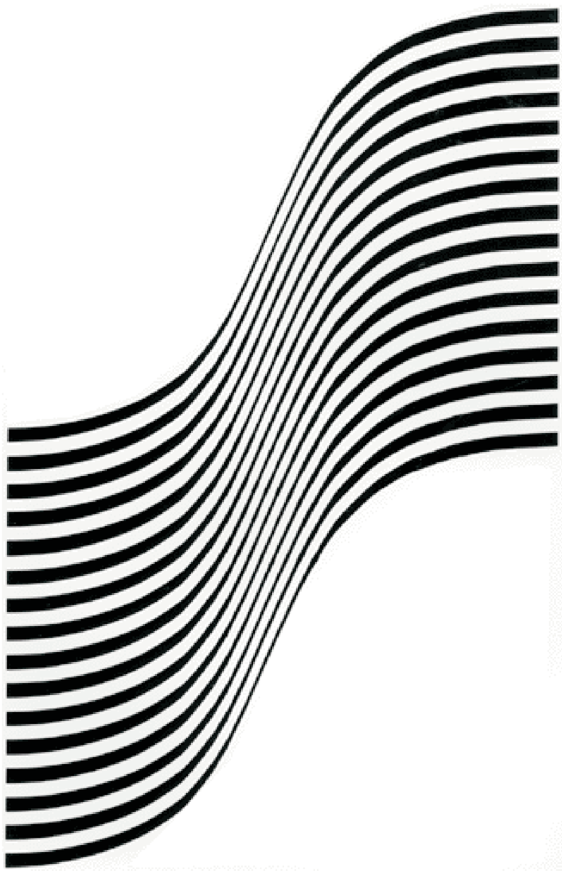
vision

Bulletin of the Applied Vision Association



Geoffrey J. Burton Award
Abstracts: AVA98 Dundee
Call for papers: Natural Images, Bristol
References on Vision

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APPLIED VISION ASSOCIATION

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42 CRAVEN STREET
LONDON WC2N 5NG
Tel: 0171-839-6000 Fax: 0171-839-6800

THE APPLIED VISION ASSOCIATION IS A REGISTERED CHARITY NO: 1049146

COMMITTEE OF MANAGEMENT

Dr Mark Bradshaw, University of Surrey.
Tel: 01483 300800 x3014 Fax: 01483 532813
email: M.Bradshaw@surrey.ac.uk

Dr Sarah Waugh, University of Aston
Tel: 0121 359 3611 ext 5425
email: s.j.waugh@aston.ac.uk

Dr Malcolm Cook, University of Abertay Dundee
Tel: 01382 308749 Fax: 01382 223121
email: m.cook@tay.ac.uk

Dr David Simmons, Glasgow Caledonian
email: D.R.Simmons@gcal.ac.uk

AVA Secretariat: Mr Nick de Brunner, College of Optometrists
Tel: 0171 839 6000 Fax: 0171 839 6800
email: ndebrunner@coptom.demon.co.uk

AVA CORPORATE MEMBERS:

Data Cell Ltd., S C House, Van Wall Business Park, Maidenhead, Berks., SL6 4UB. Contact: Mr Giles Doe.

Institute for Human Factors TNO, P.O.Box 23, 3769 ZG Soesterberg, The Netherlands. Contact: Dr A van Meeteren.

National Illumination Committee of Great Britain, c/o CIBSE, Delta House, 222 Balham High Road, London SW12 9BS.

Dutch Working Group Ergophthalmology, c/o NORI, Postbus 12141 1100 AC, Amsterdam, The Netherlands. Contact: Dr T. J. T. van den Berg.

Pilkington Optronics, Glascoed Rd.,St Asaph, Clwyd, LL17 0LL Contact: Mr J. Foley.

Sowerby Research Centre, British Aerospace, P.O.Box 5, Filton, Bristol BS12 7QW. Contact: Dr KT.Carr.

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

Noticeboard

AVA on the Internet

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.
There is also an AVA anonymous ftp site at: *ftp://hc.les.dmu.ac.uk*
This site contains:

- a hyperspectral data set of natural scenes produced by Gavin Brelstaff (see http://www.crs4.it/~gjb/ftpJOSA.html).
- David Foster's bootstrap program for estimating the accuracy of a statistical estimate derived from a set of experimental data (see http://www.vs.aston.ac.uk/Research/bootstrap.html).

