COMMENT

Microscopic analysis of the tumour indicated that it was a fibrosarcoma. Many fibrosarcomas in previous reports were described as non-encapsulated or poorly circumscribed.[3-5] In contrast, the tumour in this case had unique radiological and pathological features. Results of computed tomography of the orbit showed a relatively well defined mass attached to the posterior pole of the globe. The magnetic resonance imaging and pathological findings indicated that the fibrosarcoma in this case developed primarily in the scleral stroma and was invasive in the sclera.

KENJI OHTSUKA
KUMI SAITO
Department of Ophthalmology, Sapporo Medical University, School of Medicine Sapporo, Hokkaido, Japan

Correspondence to: Dr Kenji Ohtsuka, Department of Ophthalmology, Sapporo Medical University, School of Medicine, S-1, W-16, Chuo-ku, Sapporo 060, Japan.

Accepted for publication 28 June 1996

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CORRESPONDENCE

A new mounting bracket for donor eye holder

EDITOR,—Morphometry of corneal endothelial cells is now recognised as indispensable for evaluation of corneal function in many clinical and research situations.[1] It may be performed by physical counting of endothelial cells within a rectangular boundary from specular photomicrographic negatives, or with digitisers and image analysers which require manual tracing of the cell boundaries or their apices after endothelial specular photomicrography.[2] These methods are time consuming, tedious, and liable to human error and bias.

Advances in instrumentation and computer technology have resulted in new contact and non-contact semiautomatic clinical specular microscopes[3] which feature an autofocusing device for instant acquisition of endothelial images. In addition, some have an inbuilt semiautomatic image analysis programs, while yet others have been adapted for use with separate computers which provide rapid and comprehensive analysis of cell variables.[1] These improvements have eased the tedium and drudgery of the earlier methods,[2] and minimised the elements of human error and bias.

Furthermore, evaluation of the corneal endothelium in the presence of significant stromal oedema has become a practical reality with the advent of the confocal microscope.[4] It would be desirable to take advantage of these advances in the context of donor cornea assessment and morphometry.

Donor eye holders for supporting the intact globe for specular microscopy have been dedicated to particular instruments,[5-7] and are, therefore, not interchangeable. In addition, they may not fit the new semiautomatic contact and non-contact specular microscopes. This makes it difficult to harness the advantages of the various specular microscopes and to compare them. A universal holder for supporting the intact globe which can be attached to most clinical microscopes would be useful and desirable.

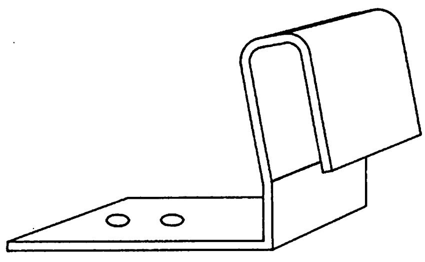

Figure 1 Diagram of the mounting bracket.

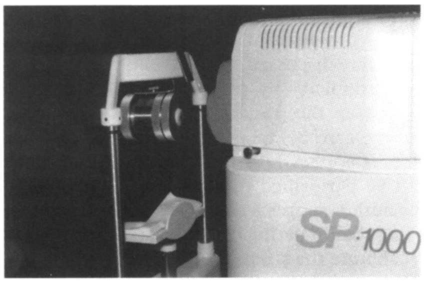

Figure 2 Photograph of eye holder with a globe in situ mounted on a non-contact specular microscope by means of the bracket for morphometry of the corneal endothelium.

Given the limitations of the donor eye holders which have been dedicated to particular specular microscopes, and the need to take advantage of recent advances in morphometric analysis with the new semiautomatic specular microscopes, in the context of donor cornea assessment and morphometry, I have designed, produced, and tested a new and simple mounting bracket for the Nartey donor eye holder.[8]

The mounting bracket (Fig 1) is made of brass and consists of flat horizontal and vertical limbs. The horizontal limb bears two holes at its distal end. The vertical limb is inclined slightly backwards at its upper two thirds, and angled forwards at its proximal end for attachment to a headrest. Either hole on the horizontal limb can be aligned with that for a thumbscrew halfway up the side of the eye holder. The mounting bracket is attached to the eye holder by first engaging the aligned holes with the thumbscrew. Tightening the thumbscrew secures the mounting bracket firmly to the side of the holder.

