x 8971; email: m.a.garlick@sussex.

**DECORATOR AVAILABLE:** painting and decorating service offered by mature student with 9 - 10 years experience. Professional work. Excellent rates. Tel: 698719.

## Small Ads Cont.

**FLAT TO LET:** large 2 bedroom flat with garden in Alexandra Villas, central Brighton. Br 3 min walk. All mod-cons. £500 pcm. From 1 Sept 96 - 30 April 97. Tel: x2303 or 722336.

**FLAT/HOUSE WANTED:** 2 bed, required 27 July - 17 Aug for visiting American teacher and family. Lewes or central Hove preferred. Tel: 327406; fax: 725299.

**FLAT/FLATLET WANTED:** by member of university staff for August. Quiet. Brighton area. C/H a must. Tel: x8006 or 734631.

**HOUSE TO LET:** large, well-equipped. Dyke road area, Brighton. From July - Dec. Tel: x2022 or 505171.

**ROOM TO LET:** in luxurious house, all mod. cons. incl. jacuzzi, TV, own phone. Peaceful surroundings. Suit faculty or p/g. Near Withdean Stadium, Brighton. 10 mins by car to University. Available now. £65 pw incl. bills. Tel: 565404.

**HOUSE SHARE:** for 2 - 3 people or family. Hanover area. £130 pw excl. From Aug - Dec/Jan. Tel: 701553.

**COMPUTER FOR SALE:** Amstrad model 1640. 3 1/2" & 5 1/2" floppies. Software: Gem, Mini Office WP, DB, SS. All manuals. Printer: Epsom Mx 80/FT. Including desk. £130 the lot. Tel: John x8067.

**WANTED:** valve based audio equipment. Anyone with old valve radios or amplifiers that they no longer require, please tel: Steve x8862.

**VCR FOR SALE:** JVC, front loading. Model 7650EK, fully featured, recently serviced, good condition. £125 ono. Tel: Jerry Mitchell x4237.

**BOOTS FOR SALE:** Frank Thomas black leather motorbike boots. Size 9/10. Little used, in new condition. Padded, waterproof etc. Includes Nikwax. £35. Tel: Andy x2764 or 749011.

**COMPUTER FOR SALE:** Macintosh LCIII, 16" screen, 18 months old. £550. Tel: Wendy x8570; email: wendy@epunix.susx.ac.uk.

**BA HOOD FOR SALE:** grey fur lined. Perfect condition. Worn once. £10. Tel: 01903 752152.

**CAR FOR SALE:** Renault 9, 1988, 4 months tax and MOT. £275. Tel: x3318 or 683452.

**STEP MACHINE FOR SALE:** £45 ono. Tel: 771875.

## Bulletin

The Bulletin appears every Friday of term with copy deadline the preceding Friday lunch-time. We welcome any suggestions for news, details of events, letters and small ads. Please contact the Information Office, Sussex House on ext. 8209 or email: Bulletin@sussex.ac.uk.