If there is anything else you think this archive should contain then let us know.

AVA and OPO Subscriptions

Membership for 1998/1999 will be as follows: ordinary members £18, student members £9. Renewal notices will be sent out in September. Those members who pay by standing order for the AVA and Ophthalmic and Physiological Optics please check that the correct amount is being paid to the AVA.

Editorial

This issue of the Bulletin contains abstracts from the AVA annual meeting in Dundee and also information about a number of AVA meetings in the future. The AVA is pleased to announce that Simon Watt from the University of Surrey was awarded £400 from the Geoffrey J. Burton Memorial Fund. If you have any comments on the Bulletin of the AVA then do contact me: mscase@dmu.ac.uk

Deadline for copy for the next Bulletin - 14th August 1998

Geoffrey J. Burton Memorial Fund

The fund was established in 1986 with the aim of providing financial assistance to students (postgraduates studying for a higher degree or first-year postdoctoral junior scientists) 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 £400.

The AVA Committee has decided that from now on there will be a single award made once a year. The closing date for awards will be on 28th February each year and will be for conferences held from 1st March to the following 28th February (i.e. there will not be retrospective awards). Applicants do not have to be presenting at an AVA conference.

The next closing date for applications is:

28th February 1999

for conferences held between 1st March 1999 and 28th February 2000.

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

The AVA Secretariat,
College of Optometrists,
42 Craven Street,
London,
WC2N 5NG.

An award of £400 was given to Simon Watt from the University of Surrey to help contribute toward costs of attending ARVO in the USA to present a poster entitled "The role of retinal size and retinal disparity in the control of reaching and grasping".

Simon's abstract is as follows:

The role of retinal size and retinal disparity in the control of reaching and grasping.

S.J. Watt, M.F. Bradshaw, P.B. Hibbard and I.R.L. Davies
Department of Psychology, University of Surrey, UK.

Purpose. To examine the effect of object distance on human reaching behaviour under monocular and binocular viewing, independently of retinal size and depth. Servos *et al* (1992, *Vision Research*, 32, 1513-21) found that reaching under binocular viewing was more efficient, showing shorter onset times, higher peak velocities, and shorter movement times. Under both binocular and monocular viewing, kinematic indices of the reach (e.g. peak velocity, peak acceleration) were scaled by object distance. However, they did not compensate for retinal size or retinal disparity when viewing distance was manipulated. In addition, the effects of retinal disparity and monocular/binocular viewing could not be separated. Methods. To augment their findings, normal and binocular stereoblind participants reached for and lifted solid rectangular objects placed at 30, 43 and 55 cm along the midline in normal lighting conditions under monocular and binocular viewing. Subjects' heads were held stationary. A range of object sizes were used so that the projected sizes could be equated at the three distances. Object height was randomised. A *MacReflex Motion Analysis* system was used to analyse movement parameters. Results. Under both monocular and binocular conditions, peak velocity was a linear function of an object's distance, and was not affected by the magnitude of retinal size or disparity. Peak velocity increased more rapidly with increasing object distance under binocular viewing than under monocular viewing. Movement onset times were longer under monocular than under binocular viewing. Reach profiles of stereoblind participants did not differ significantly from those of normal participants. Conclusions. The temporal parameters of reaching movements were not affected by object size. Object distance is the vital parameter. This supports the findings of Servos *et al*, and holds even when retinal size and retinal disparity are equated for objects presented at different distances.

Supported by the BBSRC and the Royal Society

Applied Vision Association AVA'98

University of Abertay, Dundee 28-29 May 1998 Meeting abstracts

The Geoffrey J. Burton memorial lecture was given by Nick Wade.