This permits the holder, without its base plate, but with a donor eye in situ, to be attached horizontally to the headrest of contact and non-contact specular microscopes (Fig 2) for visualisation, assessment, photography, and/or morphometric analysis of the donor corneal endothelium in the intact globe.

A smaller mounting bracket of similar design, but with a narrower angle at the proximal end of its vertical limb, can be used with the Haag-Streit slit-lamp and the tandem scanning confocal microscopes which have a plastic headrest.

It is believed this innovation is an advance and should facilitate research and objective assessment of the donor cornea in the intact globe.

I am very grateful to Mr Roger Buckley for reading the manuscript and for his helpful suggestions. I thank Mrs Ann Patmore and Mr N Wingate for permission to use the confocal and the S-P 1000 (Topcon) microscopes, and Mr P Johnson for technical assistance.

ISRAEL N NARTEY
Moorfields Eye Bank, Moorfields Eye Hospital, City Road, London EC1V 2PD

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BOOK REVIEWS

The Eye: Basic Sciences in Practice. By J V Forrester, A D Dick, P McMenamin, W R Lee. Pp 320. £45. London: W B Saunders, 1995.

Here is a textbook which seeks to guide the novice trainee ophthalmologist on the path to success in primary professional examination(s). It tackles, in a simple didactic style, the rudiments of anatomy, embryology, genetics, biochemistry, physiology, pharmacology, immunology, microbiology, and pathology. Candidates will find it a concise review of information learnt in medical school and not long forgotten.

By far the most useful chapters are those on biochemistry, pharmacology, and immunology. These are clearly written, and are pitched at exactly the right level. Topics of contemporary research have been dealt with in an admirably lucid manner, such as integrins, extracellular matrix proteins and proteoglycans, adhesion molecules, ligand/receptor/second messenger systems, retinal neurotransmitters, cytokines, immunoglobulin genes, cluster of differentiation (CD) numbers, and T cell receptors.

The sections on biochemistry and immunology make good use of a format which has been common in American books: 'boxes' demarcate from the main text a number of detours which provide helpful glossaries and encyclopaedia-type entries on supplementary and background information. In the pharmacology section, and in an attractive and concise chapter on microbiology, the boxes are used differently—to summarise 'key facts' in an eye catching manner. In other places the boxes seem to have been imposed for the sake of stylistic uniformity, when the author would have been better left to tell his own story without interference. For example: 'Amyloidosis also affects the eye (see box). [Amyloid in ocular tissues...]'.

The main criticism is the number of irritating errors, both typographical and factual. The figures and boxes in chapters 1, 2, and 3 contain several of a trivial but none the less exasperating nature:E-cor for Eco-R restriction endonuclease; Bechet for Behçet; cranial nerve VI is both an 'ophthalmic' and 'abducent'; the direction of light is shown from outer retina to inner; and a bitemporal hemianopia is drawn incorrectly. In addition, the diagram of the 'idealised' electroretinogram, while attempting to summarise electrical responses in the retina, probably only confuses the reader.

It is also clear that editorial decisions about what to include and what to exclude have been difficult. The condensation of information in the anatomy, embryology, and pathology chapters leave the reader somewhat dissatisfied, but since this is, in essence, a distillation from other texts, the 'further reading' recommendations provide information on other source material. The citing of primary reference sources is therefore puzzling since it is inconsistent and probably not necessary.

DAVID MANSFIELD

Contact Lens Optics and Lens Design. 2nd ed. By W A Douthwaite. Pp 342. £25. Oxford: Butterworth-Heinemann, 1995.

This book is not about eyes but considers in detail the optics and design of the sophisticated pieces of polymer we place onto the cornea. There is no clinical content or attempt to guide the practitioner on problem solving in contact lens practice, this being outside the scope of this text. Instead, the 342 pages guide the reader from the most basic optical principles to complex toric and bifocal contact lens calculations. The author suggests an alternative title of 'Notes on the optics of contact lens for busy contact lens practitioners' as he has attempted to cover the subject in the simplest possible way.

The first chapter covers lens power and vergence, spectacle magnification, anisometropia, and convergence illustrating how a contact lens correction differs from spectacles. If all teachings of optics has been forgotten this is a good starting point.

