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APPLIED VISION ASSOCIATION

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Deadline for copy for the next Bulletin - 18th April 1997

EDITORIAL

The vision community was shocked to hear of the death of Keith Ruddock, Professor of Biophysics at Imperial College, on 20th December 1996. This issue of the bulletin includes an obituary from one of Keith's close colleagues, David Foster. The Blackett Laboratory at Imperial is organising a meeting to celebrate Keith's life on 19th March. More details in the Bulletin. This issue also includes updated information on AVA'97. Remember that the latest information on the AVA is on our web site: <http://www.dmu.ac.uk/ava/>

If you have any comments on the Bulletin of the AVA then do contact me: mcase@dmu.ac.uk

AIM OF THE AVA: TO PROMOTE AND ADVANCE THE APPLICATION
OF RESEARCH WORK IN ALL AREAS RELATED TO VISION



Noticeboard



AVA on the World Wide Web

The Applied Vision Association now has its own world wide web pages at:

<http://www.dmu.ac.uk/ava/>

The pages contain details of who is on the committee, contact emails, latest details on forthcoming AVA meetings and links to other vision related pages. There are also archives of abstracts from previous AVA meetings.

Forthcoming AVA Meetings

Depth Perception. 4th September 1997, University of Surrey

Dr Mark Bradshaw is organising a meeting on depth perception at the University of Surrey. For more information please email: M.Bradshaw@surrey.ac.uk

Postgraduate Meeting. 5th November 1997, College of Optometrists, London.

There will be a meeting for postgraduates and researchers up to one year postdoctoral to present papers at the College of Optometrists. For more information contact the AVA Secretariat on: 0171 373 7765

AVA and OPO Subscriptions

Membership for 1996/1997 is the same price as last year. However, the price for OPO subscriptions has increased slightly. Those members who pay by standing order please don't forget to amend your standing order accordingly.

Geoffrey J. Burton Memorial Fund

The fund was established in 1986 with the aim of providing financial assistance to students (in non-established or fixed term posts) based in the UK travelling to any conferences or meetings at which they will be presenting a paper or poster. Donations to the fund can be directed to the AVA secretariat and cheques etc. should be made payable to "The Geoffrey J. Burton Memorial Fund".

The maximum award to any one individual is £200.

Awards can be made for any conference in the calendar year in which the award falls (1997 in this case). You do not have to be presenting at an AVA conference. The awards will be made twice a year.

The closing dates for applications are:

28th February 1997 (deadline now past)

31st August 1997

To apply for an award you need to complete an application form which is available from:

The AVA Secretariat,
College of Optometrists,
10 Knaresborough Place,
London,
SW5 0TG.

Tel: 0171 373 7765

Fax: 0171 373 1143

Obituary—Keith Harry Ruddock 1939–1996

Keith Ruddock was one of Britain's leading vision scientists. He was interested in normal and abnormal visual function in humans, and his research was based primarily on psychophysics, but also drew strongly on single-cell neurophysiology and studies of eye movements. As well as being an innovative and authoritative researcher, he was an outstanding lecturer and teacher, influencing several generations of young vision scientists.

He was born in 1939 in Croesyceiliog, Cwmbran, in South Wales. He was accepted for entry into West Monmouth Grammar School, Pontypool, where, later exploiting his mathematical abilities, he took A-levels in pure mathematics, applied mathematics, physics, and chemistry. In 1957, he began his undergraduate studies in physics at Imperial College, London, where he remained for the rest of his professional life. He received his BSc in physics and Associateship of the Royal College of Science in 1960. He then began his PhD studies into the effect of age on colour matching and colour discrimination, under the supervision of W.D. Wright in what was at the time the Applied Optics Section of the Physics Department. The results of this work, particularly in relation to the role of macular pigment and how its effects could be neutralized in colour matches, had lasting significance. After gaining his PhD and Diploma of Imperial College in 1964, he spent a further year as a research assistant in the Applied Optics Section before being appointed Lecturer in Physics. In 1972 he took a period of leave as a Royal Society Exchange Visitor at the Venezuelan Institute of Science and Technology where he trained with Gunnar Svaetichin. On his return he established a laboratory in Imperial College's field station at Silwood Park, where he pursued his work on retinal neuropharmacology. He was promoted to Senior Lecturer in 1976, and, reflecting his commitment to physiology, this appointment was made into a joint appointment with the Department of Zoology in 1978. He was made Reader in Biophysics in the Departments of Physics and Pure & Applied Biology in 1981, then Professor of Biophysics in 1988, and finally Head of the Biophysics Group in the Department of Physics in 1991.