Scottish Visionaries

N. J. Wade
Department of Psychology, University of Dundee, Dundee DD1 4HN

The contributions of six Scots in the eighteenth and nineteenth centuries to vision research will be briefly described. Thomas Reid (1710-1796), founder of the Scottish "common sense" school of philosophy, separated sensation from perception and conducted experiments on strabismic subjects, demonstrating amblyopia in the deviating eye. Charles Bell (1774-1842) distinguished between the sensory and motor spinal nerves, described the geometry of binocular single vision, and presented evidence for an outflow theory of visual direction. His contemporary, David Brewster (1781-1868), invented the lenticular form of stereoscope and performed experiments on space perception and a range of subjective visual phenomena. Brewster also coined the term colour blindness, which was investigated in much more detail by James Clerk Maxwell (1831-1897), whose experiments on colour mixing rendered colour vision a quantitative science. Alexander Bain (1818-1903) laid the conceptual foundations for neural networks and described what has become called Hebb's postulate. One of Bain's students, David Ferrier (1843-1928), carried out electrical stimulation of the brain, mapping sensory and motor regions of the cortex.

Thomas Reid (1710-1796) reacted to Berkeley's idealism and Hume's skepticism by arguing that the evidence of external reality is provided by the common activities of the senses and is supported by common sense intuition. "Let scholastic sophisters entangle themselves in their own cobwebs; I am resolved to take my own existence, and the existence of other things, upon trust; and to believe that snow is cold, and honey sweet, whatever they may say to the contrary. He must either be a fool, or want to make a fool of me, that would reason me out of my reason and senses."

Thus, Reid founded the Scottish common-sense school of philosophy, of which Dugald Stewart (1753-1828), Thomas Brown (1778-1820), and William Hamilton (1788-1856) were the principal protagonists. Their ideas were to be influential in the development of psychology in America in the nineteenth century. The school was opposed to associationism, particularly when it was couched in physiological language. Reid also proposed a faculty psychology; faculties were innate properties of the mind which exerted control over habits, or behaviour. His descriptive psychology could be studied by reflection on mental activity, by an analysis of the use of language, and by observations of behaviour. He provided a bridge between the extreme rationalists and empiricists. His belief in the power of reason was tempered by a desire to accumulate evidence empirically. He conducted experiments on space perception to show how people with squints gradually overcome double vision: “one who squints, and originally saw objects double by reason of that squint, may acquire such habits, that when he looks at an object with his best eye, he shall have no distinct vision with the other at all.” This was supported by evidence from examinations of the visual acuity in each eye of twenty such individuals. He believed that the perception of objects was given directly by divine assistance but that sensation derives from physical objects themselves. Although they are described similarly in language, he considered that they were different - sensations referred to the immediate actions of the senses whereas perceptions are always associated with objects that continue to exist whether or not they are perceived. Perceptions could be innate or acquired. The separation of sensation from perception has remained with psychology to the present day. Paradoxically, it was the modern standard-bearer of direct realism, Gibson, who dismissed this distinction.

Reid was born in Strachan, in the north east of Scotland, and entered the ministry after studying at Marischal College, Aberdeen. In 1752 he became professor of philosophy at King’s College, Aberdeen, and he was appointed successor to Adam Smith (1723-1790) as professor of moral philosophy at Glasgow University in 1764 - the same year An Inquiry into the Human Mind, and on the Principles of Common Sense was published. He is represented in the context of his common senses.

Charles Bell (1774-1842) has been called the father of physiological psychology. In his privately published Idea of a New Anatomy of the Brain (1811) Bell described his experiments thus: “On laying bare the roots of the spinal nerves, I found that I could cut across the posterior fasciculus of nerves, which took its origin from the posterior portion of the spinal marrow without convulsing the muscles of the back; but that on touching the anterior fasciculus with the point of the knife, the muscles of the back were immediately convulsed. Such were my reasons for concluding that the cerebrum and the cerebellum were parts distinct in function". FranTauois Magendie (1783-1855) established that the posterior roots are sensory and the anterior roots motor in 1822. This clear evidence for a functional division in the central nervous system was of tremendous import, as much of the subsequent research involved pursuing this division to ever higher centres. It also provided a physiological basis for localisation of function, in accord with Gall's psychological speculations.