The contact lens/tear film system is discussed and simple calculations to assess the power alteration necessitated by changing the lens fit (back optic zone radius change) are performed. The approximate rules—that is, a change of 0.05 mm in back optic zone radius must be accompanied by a fluid lens power change of 0.25 D, are considered. In practice, these are essentials and it is most appropriate to include them after the more long winded calculations which are not performed on a daily basis by the practitioner.

The author then defines sagittal depth, axial, and radial edge thickness. Edge lift, both axial (commonly specified in rigid gas permeable lens forms) and radial, is described with methods of calculating these for a given back surface lens design. These definitions are important and necessary for a full understanding of rigid lens design. Methods of calculation are less relevant as computer programs exist to give near instant and accurate answers.

A chapter is dedicated to aspheric surfaces and covers the conicoids (circle, ellipse, parabola, and hyperbola) eccentricity, and conic parameters. These cannot be underrated as the cornea most closely matches an elliptical form. Modern computer (numeric) controlled contact lens lathes can be programmed to produce aspheric lens forms. p Values and eccentricity are important in specifying a lens surface as this is now a real alternative to a multicurve lens design for many contact lens laboratories.

The principles of keratometry and related optics are discussed. By extending the range of measurement—by placing a −1.00 or −2.00 lens over the keratometer objective, flatter curves can be measured (the converse for steeper applies). Although optical calculations can be performed to identify the 'true' curve the author suggests a more practical approach, using ball bearing of known curvature to recalibrate the scale.

In addition to radii values, keratometers also have a corneal power scale. It is noted that different manufactures have used various values of refractive index to calculate these powers. The majority of instruments assume a corneal refractive index of 1.3375 but Zeiss have used 1.332 and American Optical 1.336 (the value of tears and aqueous). Some of these values may be a source of error.

The keratometer's value in verifying rigid contact lens base curves is noted. The difference in aberrations of convex and concave surfaces account for (small) corrections which should be applied for accuracy. The measured radii are steeper than the true radii. For most base curves it is suggested that adding 0.03 mm will suffice.

The standard keratometer uses two mires approximately 1.5 mm from the vertex of the cornea, thereby limiting the measured area to the central 3 mm around the corneal cap. The photokeratoscope uses a set of concentric circles (a placido disc target) to assess a larger area of the corneal surface. Wesley Jessen's photographic system 2000 PEK has utilised this system successfully in practice. The most recent versions of this principle use a computer to grab images from a CCD camera and allow software aided measurement and manipulation to analyse the central 10 mm or so of corneal topography. The author reminds us that, in spite of the high technology imaging equipment and colour coded maps, these are still data produced by a concentric ring target, and the limitations of this principle apply.

A chapter is dedicated to contact lens design. The author notes that with reference to the central lens fit (defined by the back optic zone diameter) some experienced practitioners advocate fitting on the steep side, some on the flat side, and others exactly on alignment. He concludes an ideal central fit should be 'somewhere near' alignment. This is a typical response from a group of experts who can often fully agree on little, but it does indicate that all are probably acceptable.

The peripheral curves and their function are covered as is the principle of constant axial edge lift in the back surface design of a rigid lens. It is suggested the ideal value for tear layer thickness (distance between the back lens surface and corneal apex) should be around 0.02 mm, with axial edge clearance (axial distance between the lens edge and corneal surface) at 0.08 mm for an ideal fit.

Computer programs are supplied along with the book to aid calculation of lens design and fitting characteristics. These are: (1) compensated axial thickness; (2) lens design (tear layer thickness and axial edge clearance); (3) optics of contact lens; (4) compensated mean radial thickness; (5) tear layer thickness and edge clearance.

Most of these are self explanatory and straightforward to use. However, to anyone familiar with contact lens surface design they can prove quite fascinating. Experienced practitioners are inclined to work by rules of thumb and change central fit and peripheral lens curves, calling on their past experience to achieve an acceptable result. When these changes are quantified by calculations—made quick and easy by computer—the results are not always as this practitioner might expect.