In 1963 he married Joan Anthony, who came from the same region in Wales, and also studied at Imperial College. She shared his strong left-wing ideals, and later became a Labour Member of Parliament. They separated in 1990.

The success he had as a lecturer was due partly to his eloquence and the easy rapport he established with his audience, and partly to the effort he put into preparing his material. His style, not just in lecturing, was traditional and simple, aiming to get the content across as directly as possible. The breadth of subjects he covered was unusual: undergraduate courses in biophysics (which he introduced into the Department), physical optics, communications physics (which he also helped establish), atomic matter, nerve biophysics, neurobiology, cell biology, and neurochemistry; and postgraduate courses in physiological optics, visual optics, and photometry and colorimetry. In addition to maintaining a heavy internal teaching programme, which included his being personal tutor to all ERASMUS students in the Physics Department, he contributed to courses at many other institutions, including the London Hospital Medical School, Chelsea College, Rank Xerox, City University, King's College London, the Royal College of Art, and Charing Cross and Westminster Medical School. He was external examiner to several optometry departments in the UK, including those at Aston, City, and UMIST, and he was an Honorary Professor at Cardiff and Visiting Professor at Charing Cross and Westminster Medical School.

As a doctoral student, he used methods established by W. D. Wright to investigate the factors that cause variation in human colour vision. Ruddock determined a modified absorption spectrum for the macular pigment and demonstrated large inter-observer variations in its optical density. The method he established for neutralizing the effects of macular pigment on colour matches was widely exploited in the design of colour-vision tests. He showed that age-related changes in colour vision can be largely attributed to the known increase with age in light absorption by the lens and do not, as was at one time believed, involve increases in the optical density of the macular pigment. His computation of the effects of age-related absorption changes on the Farnsworth-Munsell 100-Hue test provided an explanation of the reported losses with age in colour discrimination. He also examined neural contributions to colour vision, finding a new lateral adaptation effect that involved the dichromatic central fovea and demonstrating various rod-cone interactions in congenital, dichromatic deficiencies. He was able to characterize and analyse two very rare forms of colour-deficient vision: one a congenital, unilateral red-green deficiency; the other, newly discovered, a result of spreading visual inhibition of cortical origin (patient "MW").

To measure the spatial and temporal response characteristics of the early

stages of visual processing he developed a new method, a background-modulation technique, and was able to show two classes of responses that were similar to those associated with the P- and M-type neurones of the pre-cortical visual pathways. The method required a four-channel Maxwellian-view optical system and did not lend itself to implementation on a computer-controlled visual display unit; consequently it was not as widely adopted as it might have been. Nevertheless, it proved of great value in his investigations of functional abnormalities where a selective impairment of these early responses was found in conditions such as amblyopia and albinism and in patients with cortical lesions.

