CORRESPONDENCE

Ocular trauma from party balloons

EDITOR,—Ocular trauma is recognised as a major cause of visual impairment. Though estimates of incidence vary, it clearly constitutes a major worldwide health problem. The majority of injuries are sustained by active and productive individuals with inevitable consequences on their future lifestyle and on society as a whole.[1] .

Blunt ocular trauma or "closed globe"[2] injury caused by compressed air blasts resulting in substantial ocular damage[3 4] is well recorded. However, since much of the literature relates to battlefield explosions, it is often difficult to prove that no other agent was involved. More recently, injuries from automobile air bags have been described.[5–7] Such injuries are ascribed to the high velocity at which the air bag lining strikes the occupant (up to 320 km/h) and to objects trapped between the eye and air bag, often spectacles.[8]

In discussions with one local balloon manufacturer, it was identified that a number of complaints are made each year to manufacturers regarding incidents involving party balloons, the majority of which relate to incidents that occur while playing with or misusing balloons. As far as we are aware, however, no injuries are reported to have resulted from direct trauma to the eye from the balloon.

We have recently seen three patients from the Wessex region who suffered significant closed globe ocular trauma following the bursting of such balloons and are aware of a fourth case where litigation was involved.

The first patient, a 48 year old woman with no previous ocular or medical history, suffered closed globe ocular injury to her right eye when the long thin party balloon she was blowing up by mouth exploded. She was not wearing glasses at the time. She presented to the eye casualty department within 3 hours with a painful red eye when the findings were a Snellen visual acuity of 6/24, multiple superficial corneal abrasions, a 3 mm hyphaema, traumatic uveitis and mydriasis, two focal points of iris sphincter rupture, inferior iridocorneal angle recession on gonioscopy, and inferior commotio retinae. Her initial management was with a short course of steroid, mydriatic, and antibiotic drops.

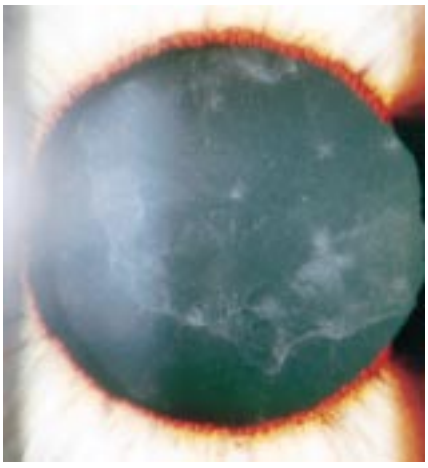

Figure 1 Traumatic cataract and iris sphincter rupture seen in patient 1.

Two years later, secondary anterior and posterior subcapsular lens opacification (Fig 1) is apparent, reducing her vision to 6/9. She is troubled by glare and has persistent anisocoria. As yet, cataract extraction is not felt to be justified. Secondary glaucoma has not developed nor have any retinal complications. Her other eye remains normal with 6/4 vision.

The second patient, a 34 year old man with no previous ocular or medical history, suffered closed globe ocular trauma to his right eye when the round party balloon he was inflating by mouth exploded. He was not wearing glasses at the time. He presented to the eye casualty department within 24 hours where the findings were a Snellen visual acuity of 6/12, ecchymosis of the upper lid, corneal abrasions, a 2 mm hyphaema, inferior iridocorneal angle recession on gonioscopy, phacodonesis, traumatic uveitis, and inferior commotio retinae. His initial management was with a short course of steroid, mydriatic, and antibiotic drops.

One year later, secondary posterior subcapsular lens opacification is apparent, reducing his vision to 6/9. As yet, cataract extraction is not felt to be justified. Secondary glaucoma has not developed nor have any retinal complications. His other eye remains normal with 6/5 vision.

The third patient, a 54 year old man with no previous ocular or medical history, suffered closed globe ocular trauma to his right eye when the party balloon he was inflating by mouth exploded. He was not wearing glasses at the time. He presented to the eye casualty department within 2 hours where the findings were a Snellen visual acuity of 6/12, superficial corneal abrasions, a microhyphaema, inferior angle recession, and commotio retinae. His initial management with a short course of steroid, mydriatic, and antibiotic drops.

At 6 months, secondary posterior subcapsular lens opacification is apparent, reducing his vision to 6/12. As yet, cataract extraction is not felt to be justified. Secondary glaucoma has not developed nor have any retinal complications. His other eye remains normal with 6/5 vision.

A further case was reported by a nearby unit with similar injuries and which has resulted in civil litigation and as a consequence, full details were not available for scrutiny.

