

Book reviews

Photoprocesses, Photoreceptors, and Evolution. By J. J. WOLKEN. 1975. Pp. 317, 152 figs, tables, bibliog. Academic Press: New York (£11.90)

'And God said, let there be light: and there was light. And God saw the light, that it was good'. Then He brought forth living creatures—first plants, then fishes and birds, then land animals, and finally man.

Light has been associated with life since its origin and all forms of life are dependent for their living on the absorption of solar energy. To utilise this energy effectively photoreceptor systems developed so that a process of photosynthesis could convert light energy into chemical energy for cellular metabolism. The vast scale of the process is seen in the surmise that 100 billion tons of organic compounds are thus synthesised each year. The response of living creatures from phototropism in plants to phototaxis in motile organisms to vision in the higher types is discussed. As these phenomena evolved from bacteria and fungi to plants and animals a vast variety of structures is utilised, from dermal sensitivity to specific eye-spots and finally the retina, as well as several specific molecules constituting pigments or pigment-systems to absorb the light energy. The author has described the structures of these—porphyrins, chlorophylls, carotenoids, flavins, and other types—integrating the researches of a number of authorities with his own. Although morphological distinctions in the organs thus developed among plants and animals are marked, the interesting conclusion is reached that a common molecular basis for all photoreceptor systems exists despite the multitude of these structural variations. The phenomena of photoperiodism and the nature of photochemical memory as well as of bioluminescence are also discussed.

The book is ambitious and its territory wide, but the author has undoubtedly succeeded in his task. The reader will require to overcome any antipathy he has to chemical formulae, but the book contains a vast store of information skilfully presented and has a plentiful supply of beautiful illustrations, including some fascinating photomicrographs and a useful and up-to-date bibliography for further reading. STEWART DUKE-ELDER

Advances in Vitreous Surgery. Edited by A. R. IRVINE and C. O'MALLEY. 1976. Pp. 720, figs, tables, refs. Charles C Thomas: Springfield, Illinois (\$51)

This book has been compiled from the contributions to a conference on recent advances in vitreous surgery held at the University of California Medical Center in 1974. Unlike so many publications which arise from symposia, the editors here have contrived to produce a volume which can be fairly described as excellent. Despite there being 50 contributors the work is comprehensive and well balanced.

The 63 chapters are divided into 12 parts. The first two parts deal with vitreous structure and examination of the vitreous body and the patient. Parts three and four deal with the surgical techniques of both the anterior and pars plana approaches. The next three parts deal almost entirely with different aspects of modern instrumentation. Parts 8–11 deal with different aspects of vitreous surgery which are related to specific diseases, apart from vitrectomy. In part 12 there are conjectures about future developments, with special emphasis on ultrasonic instruments.

It was provoking though stimulating to find that so many of one's ideas for the advancement of instrumentation, like cryofixation of the globe, have passed beyond the stage of debate to be put into practice, though it was pretty obvious from the proliferation of different instruments, both for vitrectomy and for the management of intraocular haemorrhage, that scope for improvement remains wide open.

Of particular interest also were the excellent papers on massive vitreous retraction (OKUN, Scott) or massive preretinal proliferation (Machemer) and the six chapters on the various aspects of diabetic retinopathy, which continues to be the main source of vitreous problems and the greatest stimulus to further work.

A. D. MCG. STEELE

Management Complications in Ophthalmic Plastic Surgery. Edited by D. B. SOLL. 1976. Pp. 379, figs, refs. Aesculapius Publishing Co: Birmingham, Alabama, USA (\$55)

This elegantly bound, printed, and illustrated volume from the USA, written by some 20 ophthalmologists and plastic surgeons, attempts, once again, to chart the no-man's land between ophthalmology and reconstructive surgery. Unhappily, it is only a partial success, and rather an expensive one at that. This must be largely due to the ponderous and unmanageable title under which the many distinguished contributors have been obliged to write. 'Complications' in this field of orbital, lachrymal, and palpebral reconstruction are almost always the result of the wrong operation or of the right operation done badly, and one has great sympathy with the authors whose only real message (which does emerge through the repetitive and contrived passages on complications) must be 'do it properly'.

Of the 17 chapters, all of which provide useful information for the newcomer to this field, two may be singled out for comment. That on orbital fractures is excellent, in that it is succinct, well written, and practical in its approach. By contrast the chapter on eyelid reconstruction is sadly inadequate. Operations of this sort account for much of the surgery in this field, and the real problems (and the complications) arise only when large defects, exceeding 50% of the full thickness of an eyelid, must be made good. The reader will search this chapter in vain

for guidance in the repair of such larger defects. Total reconstruction of an eyelid receives no mention at all, and the large and beautifully executed drawings, which occupy much of the space in this chapter, merely depict the meticulous repair of relatively trivial defects. Incredibly there is no mention anywhere in the book of burn injuries of the eyelids, which seems a curious omission from a work of this sort.