His studies of visual abnormalities in patients with cortical lesions had the general aim of elucidating the functional organisation of the cortical visual centres. His work on a hemianope "GY" established that this patient had residual vision in the "blind" right hemifield which, in the absence of the left striate cortex, enabled him to detect and accurately localize transient stimuli and to discriminate normally between moving stimuli that differed in velocity. Similar residual responses were recorded in four of twenty-four other patients with striate lesions, and further studies revealed GY's high spatial resolution in detection of apparent motion and weak colour discrimination capacity. Ruddock's analysis of GY's responses in relation to the brain scans he obtained showed that, even in the absence of striate input, he could perform visual discriminations associated with those pre-striate cortical areas that had escaped damage, but his orientation discrimination and ability to partition spatially his "blind" field were severely impaired. In the patient MW mentioned earlier, Ruddock showed that stimulus movement generated a diffuse, disinhibitory effect on this patient's abnormal responses to colour. Other important results obtained in his research on patients with cortical lesions included the demonstration of abnormal colour constancy in a patient with lesions of the fusiform and lingual gyri, and the disruption of parallel search in a patient suffering a visual form agnosia. The results of these patient studies, derived largely from the application of new experimental methods, provided fresh insights into the relationship between cortical visual organisation in humans and the results of electrophysiological studies on other primates.

The approach he took to research was that of a classical physicist, concentrating on elegant, revealing experiments, using simple optical and electronic apparatus and straightforward experimental designs, avoiding the need for elaborate statistical analysis. His approach to writing was

the same. His style was natural and unaffected, giving proper credit to the literature, especially to the earlier and less-recognised works. Manuscripts were prepared smoothly and efficiently with pen and paper rather than on a word-processor, and figures were constructed with a drawing pen and tracing paper, rather than with the automatic plotting packages preferred by his students.

In all, he published over 170 papers and communications in the leading generalist journals *Nature*, *Proceedings of the Royal Society of London*, *Brain*, and *Journal of the Physiological Society*, as well as contributing to the more specialist journals *Ophthalmic and Physiological Optics*, *Vision Research*, and *Spatial Vision*. He was always keen to give prominence to others in joint works, and with rare exceptions insisted on the alphabetical ordering of authors' names.

He was an exemplary research supervisor, providing close guidance when necessary, but also knowing when to stand back. People joining his group found a supportive and productive environment, and he attracted a continuous stream of highly able, hard-working postgraduate students wanting to study for PhDs and undergraduate students wanting to undertake final-year projects. It was a system that worked: he trained 46 postgraduate research students, of whom five went on to obtain full professorships within the UK and USA.

He served on many professional committees, including those of the British Photobiology Society, the Colour Group of Great Britain, and the International Research Group on Colour Vision Deficiencies; also the Vision Research Working Party for the Wellcome Trust, the Neuro-Ophthalmology Club, which he helped found, the Universities Funding Council Research Assessment Panel on Other Studies Allied to Medicine, and one of the Technical Committees of the Commission Internationale de l'Eclairage. He also served on the editorial boards of *Ophthalmic and Physiological Optics*, *Spatial Vision*, *Photobiochemistry and Photobiophysics*, and *Clinical Vision Sciences*.

The honours he received included a silver award and the H. E. Lewis award from the British Medical Association for the best medical research film of 1980, and the Walsh-Western Award from the Chartered Institute of Building Service Engineers; named lectures included the Edridge-Green Lecture for the Royal College of Surgeons, and the Trotter-Patterson Memorial lecture for the Chartered Institute of Building Service Engineers.

He had an enthusiasm for travel and exotic food, despite the occasional mishap, and he enjoyed the many invitations he received to lecture at leading institutions all over the world. Before making an early visit to China as it began to open up to foreigners he learnt Mandarin. Although not overtly athletic, he enjoyed playing cricket, snooker, and occasionally tennis, and he keenly followed Welsh rugby. Another passion he had was for music, which formed a continuous background to his work in his office and laboratory. He played the violin in the Welsh National Youth orchestra and subsequently in the Polyphonia of London orchestra, as well in several quartets. In this activity, as in his research work, he was occasionally impatient with those who placed too much emphasis on the superficial aspects of delivery: for him, the point was to get the notes—like the science—right.

