BOOK REVIEWS

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The fourth edition of this outstanding book confirms its reputation as the leading text on diving medicine. All of its 22 contributors, from Britain, the USA, Australia, New Zealand, Canada, and France are recognised internationally as experts in their fields, and they all write clearly, usually in scholarly depth with abundant references, making the book a substantial resource of manageable size.

The opening chapters describe the equipment and procedures of compressed air work, SCUBA and commercial diving, the assessment of "fitness to dive" and the legislation to which compressed air workers, divers, and their medical examiners are subject. The next few chapters discuss underwater accidents and the physiological causes of the main diving disorders. The bulky remainder gives thoughtful practical advice on the aetiology, prevention, diagnosis, and management of thermal and decompression illness.

Given that the book is very worthwhile, there is some unevenness of treatment that ought to be ironed out in the next edition. For amusement I constructed three histograms based on the bibliographies ending each chapter. They displayed the average number of references per page of text, the percentage of self-references and the percentage of references more recent than the last edition. The results showed considerable variations. Average references per page of text varied from one to 13, self-references from 0 to 42% and recent references from two to 76%. Clearly there are many reasons for this, some sensible and some not so. As examples, the chapters on procedures and equipment are the least referenced, chapters on Inert Gas Narcosis and the High Pressure Nervous Syndrome have exhaustive but dated bibliographies with high levels of self-reference, whereas the chapters on Fitness to Dive and The Long Term Health Effects of Diving have 67% and 76% of references from 1983 onwards. In part these reflect the shifts in the emphasis of research away from narcosis and the nervous syndrome to fitness and long term effects, currently of much interest. Nevertheless, it would have been good to see for example the outstanding recent work of Lieb and Franks on the site of action of inhaled anaesthetic agents referred to. These are points the editors may wish to consider when they or their successors tackle the next update of this valuable work.

DAVID DENISON


This book is unusual in that it is intended neither to be a specialist volume for ophthalmologists, nor is it aimed at the medical student. It is rather a practical manual for general clinicians, GPs, casualty officers, and other providers of primary care, who see eye problems from time to time in a broad range of other conditions. Its organisation is logical, in that it does not follow the conventional disease-by-structure pattern. Instead, it is organised according to the most common eye problems encountered by general clinicians.

Although it is a soft cover volume, the book exemplifies American medical publishing at its best. Minor differences between American and British usage and practice present no great difficulty. The book is replete with full-colour photographs of many conditions that affect both the front of the eye and the retina. The large scale line drawings are clear and well labelled, and they convey their point instantly. A glossy white paper is used that enables a very high standard of reproduction to be attained.

The page layout is uncluttered, with succinct, to the point, text. When technical terms are used they are difficult to tax the memory of the generalist, Trobe does not hesitate to add an explanation in parenthesis, as for hyphaema (blood in the anterior chamber).

Clear, brief guidance is offered on many conditions and the right balance is struck with an adequate, but not excessive, level of caution. When dealing with a foreign body embedded in the cornea, for example, the clinician is advised first to try rolling a moistened cotton-tip applicator across the corneal surface: if this fails, it is suggested that an attempt then be made to nudge the foreign body out with the side of a 22 or 25 swg needle, but only by someone with experience with this manoeuvre.

The advice about when to refer is particularly helpful. Ophthalmic trauma, for example, are categorised according to whether they should be referred within 48 hours, within 24 hours, immediately or immediately after on site treatment (as for chemical burns).

The book contains a useful section on common questions raised by patients, in which suggested answers are provided. As well as general vision, eye diseases and conditions, the subjects covered also include contact lenses and spectacles.

For the question "What is a 'lazy' eye and how can I tell if my child has one?" the following answer is suggested: "A lazy eye is one that has reduced vision, usually arising from either strabismus (crossed eyes) or large refractive error. Known as 'amblyopia' the condition is detected by the physician who measures visual acuity. In children under 3 years of age, in whom visual acuity is difficult to assess, the physician may make a presumptive diagnosis of amblyopia based on whether the child has a wandering eye or objects to having one eye covered." Suggested answers such as this offer helpful frameworks for the simple explanations required.