One should add that, in spite of this critical review, the book contains much practical information and should be a useful addition to the textbook literature in this field.

ROBIN BEARE

Optometry Handbook. By LEROY RUBIN. 1976. Pp. 198, figs, tables. Butterworth Group: London (£8-90)

The *Optometry Handbook* has chapters on visual acuity, ophthalmic optics, prescription design, ophthalmic lenses, refraction and analysis, contact lenses, low vision, and pharmacology. Each chapter is a compilation of statistical data drawn from various sources which will be particularly useful to manufacturers and opticians but of little value to ophthalmologists unless they specialise in ophthalmic optics. Of some interest to ophthalmologists would be the section on pharmacology, which lists and cross-references many drug preparations used locally and systemically that have an effect on vision. The other statistics given still keep to the obsolete American foot measurements with regard to acuity, and therefore will be of less value to British and Continental readers.

M. RUBEN

Advances in Ophthalmology. Vol. 34. Edited by E. B. STREIFF, H. SAUTTER, and M. J. ROPER-HALL. 1976. Pp. 226+8, 65 figs., refs. Karger: Basel (DM 129)

The subjects covered in this volume are the ageing of the lens, persistence and hyperplasia of the primary vitreous, the mechanisms of amblyopia, the use of laser interferometry to measure retinal visual acuity, and finally the papers presented at a symposium on lasers and the anterior segment of the eye.

Professor Jean Nordmann's publications on the biochemistry of the lens span an astonishing 50 years from his thesis in 1926 to the present very welcome review of the ageing process in the human lens and the pathology of senile cataract. The normal lens continues to grow throughout life, though the rate of growth slows down with age. In all types of senile cataract the axial cortex is thinner than in a normal lens of the same age, and there is a deficiency of fibrogenesis and protein synthesis before opacities occur. All attempts to involve extralenticular factors in the genesis of cataract have failed except perhaps for hyperglycaemia, and it seems that cataract is a local condition resulting from changes in the lens alone. Protein synthesis is slowed down, particularly with regard to glutathione, but the importance of this factor is unknown. Attempts to substitute the deficient glutathione have not given satisfactory results, and the most hopeful therapeutic possibilities are to find substances

which can penetrate the lens to activate protein synthesis. The requirements for substantiating claims for any method of treatment are clearly outlined. Drs M. Gonvers, R. Faggioni, L. Zografos, and C. Gailloud from Lausanne review the literature and present a case of persistence of the primary vitreous, concluding that this is a condition comprising a number of entities previously considered as separate. The possibility of an aetiological connection with retrolental fibroplasia cannot be excluded.

Dr G. K. von Noorden reviews the mechanisms of amblyopia as revealed by animal experiments which have shown that amblyopia is accompanied by alteration in the response of neurones in the striate cortex and by structural changes in the lateral geniculate body. It is likely that the bilateral amblyopia in such conditions as congenital cataract results from deprivation of form vision, whereas in unilateral amblyopia from squint there is an additional factor resulting from abnormal binocular functions.

Retinal function can be tested by forming interference fringes on the retina with a low-power laser. This subjective test is independent of refraction and can be used to assess function in patients with cataracts. The instrument used by Drs Rassow and Wolf is described, and a comparison of the results with the final visual acuity after cataract extraction was encouraging.

The symposium on lasers and the anterior segment was held in Hamburg in April 1976 and was concerned with experimental and clinical studies on the use of lasers for iridotomy and trabeculotomy. The experimental studies dealt with the biochemical reactions in the eye after laser irradiation, including metabolic changes and the liberation of prostaglandins, threshold damage levels for the structures of the anterior segment, and experimental results with a dye laser.

The clinical discussions confirmed that laser iridotomy is now well established as a satisfactory procedure, and although it is possible to burn a hole with the argon laser alone it is probably better to use the argon laser to produce initial stromal damage and to complete the iridotomy with a pulsed laser. The clinical value of laser trabeculotomy for chronic simple glaucoma is still controversial, although good results were claimed from using a Q-switched ruby laser. But the fall in intraocular pressure in successful cases is limited, suggesting some degree of obstruction in outflow channels beyond the trabeculum.

As is usual with this series the volume is well produced and illustrated and provides an excellent review of current work in the fields represented.

E. S. PERKINS

Grundlagen und Methodik der Ophthalmodynamometrie, Ophthalmodynamographie, Temporalisdynamographie. By D. ULRICH. 1976. Pp. 152, 58 figs., 21 diagrams, 33 tables. Georg Thieme: Leipzig (no price)

In comparison with other blood vessels in the body the retinal vessels have two advantages for measurement of blood pressure; they can be easily seen and they are enclosed in the corneo-scleral envelope. This means that it is relatively easy to increase the external pressure acting