He had a very large circle of friends, many of whom were former students. At a party in London on December 19th he commented that 1996 had been one of his most productive years. It was while walking home afterwards that he was fatally injured in a road traffic accident. His untimely death deprives the community of a widely respected and much liked individual.

David H. Foster
Aston University

(Reproduced, with permission, from *Ophthalmic and Physiological Optics*, 1997)

Meeting to celebrate the life of Keith Ruddock

19th March 1997

Blackett Laboratory
Imperial College, London

Text of letter from Prof. Brian Morgan, Imperial College London. Dated January, 1997.

Dear Colleagues

You will have heard of the tragic death of Keith Ruddock as a result of a road accident on 20 December, 1996. Keith was a greatly respected member of our Department, and was held in high esteem by all his colleagues and students, both past and present. The Blackett Laboratory is planning a celebration of Keith's life in the form of a meeting to be held in the Physics Department on Wednesday, 19 March 1997, starting at 2:30 pm. We are inviting all Keith's friends and colleagues.

We very much hope will be able to come to the meeting and buffet reception afterwards. Would you please let us know whether you are able to come by contacting Cristina Kent (Tel: 0171 594 7888; email: c.kent@ic.ac.uk).

Could you inform any of Keith's colleagues who may not have heard about the occasion. We would be glad to see them all, but would ask that they contact Cristina Kent so that we can estimate the number of attendees.

AVA books for sale

The AVA still has a number of new books for sale from conferences that it has organised over the years.

Payment can be by cheque or postal order in UK pounds (sorry, no credit cards) to "Applied Vision Association". Send your payment with the order to:

AVA Secretariat,
Applied Vision Association,
College of Optometrists,
10 Knaresborough Place,
London SW5 OTG.

Books available:

The cost for each book is £15 (including postage in the UK) for AVA members or £20 for non-AVA members. If you are outside the UK then add £5 per book to each of the prices above.

Gale, A.S., Astley, S.M., Dance, D.R. and Cairns, A.Y. (1994) **Digital Mammography**. Elsevier (424 pages).

Gale, A.S., Freeman, M.H., Haslegrave, C.M., Smith, P. and Taylor, S.P. (1988) **Vision in Vehicles II**. North Holland (420 pages).

Gale, A.S., Brown, I.D., Haslegrave, C.M., Krusysse, H.W. and Taylor, S.P. (1993) **Vision in Vehicles IV**. North Holland (355 pages).

Brogan, D., Gale, A. and Carr, K. (1993) **Visual Search 2**. Taylor and Francis (477 pages).

The cost of the Dalton conference book is £43 (including postage in the UK) for AVA members or £48 for non-AVA members. If you are outside the UK then add £5 per book.

Dickinson, C., Murray, I. and Carden, D. (1996) **John Dalton's Colour Vision Legacy**. Taylor and Francis (784 pages).

AVA '97

Image Quality

including the AVA Annual General Meeting

9th - 11th April 1997

University of Abertay, Dundee

Preliminary programme:

For more information contact Dr Malcolm Cook:
email m.cook@river.tay.ac.uk

Wednesday 9th April

Session 1 : 11:00-12:40 Image Quality I

11:00 Effects of stereo and motion manipulations on measured presence in stereoscopic displays. J. Freeman, S.E. Avons and J. Davidoff, Essex University.

11:25 Segregation of motion information via stereoscopic depth information. R.J. Snowden and M. Rossiter, University of Wales, Cardiff.

11:50 Relative size as an available coding dimension in stereoscopic space. P. Banton and P. Thomson, University of York.

12:15 University Lunch

Session 2 : 14:00-15:40 Image Quality II

14:00 Depth perception can use first and second order disparities. A. Statham and M. Georgeson, University of Birmingham.

14:25 Methods of assessing presence, a sense of *being there* within a displayed image. J. Freeman, S.E. Avons and J. Davidoff, Essex University.