G E DIGGLE


This book was intended to provide information about toxic substances in the environment and about the hazards they may cause, and covers a wide range of topics related both to ecosystems and human health. The cover suggests that it is basic enough to serve as an advanced undergraduate introduction to environmental toxicology, but, at the same time, it provides accurate scientific detail. The cover goes even further and predicts that this volume was destined to become "the environmental toxicological bible of future generations". The book has in fact a number of positive features: firstly, it attempts to outline both ecological and health related aspects of environmental toxicology. Secondly, it is very illustrative, with several interesting case studies to highlight relevant issues. Finally, it covers subjects of environmental health policy, and considers both economic and social aspects.

The weaknesses of the book result mainly from its (too) broad scope. As a result, it is "choosy" on the subjects or issues covered and neglects important parts of them. For example, in dealing with air pollution, effects on ecosystems are well covered, whereas human health effects are marginally touched upon, with emphasis on radioactive pollutants. Other environmental media are dealt with similarly. Some subjects on environmental media are not dealt with at all—for example, food and drinking water.

The book shows a remarkable structure in that after the discussion of toxic substances in some environmental media (with emphasis on ecological effects and with health effects marginally mentioned) effects of chemicals on human health are dealt with in a classical general manner independent of various environmental media. A number of toxicological endpoints are discussed, with emphasis on testing procedures, but specific aspects of environmental toxicology (multi-media exposure, partitioning within media, exposure to mixtures) are not adequately covered. Apart from that, several toxic endpoints particularly in environmental toxicology—for example, immunotoxicity, organ-directed toxicity) are not covered. In fact, textbooks on general toxicology cover these issues in a broader and more comprehensive way.

Some inaccuracies have found their way
into the text, sometimes due to oversimplification. These are related to the description of various points including ozone toxicity (is it "highly toxic") and its relevance, effects of phenoxy and biphenyls, definition of toxicological risk (is it really "often defined as LD₅₀") and some of the information provided is outdated.

In conclusion, the book provides some interesting information on chemicals in the environment, but it does not really cover all relevant aspects of the subject. Despite the imbalance between the description of effects on organism and on human health, and despite some inaccuracies, it is useful as an introductory text to ecotoxicology.

MAGED YOUNES


Over the past few decades we have become painfully aware of the health effects of asbestos and therefore more worried about other mineral fibres, both natural and synthetic. The consensus from experimental work is that the activity of fibres has little to do with their chemical composition and any mineral fibre of the right size and which persists in the lungs, or associated tissue, must be treated with suspicion.

Natural organic fibres are also not without their own risks but the possibility that synthetic organic fibres could have properties similar to asbestos only became apparent when aramid and carbon fibres were used as asbestos substitutes. There are only data on the effects of a few synthetic organic fibres and therefore it is these few "selected" fibres, carbon, aramid, and polyolefin that are the subject of one of the Environmental Health Criteria documents of the International Programme on Chemical Safety of the World Health Organisation.

These reports comprise a thorough review of the literature and an evaluation of any human health risks from the materials under consideration; they conclude with sections on protecting human health and on further research. The review in this case is a little too thorough including at least one study that is not on fibres at all and therefore not relevant to the subject. Although based on a very limited range of materials the report draws conclusions that may apply to organic fibres in general. The most significant conclusion, and one with which I wholeheartedly concur, is that "exposure to respirable, durable organic fibres is of potential health concern". Unfortunately, however, the report is marred by one major error that could lead to an erroneous assessment of any hazard from organic fibres. This mistake is a confusion about how such fibres differ from, or are similar to, the more extensively studied mineral fibres.