There are many reports of air blast injuries resulting in ocular injury[8–10] of which those involving automobile air bags are the most recent. In many cases, however, it is difficult to be certain that no other agents are involved. Indeed, animal experiments and battlefield surveys[11] suggest that the blast is rarely the cause of intraocular injury but rather the missiles created by the explosion. Animal studies have shown that the only consistent ocular injuries that occur from high blast pressures are those of retrobulbar and subconjunctival haemorrhage. This is presumably due to the even distribution of the concussive force.

In the case of automobile air bags, some injuries result directly from the inflation of the intact bag.[6] But in some, contact with the chemicals[12] used to produce inflation (sodium azide) or objects propelled at the eye or trapped between occupant and air bag, such as spectacles,[9] are the cause.

Balloons remain a popular party decoration with new and often more adventurous designs. It is also the authors' impression that long balloons are more frequently used which involve a greater initial inflation pressure. Failure to use an appropriate inflation device may have contributed to the subsequent injuries. The basis for the injuries that we have reported, however, has yet to be determined. However, with all these considerations in mind, four mechanisms can be proposed for ocular trauma in our series.

(1) A sudden release of an air jet from the bursting balloon towards the eye could produce an air blast injury.

(2) A jet of air could propel the balloon into the eye by retropulsion.

(3) The elastic coating may recoil forcibly towards the eye as it contracts, which is more likely with long thin balloons. The direction of the recoil will depend on the location of the tear at the point of bursting.

(4) A combination of the previous three.

Since the pressure within a typical balloon is relatively low (estimated to be 30 mm Hg above atmospheric), it is unlikely that the kinetic energy of the released jet of air would be forcible enough to produce injury directly as seen experimentally of by retropulsion. Furthermore, the localised ecchymosis seen on the upper lid of patient 2, would support a focal contusion at that point, rather than an evenly distributed blast and is more consistent with injuries seen on the battlefield. It is most likely, therefore, that the recoiling balloon coating or the unexpanded tip produces the corneal abrasions and the intraocular damage suffered.

It is the authors' belief that manufacturers should now warn of the hazards of inflation by mouth and initiate strategies to avoid injury—for example, recommending the use of inflation devices or eye protection while inflating a balloon.

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Osteoporosis: a survey of consultant ophthalmologists

EDITOR,—We read with interest the commentary and recommendations of Hodgkins *et al* regarding management of patients on long term steroids.[1] This was recently a topic of discussion as part of a regional audit in the south west following a survey of consultant ophthalmologists' opinions regarding the management of patients treated for giant cell arteritis. The condition does not occur under

the age of 50 and is three times more common in women—that is, the population who would be treated are already at risk of osteoporosis. The survey consisted of 46 consultant replies and found that 28 (60.9%) did not manage patients with giant cell arteritis in isolation but would also refer them to medical colleagues. Of those who managed patients with giant cell arteritis in the longer term, which numbered 16, 70% did not provide prophylaxis for osteoporosis. Corticosteroids form the mainstay of treatment of giant cell arteritis and patients take them for long periods, particularly in Europe compared with the USA.[2] The evidence of the usefulness of steroid sparing agents has not been forthcoming and agents such as azathioprine and hydroxychloroquine have been reported with variable efficacy.[3 4] As the risk of development of corticosteroid induced osteoporosis is between 30% and 50%, it is important that an effort is made to consider its prevention and treatment when potentially long term corticosteroid treatment is being initiated.[5] The survey also revealed that 22 of the consultants (48%) would prescribe H_2 antagonists routinely to their patients on long term steroids although the evidence in the literature suggests that the risk of gastrointestinal complications is not significantly higher than the normal population unless non-steroidal anti-inflammatory drugs are being used concurrently.[6]

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Reply

EDITOR,—In reply to the letter by Kiné *et al*, we note their results are similar to ours reported in the *BJO*.[1]

The main thrust of our study and the letter by Kiné *et al* is that osteoporosis is a factor which should be strongly considered by a prescriber about to commence steroids in giant cell arteritis or polymyalgia rheumatica. This does not alter whether the instigator is an ophthalmologist, alone or in conjunction with a consultant physician. It is known the main calcium loss occurs in the first 3 months of treatment and therefore action would be best undertaken at the start of treatment.

We would entirely concur with the views expressed that azathioprine and similar drugs are only of use as steroid sparers and will not affect the course of the disease alone. We agree that their place is not substantiated in the literature at present and many clinicians remain hesitant about their usage. However, immunosuppressive agents can be used safely[2] if they are monitored appropriately.

Although not reported in our original paper we did ask about the use of H_2 antagonists and similar drugs. The survey showed that present practice is that 60% of consultant ophthalmologists will use these types of drugs when starting steroid treatment. Unless there is concurrent NSAID usage there is no increased risk of serious gastrointestinal compromise reported and this co-prescribing may be unnecessary.

We welcome the letter as furthering the debate on this difficult topic.

It is likely that drugs such as biphosphonates will be more frequently prescribed in the future although no firm indication exists as yet.