If the corneal vertex radius is known from keratometery the lens design program can be used to produce the specification for a lens to give chosen tear layer thickness and axial edge clearance values. The program prompts the necessary data to be entered, including p value for cornea which has to be estimated if only standard keratometry is available. Multicurve (C1 to C5), offset and aspheric lens surfaces can be used and allow an inexperienced practitioner to create a lens design. The user is prompted to enter the required tear layer thickness and optic zone diameter; the program computes the necessary back optic zone radius. This part of the program goes on to calculate the axial edge lift necessary to give the axial edge clearance specified by the practitioner, and therefore give a full back surface specification for ordering. A graphical representation of the fluid lens profile between the lens and corneal is then displayed.

A chapter on astigmatism and corneal toricity covers the fitting of toric rigid lenses with some practical examples being worked through. In induced astigmatism and 'compensated torics'—where both front and back surfaces are toric, the front surface toricity is calculated to eliminate the induced astigmatism caused by the back toric curves; the fitting relation of a spherical lens on an astigmatic cornea is examined.

Miscellaneous features cover bifocal contact lenses (both refractive and diffractive), modified scleral underwater contact lenses, LVA telescopes, and aphakic contact lenses.

A chapter on checking lens specifications and British Standard tolerances concludes the text with listings of the computer programs then given.

The text is an extremely thorough and comprehensive guide to contact lenses with the notable absence of consideration of lens designs for keratoconus. It has perhaps been written primarily as a guide for undergraduate students and those sitting for specialist contact lens qualifications. In practical terms the text is likely to be useful to any practitioner with an interest in having lenses made to his or her own specifications other than accepting the manufacturers' standard product. Most of the text is concerned with rigid rather than soft lenses. This is reasonable in that practitioners still have total control over the specification of a rigid lens form, at least from some laboratories. Soft lenses are in the main mass produced and the practitioner's input to the lens design is at best limited. It could also be argued that soft lens design is less critical and more forgiving than the rigid counterpart.

The computer program provides the opportunity for the user to experiment with many of the book's teachings. Having figures of 'average' tear layer thickness and edge clearance, theoretical computer lens designs can be altered to see what effect they have on these values. This will certainly aid lens design, making this a less daunting prospect for the novice and allowing experienced practitioners to quantify the effects of changes in parameters.

This second edition includes two new chapters—on aspheric surfaces and contact lens surface design. The computer programs are also supplied on disk, other than listings which are in Basic, and graphical presentations are now included. At a price of £25 this book deserves to find a place in the bookshelves of many contact lens practitioners.

STEPHEN C McPHERSON

Manual of Ocular Diagnosis and Therapy. Edited by D Pavan-Langston. Pp 528. £24.95. Boston: Little, Brown, 1996.

This book is in its fourth edition. It is one of the Little, Brown spiral manuals, of a handy size, almost pocketable, but the ring binding renders the publication not durable and some pages along the perforations were torn even during the writing of this review.

The book consists of 16 chapters, two appendices, and a full index of 37 pages. There are 10 contributors all from the eastern seaboard of the USA, and mainly on the staff of Harvard Medical School. Fortunately, there is little evidence of disjointed presentation as can often occur in a book with multiple contributors. The chapters are arranged into general topics—for example, eyelids andlacrimal system (18 pages), keratorefractive surgery (8 pages), ocular manifestations of systemic disease (18 pages), and refractive errors and clinical optics (28 pages). There is mention of almost the total range of modern ophthalmological practice in this small textbook. To attempt that is a difficult exercise.

In the preface the editor states the object of the book is to be of use to the doctor on the front line, the one sitting face to face with a patient. There is a great deal of information in this book but an amount of cross referencing is necessary to obtain the information relevant to a particular sign or symptom.

The appendix on ocular drug toxicity comprises extensive catalogues of ocular symptoms and signs regarded as toxic effects from different categories of therapeutic agents. Unfortunately, there is no indication of the relative frequency or severity of these toxic effects. In the table of antispasmodics there is mention of visual hallucinations but not of acute angle closure glaucoma.

A great deal of information is contained in this comprehensive book—for example, a table of posterior chamber intraocular lenses with detail of haptic material and haptic angle and size used plus the number of dialling holes. Perhaps the reproduction of the line drawings and the illustrations (all in black and white) is not very clear.

I enjoyed delving into this book and it refreshed memories of a number of conditions. This is a book to pick up and put down and it will provide the reader with an extensive source of information around which clinical practice can be developed.