Bell traced the course of the nerves from the senses to specific areas of the brain, thereby suggesting a principle of specific nerve energies: "It is provided, that the extremities of the nerves of the senses shall be susceptible each of certain qualities in matter; and betwixt the impression of the outward sense, as it may be called, and the exercise of the internal organ, there is established a connection by which the ideas excited have a permanent correspondence with the qualities of bodies which surround us". In a later paper to the Royal Society he described the muscle or proprioceptive sense and distinguished by experiment the consequences of active and passive eye movements on visual direction.

Bell was born and died in Edinburgh, although he made his mark in London. Bell, aged thirty, moved to London to practice surgery and eventually established a medical school. The previous year he had written the third volume of the Anatomy of the Human Body (1803), with his oldest brother, John, who was a noted Edinburgh surgeon. His arrival in London was inauspicious, as few knew of his work, but with the publication of his Essays on the Anatomy of Expression in Painting (1806), combining his artistic talents and anatomical knowledge, he became widely recognised. The nerves of the head, in which Bell's portrait is shown, was originally drawn by him, and it appeared in the third edition of the book. He demonstrated that the muscles of expression are controlled by the seventh cranial nerve, damage to which can result in Bell's palsy.

David Brewster (1781-1868) was a physicist who devised two of the most popular optical instruments of the nineteenth century - the kaleidoscope and the lenticular form of the stereoscope. They were known as a philosophical toys, because they combined science with amusement. His principal interest was in the phenomenon of polarisation, and he supported Newton's corpuscular theory of light in opposition to Young's wave theory. Brewster wrote on visual as well as physical optics and his pen, from which he made his living, was applied with polemic and perspicacity to far broader human endeavours. For example, he referred to Bell's experiments on the influence of the eye muscles on visual direction as physiological phantasies, largely because Brewster considered that the seat of vision is in the eye rather than being determined more centrally. He applied the concept of visible direction to a wide variety of phenomena, including stereoscopic vision: objects viewed with two eyes were seen at the intersection of the monocular visible directions. Although he did not add substantially to theory in the context of binocular vision, he did devise, in 1849, the most popular design of stereoscope used in nineteenth century households. It consisted of a single lens cut in half so that the two half-lenses, when appropriately mounted, acted as magnifiers as well as prisms, fusing adjacent stereophotographs. Brewster also made forays into colour vision, suggesting that sunlight was composed of three colours (red, yellow, and blue), and introducing the term colour blindness into our language. Formerly, it was referred to as Daltonism, after the chemist John Dalton (1766-1844), who described his own inability to distinguish red from black. Colour blindness was preferred because "no person wishes to be immortalised by his imperfection".

Brewster was born in Jedburgh and studied divinity at Edinburgh University. His diffidence when preaching led him to give up the ministry in favour of natural philosophy. He earned his living as an editor of scientific journals and as a prolific writer. His first academic post was as Principal at St. Andrews University in 1839, and he later became Principal at Edinburgh University.

The kaleidoscope is a simple optical instrument involving two plane mirrors inclined at an angle like 45 degrees (which can be divided into 360 degrees) and located in a tube. Viewing through one end of the tube multiplies the images of objects at the other. As with most of Brewster's inventions there was controversy regarding its originality.

James Clerk Maxwell (1831-1879) rendered the investigation of colour vision a quantitative science and applied it to the analysis of anomalies in colour perception. He revived Young's three colour theory, as did Helmholtz, but provided a more complete defence of it. The essential difference between their approaches was that Maxwell appreciated that subtraction as well as addition was required in order to produce all colours from three primaries. Moreover, Helmholtz had argued that the three-colour mechanism acted at the level of the specific nerve energies whereas Maxwell, like Young, contended that there were three different colour receptors. Support for this derived from his studies of colour defective individuals, who could be classified according to the colour receptors that were absent or anomalous.

Maxwell introduced the method that has become standard in experiments on colour mixing: “The coloured paper is cut into the form of discs, each with a small hole in the centre, and divided along a radius, so as to admit of several of them being placed on the same axis, so that part of each is exposed”. When the device, often called Maxwell’s disk, was rotated rapidly the colours combined: “I have found by independent experiments, that the colour produced by fast spinning is identical with that produced by causing the light of the different colours to fall on the retina at once”. Later, smaller discs were added so that comparisons could be made during rotation. Most colour defectives could match any colour with only two of the primaries. The resulting equations led to the proposal of a three-dimensional colour solid, with variables that would now be called hue, saturation and intensity. The location of white in the colour solid was of critical importance: hue was determined by the angular position with respect to white, and saturation by the distance from white. Maxwell considered that colour was the province of physics rather than phenomenology: “I think there is a good deal to be learned from the names of colours; not about colours, of course, but about names”.