14:50 The impact of helmet-mounted displays on visual attention. A.M. Rohaly and R. Karsh, US Army Research Laboratory.

15:15 Image quality measurements for evaluating stereoscopic display performance. A. Bhoopal, De Montfort University.

15:40 Afternoon Tea

Session 3 : 16:10-17:25 Image Quality III

16:10 Duration Neglect in television picture quality information. D. Hands, S. Avons and J. Davidoff, Essex University.

16:35 Encoding faces in byte sized chunks. M.H. Maxfield, Denbridge Digital.

Civic Reception 18:30 at University of Abertay

Buffet Dinner 19:30 at University of Abertay

Thursday 10th April

Session 1 : 9:00-10:40 Spatial and Chromatic Vision

9:25 Evidence for the independence of first- and second-order vision. A. Schofield and M. Georgeson, University of Birmingham.

9:50 A Naive Approach to Visual Coding. R. Clement and I. Moorhead, DERA, Fort Halstead.

10:15 Spatial Interactions between motion and colour. M.O. Scase, De Montfort University.

10:40 Morning Coffee

Session 2 : 11:15-12:30 Industrial/Clinical Speakers

11:00 Military Imaging Systems and Human Factors

11:15 GEC Optronics

11:30 Choice of waveband for target detection tasks in thermal imaging systems. Pilkington (Barr/Stroud)

12:00 Title to be announced. BAe BASE or BAe Sowerby

12:30 University Lunch

Session 3 : 14:00-15:00 AVA Annual Meeting

15:00-16:00 Geoffrey J. Burton Memorial Lecture

Image Quality Andrew Watson (NASA-Ames)

16:00-17:30 Afternoon Tea, Exhibit Session Poster Session/Finger Buffet

Posters

a) Second-order vision requires second-order calibration. A. Schofield and M. Georgeson, University of Birmingham.

b) Designing signing. S.E. King and M.J. Cook, University of Abertay.

c) Gaze displacement with a moving visual frame. M.T. Swanston, H. Pengelly and M.J. Cook, University of Abertay.

d) Computers and the visually impaired. R. Gledhill, University of Abertay.

19:00 Evening Meal on HMS Unicorn/Pierre Victoire

Friday 11th April

Session 1 : 9:00-10.30 Open Contributions

9.25 Changes in perceived image size after PRK surgery. H.E. Ross, B.J. Craven and G. Whittaker, University of Stirling.

9:50 Defocus, ocular aberrations and the contrast sensitivity function. R.L. Woods, N.C. Strang and D.A. Atchison, Glasgow Caledonian.

10:15 Dark-adaptation as a model of the Parkinsonian visual system. B. Wink and J.P. Harris, University of Reading and University of Wolverhampton.

10:40 Morning Coffee

11:10 Tracking at different display frequencies. M.J. Cook, University of Abertay.

11:35 Participation of imagery code in recognition performance, T.A. Rebeke, Institute of Psychology, Russia.

Registration and accommodation costs

For more information contact Dr Malcolm Cook:
email m.cook@river.tay.ac.uk

Registration

Conference Registration (3 days) AVA member	£60.00
Conference Registration (3 days) non-AVA member	£70.00

	AVA/Non-AVA
Day 1 Conference Registration Fee	£26.00/30.00
Day 2 Conference Registration Fee	£26.00/30.00
Day 3 Conference Registration Fee	£26.00/30.00

(NB Registration includes coach costs for transporting delegates to conference venue.)

Accommodation at Dundee University
(Bed and Breakfast)

Wednesday 9 th April	£33.00
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Thursday 10 th April	£33.00
Friday 11 th April	£33.00

Lunch and Drink (Abertay Students Association)

Wednesday 9 th April	£6.00
Thursday 10 th April	£6.00
Friday 11 th April	£6.00

Wednesday 9 th April - Evening Meal	£15.00
Thursday 10 th April - Conference Dinner	£6.00

The AVA committee intends to offer one or more prizes of 50 pounds (depending on the number and quality of submissions) for the best post-graduate/post-doctoral posters or demonstrations.