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Effect of PRK on intraocular pressure measurements and on keratometry

EDITOR,—Pepose *et al* discuss the problem of an inaccurate measurement of intraocular pressure (IOP) after photorefractive keratectomy (PRK).[1] To my knowledge, we were the first to demonstrate the apparent reduction of IOP after PRK for myopia in a group of 64 eyes (47 patients).[2]

We measured the IOP with the Goldmann tonometer in the central and temporal parts of the cornea before and after PRK for myopia during a period of 1 year. Whereas pressure values in the temporal part remained unchanged mean values in the central part were 2–3 mm Hg lower.[2]

Pepose *et al* say that "the small change in IOP measurement following PRK is probably not enough to alter a therapeutic decision in an individual patient known to have glaucoma". However, in our study, the differences between central and temporal measurements were higher, the higher the degree of intended correction, and reached 10 and 12 mm Hg.

Thus, these patients with high myopia might really be in danger of losing visual function, while IOP might seem normal and evaluation of disc cupping might be very difficult. In these patients, we recommend also measuring the pressure in the temporal part of the cornea.

Pepose *et al* cite Holladay and say that "in patients with previous PRK or LASIK, either manual or automated keratometry will both overestimate the change in central refractive power following these procedures". However, we showed that the reduction in dioptric power as measured with a manual keratometer or with videokeratography is less than the reduction in subjective refraction.[3] This phenomenon was later described by others. So, underestimation must be presumed in these cases.

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Reply

EDITOR,—I appreciate Dr Schipper's comments regarding our commentary,[1] as well as the important contributions of his group on intraocular pressure measurement following excimer laser photorefractive keratectomy.[2 3] No attempt was made to present a literature review of this subject in the forum or our commentary. However, the suggestion[4] and demonstration[5] that excimer PRK would lead to underestimations of Goldmann applanation tonometry predates Schipper's work[2 3] by several years. Readers may also find the reports of Chatterjee *et al*,[6] Faucher *et al*,[7] and Kohlhaas *et al* [8] on this subject to be of interest. The findings of our own studies[1] are in total agreement with Schipper,[2 3] as is our stated conclusion that the reduced central tonometry reading following PRK or LASIK might, in selected cases, delay the recognition that glaucoma is present following these procedures.

With regard to keratometry, the relation between the change in manifest refraction and change in corneal topography following excimer laser photorefractive keratectomy is complex. While studies by Schipper and others have shown smaller changes measured with videokeratography than by refraction, other investigators[9] have shown that topography tended to overestimate refractive change for corrections of 5 dioptres or less and underestimate the change for corrections greater than 5 dioptres. Such inconsistences may reflect the idiosyncrasies and confounding inaccuracies inherent to corneal topography units. These include the use of algorithms for power calculation based on spherical rather than aspherical optical systems; inaccurate power calculations at points distant from tile corneal apex; data averaging across meridians; alignment of videokeratoscopes perpendicular to the comeal apex; post-surgical changes in corneal and visual reference axes; interpolation rather than measurement of central corneal power; interexamination variation; and employment of a keratometric index of refraction of 1.3375 rather than the actual comeal refractive index of 1.376.[10]

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Deep lamellar keratoplasty with complete removal of pathological stroma for vision improvement

EDITOR,—We read with great interest the article by Sugita and Kondo and the editorial by Aggarwal.[1 2] We congratulate the authors on this paper which can contribute to the revival of lamellar keratoplasty. The authors report on deep lamellar keratoplasty in which the stroma is excised to the extent that only Descemet's membrane remained. We wish to comment that we have previously reported on a similar procedure.[3–5] We used a full thickness graft, since in the eyes operated by us the endothelium was compensated and graft clarity was maintained by the donor's corneal endothelium. It seems to us that deep lamellar keratoplasty with a full thickness graft can also be a useful procedure in cases with decompensated endothelium.

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1 Sugita J, Kondo J. Deep lamellar keratoplasty with complete removal of pathological stroma for vision improvement. *Br J Ophthalmol* 1997;**81**:184–8.
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Reply

EDITOR,—I am pleased by the interest and debate generated by the editorial[1] and also the paper by Sugita and Kondo.[2]

As mentioned in the editorial the concept of deep lamellar keratoplasty is not new. Its most attractive feature is almost complete eradication of the risk of graft rejection (as with lamellar keratoplasty) together with the potential of good visual acuity (as with penetrating keratoplasty).

Patients most likely to benefit from such a procedure are thus those with normal functioning endothelium but a diseased stroma. The problem to date has been (and still remains) that in such cases dissection to Descemet's membrane is time consuming and technically relatively difficult. Many have tried to improve the technique, including using air to help identify and separate the deep stromal fibres from Descemet's membrane. Archila in 1985,[3] Price in 1989,[4] and Chau *et al* in 1992.[5]

The paper by Sugita and Kondo[2] was interesting because they describe another technique to dissect the deep stroma from Descemet's membrane. They showed excellent results in a large series of cases using this technique.