Maxwell was born in Edinburgh and studied physics at its university followed by mathematics at Cambridge. He held posts at Aberdeen and London Universities before his appointment, in 1871, as foundation professor of experimental physics at Cambridge University. He commenced his colour experiments at Edinburgh and returned to them throughout his life. In 1861 he demonstrated the first colour photograph to a meeting at the Royal Institution. Separate photographs of a tartan ribbon were taken through red, green, and blue filters and projected through similar filters.

The colour triangle had its origins in Young’s work, but it was subsequently modified by Maxwell. He is portrayed in combination with a diagram illustrating the chromatic relations of coloured papers; ultramarine, vermilion and emerald-green occupy the corners.

Alexander Bain (1818-1903) wrote two textbooks on psychology that were to provide the prototypes for subsequent writers; he also founded the first journal, Mind, concerned principally with psychological issues in 1876. Bain integrated sensory physiology with philosophy to espouse an independent discipline of psychology "conceiving that the time has now come when many of the striking discoveries of Physiologists relative to the nervous system should find a recognised place in the Science of Mind". He extended the union to higher mental processes and voluntary action, emphasising the importance of sensory feedback in the control of movement: "In treating of the Senses, besides recognising the so-called muscular sense as distinct from the five senses, I have thought proper to assign to Movement and the feelings of Movement a position preceding the Sensations of the senses; and have endeavoured to prove that the exercise of active energy originating in purely internal impulses, independent of the stimulus produced by outward impressions, is a primary fact of our constitution". In stressing the motor component of perception he was the harbinger of behaviourism: "action is a more intimate and inseparable property of our constitution than any of our sensations, and in fact enters as a component part into every one of the senses." He also appreciated those actions connected with the alleviation of pain or the increase of pleasure would occur with greater frequency.

The Senses and the Intellect (1855) and The Emotions and the Will (1859) became the standard texts for psychology until James's Principles appeared three decades later, and James drew upon them considerably. In addition to his texts on psychology Bain wrote books on English grammar, ethics, logic, rhetoric, and phrenology.

Bain was born in Aberdeen, studied philosophy at Marischal College, Aberdeen, and taught moral and mental philosophy there for the next five years. He returned to Aberdeen University in 1860, as professor of logic and rhetoric, after a period in London lecturing and living off his pen. The illustration reflects the importance of Bain's Mind, which was initially edited by one of his former students; it also incorporates a model of a neural processing designed by Bain to give differential output with input of varied intensities. That is, he proposed a connectionist account of learning: "I can suppose that, at first, each one of the circuits would affect all others indiscriminately; but that, in consequence of two of them being independently made active at the same moment (which is the fact in acquisition), a strengthened connection or diminished obstruction would arise between these two, by a change wrought in the intervening cell-substance; and that, afterwards, the induction from one of these circuits would not be indiscriminate, but select; being comparatively strong towards one, and weaker towards the rest".

David Ferrier (1843-1928) electrically stimulated the brains of many species and mapped areas of the cortex: "the whole brain is regarded as divided into sensory and motor regions.. a scientific phrenology is regarded as possible". The long-held view that the brain was unaffected by direct stimulation had been overturned by Gustav Theodor Fritsch (1838-1927) and Eduard Hitzig (1838-1907) in 1870. They galvanically stimulated the exposed brains of unanesthetized dogs and found specific precentral areas that resulted in muscular contractions: they divided the cortex into two parts - motor and not motor. Thus a new physiology, based on cortical localisation, was being established at around the time of the new psychology. "The discovery of new methods of investigation opens up new fields of inquiry, and leads to the discovery of new truths. The discovery of the electrical excitability of the brain by Fritsch and Hitzig has given a fresh impetus to researches on the functions of the brain, and throws new light on many obscure points in cerebral physiology and pathology."