For more information please contact:

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Stop Press!

We would like to encourage more postgraduate involvement in AVA97 and so the conference organiser will be accepting postgraduate poster contributions until the end of March.

Meeting Report

Locus Questions in Vision

18th December, 1996, Aston University

On Wednesday December 18th, 57 delegates visited the Department of Vision Science at Aston University for the AVA's first one-day Christmas Meeting. Delegates were mainly British, though overseas visitors came from Australia, Italy and USA. The day was split into three sessions, punctuated by a buffet lunch and afternoon coffee. Over the course of the day fourteen talks, including two invited lectures, were delivered to an enthusiastic and receptive audience. As impressive as the talks themselves was the wide range of investigative techniques represented at the meeting. Presentations drew on psychophysics, MEG, fMRI, PET, VEP, TMS, computational modelling and references to single cell recordings. Themes too were varied, ranging from models of edge coding and visual frames of reference to experiments on blindsight, visual memory, visual search and learning, and an eclectic group of papers on colour vision. In several presentations, depth perception was an important issue, with stimuli based on motion, shading and occlusion cues. One broad view was that rapid perceptual access, or indeed, visual awareness, comes after preliminary filtering for motion and luminance, perhaps at a stage where object properties are made explicit. Perceptual grouping was also shown to occur later than is often supposed for certain kinds of stimuli. Another view was that "mosaic" and "amodally completed" representations may not be sequential representations but parallel streams competing for visual awareness. A poster session in the evening provided the backdrop for chat, both social and scientific, and was embraced by all with high spirits. Indeed, several 'guest' delegates pledged AVA membership at this point! Perhaps predictably, the preferred choice for an evening meal was the local pub, a mere stone's throw away from the Department, where good humour and science continued well into the evening.

A most enjoyable start to the Christmas break.

Refereed meeting abstracts can be found at:

<http://www.pion.co.uk/perception/lqv96/prog.html>

and <http://www.dmu.ac.uk/ava/aston-ab.html>

The abstracts were published in *Perception*, 1996, volume 25, number 11, pages 1369-1376.

Tim Meese, Meeting Organiser



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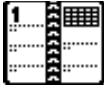
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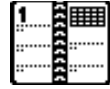
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References supplied (as usual!) by:

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Meetings Calendar



1997

- March 19 *Celebration of the life of Keith Ruddock.* Blackett Laboratory, Imperial College.
Contact: Cristina Kent 0171 594 7888
email: c.kent@ic.ac.uk
- March 24-26 *Visual Scales: Photometric and Colorimetric Aspects.* NPL, Teddington, Middlesex.
Contact: Dr Julie Taylor, 0181 943 6539
- April 9-11 *AVA'97 Image Quality.* University of Abertay, Dundee, UK. Contact: Dr Malcolm Cook, University of Abertay, Bell Street, Dundee, DD1 1HG, email:
m.cook@river.tay.ac.uk
- May 11-16 *ARVO* Fort Lauderdale, USA
<http://www.arvo.org/arvo/>
- August 24-29 ECVP Helsinki-Espoo, Finland
email: ecvp97@helsinki.fi
<http://www.psych.helsinki.fi/ecvp97>
- September 4 *AVA meeting on depth perception.* University of Surrey. email: M.Bradshaw@surrey.ac.uk
- September 14-17 *Vision in Vehicles 7,* Marseilles, France.
Contact: 01332-622287,
email: avru@derby.ac.uk
- November 5 *AVA postgraduate meeting.* College of Optometrists, London. Contact: 0171 373 7765
- November 19-20 Brain mechanisms of selective perception and action. The Royal Society, London.
<http://www.royalsoc.ac.uk/rs/>