Loewenstein and Lazar in their letter refer to their "Intentional retention of Decemet's membrane in keratoplasty for the surgical treatment of bullous keratopathy".[6] This is indeed an interesting concept.

In bullous keratopathy as the stroma is already hydrated it is much easier to identify and separate the deep stroma from Descemet's membrane.

As they themselves state in their paper, for the graft to function microperforations in Descemet's membrane are necessary and the production of a secondary aqueous filled chamber. I suspect that the donor endothelium is hence exposed to the recipient's immunological system in the same way as in penetrating keratoplasty, and hence the main advantage of deep lamellar keratoplasty (reducing the risk of rejection) is also probably lost. In all their patients Decemet's membrane opacified to some degree and this must reduce the final visual outcome. Indeed the best visual outcome they report is 6/60.[6]

The only advantage of this procedure over penetrating keratoplasty, in bullous keratopathy, is that the anterior chamber is not completely opened (only by microperforations). As the authors state this may be an advantage in some eyes where one does not wish to open the anterior chamber completely.

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Reply

EDITOR,—Loewenstein and Lazar have proposed that deep lamellar keratoplasty (DLK) using a full thickness graft with intentional opening of the central Descemet's membrane in the host recipient lamellar bed creating a double anterior chamber can be useful in the management of bullous keratopathy.

I have had three cases of persistent double anterior chamber. In each case a fairly large accidental perforation of Descemet's membrane occurred during the DLK procedure. In each case, a full thickness donor cornea with presumed functioning endothelium was used, although donor endothelial quality had been judged marginal before surgery. All three grafts have remained clear for 1–4 years and a second anterior chamber in each case has persisted. These cases were not included in our series, the recipients did not have known endothelial disease, and the management of endothelial disease was not considered an indication for DLK. It is likely that the construction of an appropriately sized defect in the host Descemet's membrane for their proposed procedure may be difficult, the objective of a second anterior chamber may not always be realised, and if not it is likely that much of the donor endothelium will die. However, it is intriguing to consider whether the donor endothelium in such a second anterior chamber may be protected from possible deleterious effects of aqueous streaming compared with donor endothelial cells facing the anterior chamber in conventional penetrating keratoplasty–an analogy would be the shore within a protected bay compared with the shore facing an ocean.

We believe that what Loewenstein and Lazar have proposed is conceptually different from DLK as discussed in our paper. Whether their procedure is a reasonable alternative to penetrating keratoplasty for the routine management of corneal endothelial disease or for selected cases of endothelial disease where minimal intraocular surgery is desired awaits the test of time.

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BOOK REVIEWS

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John Dalton's Colour Vision Legacy. Edited by Christine Dickinson, Ian Murray, David Carden. Pp 738. £59.50. London: Taylor and Francis, 1996. ISBN 07484-03108.

John Dalton, the celebrated chemist, realised that his colour perception differed from that of others, and he left a detailed description of how colours appeared to him. Dalton believed that his vitreous humour possessed an abnormal blue tint, causing his anomalous colour perception, and he gave instructions for his eyes to be examined on his death, to test this hypothesis. His wishes were duly carried out, but no blue coloration was found, and Dalton's hypothesis was refuted. However, the shrivelled remains of one eye have survived to this day, and now belong to the Manchester Literary and Philosophical Society.

This large book contains the edited proceedings of a conference commemorating the 150th anniversary of Dalton's death. An undoubted highlight is the 'essay in molecular biography' of Mollon, Dulai, and Hunt: taking samples from Dalton's eye, they amplified sections of his visual pigment genes, and identified his colour vision genotype (he was a deuteranope, lacking the normal middle wave pigment gene). By measuring the colours of

such things as 18th century sealing wax and the leaf of *Prunus lauro-cerasus*, they were able to confirm that the colour confusions recorded by Dalton are consistent with the genetic diagnosis of deuteranopia.

As a conference volume, there are naturally differences in style, and wide variations in content, which reflect the different interests of the different authors. However, the editors have done a fine job in organising the volume into sections, each containing a number of papers by different authors on related topics. As might be expected, many papers are on colour vision deficiencies and colour vision tests, including contributions from Morland and Ruddock on acquired deficiencies, from Moreland on anomaloscopy, and several on automated colour vision testing. But the scope is much wider than this. There is a good review from Teller on the development of colour vision; there are purely practical contributions, on the prescription of coloured filters for children with reading difficulties, for example, and there are theoretical contributions on models of colour vision and colour constancy, and on chromatic channels and pathways. The book therefore provides discussions of particular problems in detail, rather than a broad coverage of basic principles and techniques in colour science. As such, it will certainly be of interest to anyone doing psychophysical work on colour vision, as well as to ophthalmologists interested in colour vision and colour vision deficiencies, and the excellent index and cross references will make it easy for the researcher to find the articles that are relevant to his or her work.