The involvement of certain cortical regions in motor control had been proposed by John Hughlings Jackson (1835-1911) on the basis of his studies of epilepsy and these, too, were the stimulus for Ferrier's investigations. In 1873 he commenced a series of experiments on anaesthetised frogs, pigeons, guinea pigs, rabbits, cats, dogs, and monkeys in which he applied faradic stimulation to localised areas of the cortex; he also carried out ablations of the same areas. These demonstrated large species differences, and pointed to the dangers of extrapolating broadly, as Flourens had done. Consequently, most attention was paid to stimulation of monkey cortex, and Ferrier described his results in The Functions of the Brain (1876), which was dedicated to Jackson. Precise movements of muscle groups followed localised stimulation in the precentral area, sensory defects resulted from more posterior ablation, and lesions in the frontal cortex disturbed intelligent behaviour: "The removal of the frontal lobes causes no motor paralysis, or other evident physiological effects, but causes a form of mental degradation, which may be reduced in ultimate analysis to loss of the faculty of attention."

Ferrier was born in Aberdeen and studied classics and philosophy at its

University, where he came under Bain's influence. After a year at Heidelberg he studied medicine at Edinburgh University. He was appointed professor of forensic medicine at King's College Hospital, London, and later occupied the specially created chair of neuropathology. He was a founding editor of the journal Brain in 1878, and was instrumental in instigating the first surgical removal of a tumour from a human brain. Ferrier is represented in a drawing of the human brain that is marked with the motor map of monkey cortex: the numbers specify localised movements with the letters representing movement areas for the hand and wrist.

The visual demands of soccer

David R. Simmons, Joseph M. Duffy and Mary-Frances Coyle.

Department of Vision Sciences
Glasgow Caledonian University,
City Campus,
Cowcaddens Road,
Glasgow G4 0BA
Tel: (0141) 331 3389
e-mail: drsi@gcal.ac.uk

What are the visual demands placed upon the soccer player? The traditional approach to determining the visual demands of a sport is to perform a VISUAL TASK ANALYSIS (VTA). This analysis breaks down the activity by examining which visual modules (e.g. colour vision, depth perception) are important to the task and then determining whether the demands made upon these modules are high, medium or low (see, e.g., Sports Vision (1995) (eds) Loran and MacEwan). We have extended this analysis by first breaking soccer down into component activities: passing, tackling, heading and shooting. The highlighted visual modules (e.g. motion perception) from these activities were then broken down further to reveal which aspects are most important, such as speed judgement, trajectory judgement or motion detection. Information was gathered by video observation of professional games, measurement of light levels in sports arenas, and from coaching manuals. The aim was to produce a series of sport-specific visual tests to probe the extent to which these visual abilities are important to the soccer player. The VTA suggested that, all aspects of motion perception and some of depth perception were the most crucial factors and the following tests were devised and employed in pilot studies: ball depth discrimination, peripheral motion detection (player running into visual field) and dynamic visual acuity (visibility of a high spatial frequency grating attached to a running player).

Comparison of the performance of normal and schizophrenic subjects in gap pursuit tasks

Paul C. Knox & Gillian O'Mullane

Vision Sciences, Glasgow Caledonian University, Cowcaddens Rd, Glasgow G4 0BA

It has been known for some time that a deficit in smooth pursuit (SP) is present in many schizophrenics, and it has been suggested that this might serve as a biological marker for the neuropathology which underlies schizophrenia. It is also known that in *gap* tasks, saccade latency is modified in a different way from normals. With the confirmation that there is a gap effect on pursuit latency (Knox, 1998, Neuroreport 9, 809-812) we wished to compare SP performance in gap pursuit tasks in normals and schizophrenic subjects.

We have investigated SP in two subjects diagnosed with schizophrenia (ICD 10 Criteria) and compared it with normal subject data. All tasks were performed monocularly. A fixation target, presented for a variable period (0.5-1.5s) in the middle of the display, was replaced by the pursuit target which moved to the left or right of fixation, through the centre of the display, continuing laterally until it disappeared off the edge of the display. In sets of four interleaved tasks (always two leftward and two rightward) one task had no gap, the other three had gaps of 100, 200 or 400ms. Subjects were instructed to track the moving target. Eye position was recorded using infrared oculography, digitised at 1kHz and stored on disc. SP latency was measured off-line from velocity traces for each trial in which pursuit was preceded by a period of steady fixation. We were able to collect two runs of 96 trials on each of the schizophrenic subjects.