WILLIAM M DOIG

Ophthalmic Ultrasound—A Practical Guide. By Hatem R Atta. Pp 156. £35. Edinburgh: Churchill Livingstone, 1996.

This book is intended to be a practical step by step guide to the use of ultrasonography in clinical ophthalmology. After a very concise introduction to the history and physics of ultrasound the author describes the techniques for examining the globe and the orbit in few words but with a great number of clear diagrams and photographs. There is a particularly good section on the labelling of the orientation of scans. This is essential if the same lesion is to be repeatedly re-examined but always presents difficulty to inexperienced and occasional ultrasonographers. Throughout the book equal emphasis is given to both A and B scan techniques showing how the two are complementary to each other. There is a chapter on the measurement of axial eye length and the calculation of intraocular lens powers which will be helpful to any ophthalmologist or technician involved with biometry. The ultrasound characteristics of the eye and orbital pathological conditions most likely to be encountered are described with excellent photographs of the typical scans and a short description of what to look for in each case.

There are few up to date textbooks on ophthalmic ultrasound. Guthoff's *Ultrasound in Ophthalmological Diagnosis* emphasises the physics and Byrne and Green's *Ultrasound of the Eye and Orbit* is a comprehensive guide which covers a wider range of pathological conditions. Hatem Atta's *Ophthalmic Ultrasound—A Practical Guide* meets the need for a clear and concise basic text. There should be a copy next to each ultrasound scanner.

R C BOSANQUET

NOTICES

British and Eire Association of Vitreo-Retinal Surgeons (BEAVRS)

The next meeting of the British and Eire Association of Vitreo-Retinal Surgeons (BEAVRS) will be held at the Manor House Hotel, Morehampstead, Devon on 17–18 October 1996. Further details: Mrs Jill Gledhill, Torbay Hospital, Lawes Bridge, Torquay TQ2 7AA.(Tel: 01803 654825; Fax: 01803 655011.)

European Programme for Continuing Education

A symposium on angiography and laser will take place at the University of Créteil on 18–19 October1996. Further details: Professor Gabriel Coscas, Clinique Ophtalmologique Universitaire de Créteil, 40 Avenue de Verdun, 94010 Créteil Cedex, France. (Tel: 45 17 52 22; Fax: 45 17 52 27.)

Hong Kong Ophthalmological Symposium '96

The Hong Kong Ophthalmological Symposium '96 on retinal disease will take place on 14–15 December 1996 at the Hong Kong Convention and Exhibition Center. Further details: Dr Barry Yeung, Symposium Secretary, Hong Kong Ophthalmological Society, University Eye Centre, 3/F, Hong Kong Eye Hospital, 147K Argyle Street, Kowloon, Hong Kong. (Tel: 2761 9128; Fax: 2715 0089.)

XVI Congress of the Asia Pacific Academy of Ophthalmology

The XVI Congress of the Asia Pacific Academy of Ophthalmology will be held in Kathmandu, Nepal from 2–6 March 1997. Further details: The Secretariat, XVI Congress of APAO, Nepal Eye Hospital Building, Tripureswor, PO Box 335, Kathmandu, Nepal. (Fax: +977 1 227505/518.)

2nd International and 4th European Congress on Ambulatory Surgery

The 2nd International and 4th European Congress on Ambulatory Surgery will be held at the Queen Elizabeth II Conference Centre, Westminster, London on 15–18 April 1997. Further details: Congress Secretariat, Kite Communications, The Silk Mill House, 196 Huddersfield Road, Meltham, West Yorkshire HD7 3AP. (Tel: +44 1484 854575; Fax: +44 1484 854576.)

2nd International Symposium on ARMD

The 2nd International Symposium on ARMD will be held at Glasgow University, Scotland under the auspices of the Royal College of Ophthalmologists on 16–18 September 1997. Further details: Dr G E Marshall, Eye Department, Western Infirmary, 38 Church Street, Glasgow G11 6NT, UK. (Tel: 0141 211 2094; Fax: 0141 339 7485; email: gem1b@clinmed.GLA.AC.UK)

XXVIIIth 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, the Netherlands. (Tel: +31-20-6793411; fax: +31-20-6737306; internet http://www.solution.nl/ico-98/)