BENEDICT REGAN

Excimer Lasers in Ophthalmology. Principles and Practice. By Charles N I J McGhee, Hugh R Taylor, David S Gartry, Stephen L Trokel. Pp 472. £115.00. London: Martin Dunitz, 1997. ISBN 1-85317-253-7.
Refractive surgery is a rapidly expanding area in ophthalmology, partly due to the introduction of excimer laser which was a huge step forward and is now well established. Many ophthalmologists have not taken a major interest and the vacuum has been filled by non-scientific and commercial groups. Excimer laser surgery has been performed for nearly seven years in humans and it is ironic that most of the initial work has come from Europe and not from the USA; it is only recently, as a result of approval by the American Food and Drugs Administration, that this technology has become widely available in the USA. However, much of the publicity has been negative and there has been a real danger that this exciting emerging technology will not advance and gain respectability.

It is for this reason that a comprehensive summary in a methodical clear and concise fashion is welcome at this time. The authors have assembled an impressive array of leading ophthalmologists to write the chapters in this book. They have chosen very practical relevant topics and have written them in a clear and concise fashion throughout; in fact, it would appear that the editorial decision in this book has been an emphasis on practical points at the expense of a pure scientific approach. In this regard the book is timely and is current and provides updated scientific and clinical knowledge and outlines all the common complications and their management.

There are a number of chapters worth commenting on: firstly, in terms of the knowledge they convey; in particular, the development of excimer laser corneal surgery and the beam tissue interaction giving the practising ophthalmologist a very comprehensive and clear knowledge of the mechanism of excimer laser. The chapter on Lasik is current and provides a practical knowledge on the technique and the results in this expanding area of refractive surgery. The chapter on surgical and laser correction of hypermetropia is also well written and balanced. The authors have also covered the main laser systems that are currently in use.

The textbook is exceptionally well referenced and in this regard there are references taken from the *European Journal of Cataract and Refractive Surgery* before it got recognition from Index Medicus. It suggests an exceptional level of research and detail. The illustrations are well placed and are very good quality and enhance this book. There are many reasons why I am impressed. I believe it is one of the best textbooks to date that has been published on this subject. I would strongly recommend it to all ophthalmologists and in particular to those who perform excimer laser and I would also recommend it as an excellent textbook for ophthalmologists in training who are anxious to learn both the basics and the practical aspects of this emerging technology.

MICHAEL O'KEEFE

Clinical Orthoptics. By Fiona Rowe. Pp 288. £24.99. Oxford: Blackwell Science, 1997. ISBN 0 632 042745.
This is a well referenced and well written short textbook which gives a basic introduction to common ocular motility disorders, sensory adaptations to strabismus, and clinical examination methods for both motility and sensory phenomena.

The book comprises an introduction to orthoptics, a section on concomitant strabismus, and a section on incomitant strabismus and nystagmus.

The appendix includes a glossary of terms and a series of exemplary case reports.

This book is very much an introduction to the subject of disorders of ocular motility and how they are assessed. The preface explains that the book is "written primarily for ophthalmologists undertaking their fellowship and for orthoptic undergraduate students". However, the ophthalmologist in training would be well advised to use this book as a useful primer and to take advantage of the fact that the book is well referenced, as a deeper understanding of the subject is probably required by those planning to take fellowship examinations in the UK.

Although the full range of procedures for examination of eye movements are described separately, there is no section which provides a structured overall examination strategy in which the initial findings are elicited and subsequently lead onto appropriate "secondary" examination strategies which may either assist in eliciting the diagnosis or in quantifying the motor and sensory aspects of the disorder. Such a section would no doubt prove very helpful in any future edition particularly in the light of the new clinical examination section of the examinations of the Royal College of Ophthalmologists.

In conclusion, this book provides an excellent introduction to the subject of ocular motility and its examination but it should not be used as the sole source of information because, as is acknowledged in the preface, in depth discussion is beyond the scope of a small handbook of this nature.

G DUTTON

NOTICES

Residents' Foreign Exchange Programme

Any resident interested in spending a period of up to one month in departments of ophthalmology in the Netherlands, Finland, Ireland, Germany, Denmark, France, Austria, or Portugal should apply to: Mr Robert Acheson, Secretary of the Foreign Exchange Committee, European Board of Ophthalmology, Institute of Ophthalmology, University College Dublin, 60 Eccles Street, Dublin 7, Ireland.