Mineral fibres have specific densities of about 3 although the bulk of organic fibres are closer to unit density (that is with a specific gravity of one), carbon fibres can have specific densities of up to perhaps 2.2. These differences in density affect the falling speed of fibres in air and it is this that largely determines whether a particle is respirable or not. For an ideal cylindrical fibre falling speed is proportional to cross sectional area and the falling speed of any small particle is directly proportional to the difference in the density of the particle and that of air (a buoyancy factor). For materials as dense as these respirability can be regarded as being directly proportional to density. Most people would regard respirability as describing the behaviour of spheres of unit density and the role of any differences in density gets forgotten. In this document this has led to some of the considerations affecting the deposition of mineral fibres being directly applied to organic fibres. Thus the 1:3 ratio between physical fibre diameter and aerodynamic diameter, which is frequently used as a crude conversion factor for mineral fibres, is given as if true for all fibres. For a fibre with a specific density of about 3, respirability will reduce as diameter increases until at about 3 µm the fibres can be regarded as not respirable. With a specific density of 1.7 respirability would only be true at diameters well over 5 µm. The actual determinants of respirability for organic fibres are much more complex than for the ideal cylinder model. Figure 1 in this report shows a transmission electron micrograph of Kevlar (p-aramid) and this seems to be branched with fibrils breaking away from the surface; this type of fibre will behave as if its density were well below one. As many organic fibres have similar complex shapes the only way to determine respirability is by direct measurement of falling speed or sampling with an appropriate size selective sampler. Many fine fibres are now reaching the market place and many of them will contain respirable fibres that would be ignored if the approach used in this document were true. Assessing the potential of these fibres to cause significant exposure requires further work.

This confusion between mineral and organic fibres is implicit in many parts of the report and reference is made to the counting of the so called "WHO fibres". These are the methods devised for counting mineral fibres on filters from occupational hygiene samples. It is assumed that this size has been determined by the WHO to be those with the biological activity responsible for pathogenicity. This is not true and the use of this definition for inappropriate purposes causes considerable problems. The application of size rules devised for mineral fibres will almost always underestimate the hazardous properties of organic fibres.

In the other direction, that of increasing vigilance, one of the conclusions of the report (number 3) seems unusually extreme. Although it is very difficult to understand, probably through having been garbled in the word processor, it seems to suggest that all respirable and biopersistent fibres should be treated as asbestos unless evidence to the contrary is obtained. Given that many polymeric fibres must be persistent, as is witnessed by the long life of sutures and implants, this would suggest that many products made of fine fibres of these polymers should carry warning labels and that the fibres should face asbestos-like bans. I cannot imagine what the appropriate wording would be for such labels but in practice polymeric fibres will always be less dusty than asbestos and could not cause similar exposures. Many people, and I am one, believe that dustiness is an inherent property of this type of material and thus should be part of hazard identification; this is an example where the concepts of hazard and risk are difficult to apply to materials with mixed effects that is determined by their physical form rather than chemical reactivity.

In general, then, this is an interesting review but with distinct dangers to both health and health and safety. This is not typical of the IPCS documents and we must hope that further reports considering any risk from organic fibres become rapidly available and that they do not perpetuate the errors in this document.

RC BROWN


Drugs of abuse seem now to be so widely available that we must all be anxious about the social and medical consequences of their so called recreational use and wider consumption. To test employees routinely for the consumption of such drugs is not yet policy in many countries, but it may become so in certain jobs, possibly after a suspicious incident, or as a precautionary measure. The institution of a programme of unannounced or predetermined testing of employees raises major legal and ethical issues for the occupational physician and other professionals concerned with obtaining samples and the analysis and interpretations of the results, and for them and others responsible for subsequent actions, ranging from help to punishment.

The Working Party of the Faculty of Occupational Medicine has attempted to tackle these issues while they are still nascent in Britain. This pamphlet provides guidance about why testing programmes may be done (excluding smoking and alcohol), the ethical, legal, and forensic precautions required in collecting and handling samples, and the role of the Occupational Physician both in devising management policy and in helping to plan and carry out a positive test. The document is too cautiously written to become self fulfilling by precipitating inadequately considered campaigns of testing. There seems little space between libertarian, professional and postmodern populists.

Like all general guidelines it tends to a breadth that sometimes risks loss of definition, but it does determine practical and professional advice. There might usefully have been a stronger section on the responsibilities of the physician to the individual, and the dilemma of confidentiality, but the cautious user of the guidelines will find much guidance about what to do and when, and help with this issue at work.

A D DAYAN