SP latency both for leftward and rightward SP was much longer in the schizophrenic subjects than for normal subjects. In addition, there was a marked difference between latency for leftward and rightward SP in the schizophrenic subjects and an asymmetry in the gap effect, which was not observed in the normals. Further work is required in a larger number of subjects to establish in what proportion of schizophrenic subjects these differences in performance and asymmetry in the gap effect are observed.

Using 'invisible stimuli' to provide a warning of inappropriate visual accommodation responses (WIVAR) with head-up displays (HUDs).

Graham K. Edgar
British Aerospace,
Sowerby Research Centre,
FPC 267, PO Box 5,
Filton, Bristol, BS12 7QW.
U.K.

James S. Wolffsohn and Neville A. McBrien
Department of Optometry and Vision Sciences,
Cardiff University of Wales,
Cardiff, U.K.

Although virtual image displays used in aircraft (such as head-up and helmet-mounted displays (HUDs and HMDs)) carry a number of benefits for the user, there has been some concern that pilots may, at times, be inappropriately accommodated (focused) when using these displays. This 'short sightedness' may also occur without the use of displays when, for instance, searching a featureless field (such as a clear sky or the sea) for a target. This inappropriate focusing response is obviously not desirable and the consequences can be serious and may include an inability to detect external targets and misperceptions of the size (and distance) of objects in the 'outside world'.

This abnormal focusing response is particularly dangerous as the individual concerned may be completely unaware that there is a problem. The system described in this report is designed to give warning of inappropriate lapses in the level of accommodation. The system is designed to be as simple as possible and consists of two (vertical) lines projected onto a screen (such as the windshield or HUD combiner) close to the user. If the user is focused appropriately the percept should be of four lines (but see below for a refinement of this technique); if the user is focused inappropriately the percept should be of two (or possibly three) lines. A refinement of the technique (and one of the advantages of it) is that, in daylight, it is possible to adjust the luminance of the lines so that they are only visible if there is a problem - and so should not present a distraction under normal circumstances. This system was mocked up and evaluated using an aircraft HUD and was found to significantly improve the accommodation response.

Motility and binocularity outcomes in retinal detachment surgery primary vitrectomy versus plombage or external surgery

Lesley A Wright/Marie Cleary
Glasgow Caledonian University and Glasgow Eye Infirmary

Ocular motility defects are well recognised as a problem following retinal detachment surgery. It is presumed that plombage is primarily responsible and hence the increasing use of vitrectomy as a primary procedure in retinal detachment repair might be expected to reduce the incidence of ocular motility defects.

Accordingly two groups of patients presenting with uncomplicated rhegmatogenous retinal detachments were examined following primary surgical intervention for binocularity outcomes. The first group, n=12, underwent primary vitrectomy, and the second group, n=35, underwent plombage.

Ocular movements were full in 75% of the first group and 51% of the second. Restricted vertical movements were found in 25% of the first group and 34% of the second group, whereas horizontal and general restrictions were only evident in the second group (9% and 6%).

Binocularity was assessed primarily by the cover test, modified Bagolini glasses with a red filter to confirm superimposition, and motor fusional reserves were investigated with prisms. Superimposition was attained in 58% of group one, and 43% of group two, but true motor fusion was only attained in 25% of group one but in 31% of group two. The remainder did not achieve any binocularity, but 17% of group two and none of group one complained of diplopia.

Although the group sizes are small and unequal the findings confirm that ocular motility problems are not exclusive to plombage although the incidence is lower in the group which underwent primary vitrectomy. Slinging of the extraocular muscles, particularly in cases of multiple procedures, and the accompanying dissection of Tenon's must be considered as contributory factors. These motility deficits produced significant longterm symptoms in both groups.

The effect of other confounding factors such as macular status, final visual acuity and refractive error, are also considered.

The gap effect on saccade and pursuit latencies in dyslexic Meares-Irlen subjects and non-dyslexic subjects.