Antipersonnel mines

The latest issue of the *Journal of Community Eye Health* (no 23) deals with injuries caused by antipersonnel mines. Editorial by Robin Coupland, and papers covering ocular trauma in Cambodia, Albania, Eritrea, Ethiopia, and Afganistan. For further information please contact Ann Naughton, ICEH, Institute of Ophthalmology, 11–43 Bath Street, London EC1V 9EL. (Tel: (44) 171 608 6910; fax: (44) 171 250 3207; email: eyeresource@ucl.ac.uk) Annual subscription: £25. Free to health workers in developing countries.

20th Annual Wilmer Institute's Current Concepts in Ophthalmology

The 20th Annual Wilmer Institute's Current Concepts in Ophthalmology will be held on 5–10 February 1998 at the Hyatt Regency Cerromar Beach Hotel, Dorado, Puerto Rico. Further details: Program Coordinator, Johns Hopkins Medical Institutions, Office of Continuing Medical Education, Turner 20/720 Rutland Avenue, Baltimore, MD 21205, USA. (Tel: 410 955-2959; fax: 410 955-0807; email: cmenet@som.adm.jhu.edu; homepage: http://ww2.med.jhu.edu.cme)

The Cullen Course 1998. Clinical Advances in Ophthalmology for the Practising Ophthalmologist

Baylor College of Medicine, The Cullen Eye Institute, Department of Ophthalmology presents the Cullen Course 1998, Clinical Advances in Ophthalmology for the Practising Ophthalmologist, at the Houstonian Hotel and Conference Center, 111 North Post Oak Road, Houston, Texas on 6–8 March 1998. Further details: Carol J Soroka, Conference Coordinator, Office of Continuing Education, Baylor College of Medicine, One Baylor Plaza-S104, Houston, TX 77030, USA. (Tel: (713) 798-5600)

2nd International Glaucoma Symposium (IGS)

The 2nd International Glaucoma Symposium will be held on 15–20 March 1998 in

Jerusalem, Israel. Further details: The 2nd IGS Sectretariat, PO Box 50006, Tel Aviv 61500, Israel. (Tel: +972-3-514-0000; fax: +972-3-517-5674; email: glaucoma@kenes.com)

15th Annual Wilmer Institute's Current Concepts in Ophthalmology

The 15th Annual Wilmer Institute's Current Concepts in Ophthalmology will be held on 15–20 March 1998 at Manor Vail Lodge, Vail, Colorado. Further details: Program Coordinator, Johns Hopkins Medical Institutions, Office of Continuing Medical Education, Turner 20/720 Rutland Avenue, Baltimore, MD 21205, USA. (Tel: 410 955-2959; fax: 410 955-0807; email: cmenet@som.adm.jhu.edu; homepage:http://ww2.med.jhu.edu.cme)

American Institute of Ultrasound in Medicine

The American Institute of Ultrasound in Medicine is holding its 42nd annual convention on 22–25 March 1998 at the Hynes Convention Center, Boston, MA, USA. A pre-convention course entitled "Ultrasound and women's health" will take place on 21–22 March, and a pre-convention tutorial called "Vascular ultrasound" will be held on 22 March. Further information: AIUM, 14750 Sweitzer Lane, Suite 100, Laurel, MD 20707-5906, USA. (Tel: (301) 498-4100; fax: (301) 498-4450)

Globe 98—International Telecommunication Live-Surgery Event

Globe 98, the International Telecommunication Live-Surgery Event will be held on 27–28 March 1998 in Innsbruck, Austria. Further details: International Telecommunication Live-Surgery Network (ILSN), Fürstenweg 165, A-6020 Innsbruck, Austria. (Tel: 0043-512-286688 or 0043-512-581860; fax: 0043-512-264838; email: ilsn@net4you.co.at; homepage: http://www.carrier.co.at/ilsn/)

Leonard Klein Foundation

The Leonard Klein Foundation bestows the Leonard Klein Award for innovative scientific works in the field of development and application of microsurgical intruments as well as for microsurgical operating techniques. The award is endowed with 30 000 DM. Five copies of the work have to be submitted in English or German by 31 March 1998 to Stifterband fur die Deutche Wissenschaft e V, Herrn Peter Beck, Postfach 16 44 60, D-45224 Essen, Germany.

Wilmer Ophthalmological Institute

The Johns Hopkins Medical Institution/ Residents Association of the Wilmer Ophthalmological Institute is holding its 57th clinical meeting at the Baltimore-Turner Auditorium, JHH on 1–2 May 1998. Further details: Ms Sharon Welling, Conference Coordinator, Wilmer B20 - Johns Hopkins Hospital, 600 North Wolfe Street, Baltimore, MD 21287-5001, USA. (Tel: 410-955-5700; fax: 410-614-9632)

4th International Vitreoretinal Meeting

The 4th International Vitreoretinal Meeting will be held in Parma, Italy on 29–30 May 1998 at the University Eye Clinic. Further details: C Cantù and M A De Giovanni, Institute of Ophthalmology, University of Parma, Via Gramsci 14 - 43100 Parma, Italy. (Fax: ++39.521.292358; email: gnuzzi@rsadvnet.it)

11th Annual Meeting of German Ophthalmic Surgeons

The 11th Annual Meeting of German Ophthalmic Surgeons will be held on 28–31 May 1998 in the Meistersingerhalle, Nürnberg, Germany. Further details: Organisation Nürnberg GmbH, Wielandstrasse 6, D-90419 Nürnberg, Germany. (Tel: +49-911-393160; fax: +49-911-331204)

9th British Association of Day Surgery Annual Scientific Meeting and Exhibition

The 9th British Association of Day Surgery Annual Scientific Meeting and Exhibition will take place at the Harrogate International Centre on 4–6 June 1998. Further details: Kite Communications, The Silk Mill House, 196 Huddersfield Road, Meltham, W Yorks HD7 3AP. (Tel: 01484 854575; fax: 01484 854576; email info@kitecomms.co.uk)

XVIIIth International Congress of Ophthalmology

The XXVIIIth International Congress of Ophthalmology will be held in Amsterdam on 21–26 June 1998. Further details: Eurocongres Conference Management, Jan van Goyenkade 11, 1075 HP Amsterdam, Netherlands. (Tel: +31-20-6793411; fax: +31-20-6737306; internet http://www.solution.nl/ico-98/)

First Combined International Symposium on Ocular Immunology and Inflammation

The First Combined International Symposium on Ocular Immunology and Inflammation will be held in Amsterdam on 27 June–1 July 1998. The meeting is sponsored by the International Ocular Immunology and Inflammation Society, the International Uveitis Study Group, and the Immunology and Immunopathology of the Eye Organisation. Further details: Professor Aize Kijlstra, The Netherlands Ophthalmic Research Institute, PO Box 12141, 1100 AC Amsterdam, Netherlands (email: a.kijlstra@amc.uva.nl)

2nd International Conference on Ocular Infections

The 2nd International Conference on Ocular Infections will be held on 22–26 August 1998 in Munich, Germany. Further details: Professor J Frucht-Pery, 2nd International Conference on Ocular Infections, PO Box 50006, Tel Aviv, 61500, Israel. (Tel: 972 3 5140000; fax: 972 3 5175674 or 5140077; email: ocular@kenes.com)

ICOP 98

The next International Conference in Ophthalmic Photography (ICOP) will be held on 19–21 September 1998. Further details: Mrs Gillian Bennerson, Senior Ophthalmic Photographer, Bristol Eye Hospital, Lower Maudlin Street, Bristol BS1 2LX. (Tel: 0117-928-4677)

Corrections

A paper published in the September 1997 issue of the *BJO* (1997;**81**:732–4) contained an error in the author list. The name Q H Ali should be Q K Ali. We apologise to the author for this error.

An author error occurred in the paper by Tamakoshi *et al* in the October 1997 issue of the journal (1997;**81**:901–4). The name of Tatsuro Ishibashi, MD, was omitted from the list of the Members of the Research Committee on Chorioretinal Degenerations (1991) that appeared on p 904.

INSTRUCTIONS FOR AUTHORS

Adherence to the following guidelines is essential if efficient and expeditious processing of your manuscript is to be achieved. Manuscripts will be returned to authors for revision before peer review if they are submitted in incorrect format. Please indicate in a covering letter which category of paper your article represents.

The *British Journal of Ophthalmology* is an international journal covering all aspects of clinical ophthalmology and the visual/ophthalmic sciences. Contributors should consider the widely varying readership and write clear, simple articles with the minimum of technical detail. Space in the journal is limited and articles should therefore be as concise as possible. One page of text is approximately 1000 words.

Manuscripts should be sent to the editor who selects them on the basis of their suitability for the journal and of reports from independent referees. Manuscripts are acknowledged on receipt and the majority (>80%) are sent for review. Those that are not reviewed are returned to the author as rapidly as possible so that they may be submitted elsewhere.

Manuscripts may be processed by section editors who deal with specific areas of ophthalmology including surgical retina, medical retina, neuro-ophthalmology, glaucoma, paediatric ophthalmology, ocular motility, orbital disease, anterior segment disease, oncology, lens, optics and visual sciences, laboratory sciences, pathology, and immunology. A minimum of two referees, chosen for their specific expertise, review each article.

Papers are accepted on the understanding that they have not been and will not be published elsewhere, and that there are no ethical problems with the work described. If requested, authors shall produce the data upon which the manuscript is based for examination by the editor.

Categories of papers

ORIGINAL ARTICLES

(a) Clinical science

Articles on clinical topics are research reports of a general or specialised nature comprising approximately 3000 words and 4-6 display items (Figures and Tables).