Nadia Northway, Gillian M O'Mullane and Paul C Knox
Vision Sciences, Glasgow Caledonian University, City Campus, Cowcaddens Rd, Glasgow G4 OBA

Saccade latency is modified differently in dyslexic subjects compared to normals in gap saccade tasks. It is now known that smooth pursuit latency is altered in gap tasks. We have compared the gap effect on pursuit latency in a group of normal subjects (n=5) with a group of subjects with Meares Irlen syndrome (MI) and dyslexia (n=7)

Subjects viewed a visual display at 57cms with their left eye. Sets of four saccadic or pursuit tasks were interleaved in runs of 52 or 96 trials. In saccade runs, normal (gap:0ms) and gap (200ms) trials to left and right were presented pseudorandomly. In pursuit runs, the target stepped 5° either to the left or right of a fixation target and then moved at 14°/s back through the centre of the display (gaps: 0ms,100ms, 200ms, 400ms). Left eye position was measured using infrared oculography, digitised and stored on disc for analysis. Eye movement latencies were measured off-line from velocity traces. In the normal group there was a gap effect for pursuit to the left and right. In the MI group, mean pursuit latencies were significantly longer that normal and the gap effect was absent for pursuit to the right. The gap effect on saccade latency was also asymmetric in at least some MI subjects.

These results suggest that the alteration which is normally seen in gap tests may be absent or asymmetrical in subjects with Meares Irlen syndrome for both saccades and smooth pursuit. It remains to be seen whether they can be explained in terms of visual deficits or if other mechanisms, such as an attentional asymmetry, must be invoked.

Applied Vision Association
Natural Images
16 September 1998

Announcement and call for papers

The AVA will be holding a scientific meeting at the University of Bristol on 16th September 1998.

Speakers will include: David Tolhurst, University of Cambridge.

For more information please contact:

Ian Moorhead
email: i_moorhead@dera.gov.uk
Tel: 01959 514426 (work) 0468 431908 (mobile)

Applied Vision Association

Future meetings

The AVA is planning to hold a number of scientific meetings in the near future. Details of these meetings are given below. Further information will be included in future issues of the Bulletin. For the latest news please look at the meetings page of the AVA web site at: http://www.dmu.ac.uk/ava/

AVA Postgraduate meeting - College of Optometrists, London

11 November 1998

contact: Nick deBrunner (AVA secretariat)
NdeBrunner@COptom.demon.co.uk

AVA Christmas meeting - Aston University

16 December 1998

contact: Tim Meese T.S.Meese@aston.ac.uk

AVA 99 - Annual meeting- College of Optometrists, London

17 March 1999

Meeting theme: Visual Search

contact: Nick deBrunner (AVA secretariat)
NdeBrunner@COptom.demon.co.uk

AVA books for sale

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

Gale, A.S., Brown, I.D., Haslegrave, C.M., Kruysse, 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).

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

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Chris Dickinson
MJCCMD@fs1.op.umist.ac.uk

Meetings Calendar

1998

August 24-28	ECVP98, Oxford Contact: Brian Rogers bjr@psy.ox.ac.uk http://www.psych.ox.ac.uk/ecvp98.htm
September 8-9	British Congress of Optometry and Vision Science UMIST Contact: mjccmd@fs1.op.umist.ac.uk http://www.umist.ac.uk/UMIST_OVS/welcome.html
September 16	AVA Natural Images meeting, University of Bristol Contact: Ian Moorhead i_moorhead@dera.gov.uk
November 11	AVA Postgrad meeting, College of Optometrists Nick deBrunner ndebrunner@coptom.demon.co.uk
October 23-26	Silmo 1998 http://www.silmo.fr
December 16	AVA Christmas meeting, Aston University Contact: Tim Meese T.S.Meese@aston.ac.uk

1999

March 17	AVA99 annual meeting, College of Optometrists Nick deBrunner ndebrunner@coptom.demon.co.uk
May 9-14	ARVO, Ft Lauderdale, USA http://www.faseb.org/arvo/
August 10-14	23rd Pupil Colloquium, Nottingham http://www.mailbase.ac.uk/lists/pupil/files/