(b) Laboratory science

Articles on ophthalmic or visual sciences are research reports of experimental work generally of the same size as clinical research reports. Laboratory science papers will be included in a designated section of the journal.

Both types of original article should include the following: title; key words (up to four); address and which author address for correspondence; structured abstract (approx 200 words, headings 'Aims/background', 'Methods', 'Results', and 'Conclusion'); introduction; materials and methods; results and discussion sections; references and acknowledgements; legends for display items (Figures and Tables).

REVIEW ARTICLES

Substantive review articles will be included under the section 'Perspective' and will address any aspect of clinical or laboratory ophthalmology. Review articles will be approximately 3000-5000 words in length including references and may contain display items (Figures and Tables). Most review articles are commissioned but uninvited reviews are welcomed. Prior discussion with the Editor is recommended. All reviews are subject to independent refereeing.

LETTERS TO THE EDITOR

Case reports will be published as 'Letters to the editor'. These are normally 500–600 words written in the form of a letter with a maximum of two display items (Figures and Tables). The letter should include an introductory section (without heading), the case report (heading: Case report) and a comment (heading: Comment), plus a maximum of 10 references.

CORRESPONDENCE

Letters are normally constructed in the form of scientific correspondence and are usually 200–300 words.

Preparation of manuscripts

Manuscripts will be received on the understanding that they have not been and will not be published elsewhere while under editorial review. Manuscripts may be subject to editorial revision with the author's agreement. All communications should be sent to the Editor, *British Journal of Ophthalmology,* Department of Ophthalmology, University of Aberdeen Medical School, Foresterhill, Aberdeen AB9 2ZD, Scotland, UK. (Tel: 01224 663812; Fax: 01224 663832.)

Manuscripts must be submitted in triplicate, and typed double spaced on one side of the paper only, with one inch margins. Each author must sign the covering letter as evidence of consent to publication. Revised manuscripts should be submitted as hard copy and on disk. Detailed instructions will be sent to authors on invitation to revise.

ILLUSTRATIONS

Illustrations must be submitted in triplicate. Transparencies must be accompanied by prints. Only salient detail should be included. All must be labelled with the author's name, numbered in the same order as they are cited in the text irrespective of whether they are in colour or black and white, and have the top indicated. Radiographs must be submitted as prints. Line drawings should be clearly labelled and will be redrawn to house style. The width of illustrations for the original articles should be 68 mm, 104 mm, 140 mm or, in exceptional circumstances, 176 mm, to fit the column layout of the journal. Illustrations for 'Letters to the editor' should be 56 mm or 116 mm. Stain used and a scale bar (or magnification) should be given. Legends must be typed on a separate sheet.

TABLES

Each table should be on a separate sheet, have a heading, and contain no vertical rules.

REFERENCES

In accordance with the Vancouver agreement references are cited by the numerical system. They must be *typed double spaced.*

References in the text must be cited in numerical order of first appearance. References in the list must be given in the numerical order in which they first appear in the text, not in alphabetical order of authors' names. References with one to three authors must include all authors' names; for references with more than three authors the first three should be given and then *et al*. Titles of journals should be abbreviated in accordance with the *Index Medicus* or given in full.[1] References to books must include names of editor(s) if there is one, town where published, name of publisher, year, volume, page numbers.[2]

1 Kaye SB, Shimeld C, Grinfield E, *et al.* Non-traumatic acquisition of herpes simplex virus infection through the eye. *Br J Ophthalmol* 1992; **76**:412-8.
2 Jakobiec FA, Font RL. Orbit. In: Spencer WB, ed. *Ophthalmic pathology: an atlas and textbook*. 3rd ed. Philadelphia: Saunders, 1986:2461-76.

References will not be checked in the editorial office. Responsibility for their accuracy and completeness lies with the author.

SI UNITS

The work should be reported in the units used. If these were not SI units, the equivalent in SI units should be given in parentheses.

STATISTICS

Particular attention should be paid to the description of any sample selection process; in particular, the representativeness of the sample should be argued and the handling of any missing data justified. Authors are asked to check tables etc to ensure that missing data are accounted for, that percentages add up to 100 and that numbers in tables are not at variance with those quoted in the text. The policy of the *British Journal of Ophthalmology* is based on the statistical guidelines published in the *British Medical Journal* in 1983 and these are a useful source of information for authors (Altman DG, Gore SM, Gardner MJ, Pocock SJ. Statistical guidelines for contributors to medical journals, *BMJ* 1983; **286:** 1489-93). Blanket statements on the use of statistical techniques should be avoided; it must be made quite clear in context which procedure is being used. Authors should bear in mind that relatively simple analyses are often quite adequate to support the arguments presented.

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