Book reviews


The fact that recommended threshold limit values (TLVs) for many industrial solvents and other toxic chemicals are much lower in the USSR than in the USA has aroused interest for many years. The Soviet scientists only regard as acceptable a concentration of a substance that fails to elicit a conditioned reflex in experimental animals, or occasionally the tests have been carried out on man.

Outside the USSR experimental psychologists do not regard the conditioned reflex a response that faithfully reflects a behavioural effect. There are other experimental means for eliciting behavioural responses in laboratory animals and man. This book contains papers, demonstrations, and a variety of other contributions to a five-day meeting held in 1973 for the exchange of current information and test methods in behavioural toxicology. The aim was to see how the results could be applied to establish standards to ‘protect and maintain the functional capacity of the working people in the USA.’

Twenty papers and ten demonstrations deal with behaviour studies on man while seven papers describe neurophysiological rather than performance studies and two of these were on experimental animals. A very long paper on accidents to construction workers appears to be quite irrelevant. It is perhaps not surprising that one of the speakers in the final session is quoted as follows, ‘I do not know how many of you are as confused by the definition of behavioural toxicology as I am now and have been all week’ (p. 459). His confidence in the quality of the more conventional toxicology may well have been shaken by a ‘keynote’ address which included the statement ‘that only when anaemia is associated with lead poisoning do we have convincing evidence of a biochemical effect’.

Unfortunately there were no contributors from the USSR or Czechoslovakia where the use of behavioural studies mainly on animals has played such an important part in providing the basis for setting threshold limit values.

The papers relate to the effects of carbon monoxide, carbon disulphide, trichloroethylene, mercury, lead and organophosphorus insecticides, as well as alcohol, and marihuana. On the organophosphorus insecticides one paper (p. 165) gives a close critical analysis of studies on the effects of exposure and concludes that there are none. However the preceding paper (p. 154), with a highly qualified suggestion of a possible effect, displays a total failure to assess the published literature (for example, reference 12, p. 163). It is a pity that none of those who have made significant contributions to the effect of anticholinesterases on animal behaviour were invited.

A careful analysis of human performance may well have a contribution to make to our knowledge of the effects of toxic substances on people. However, one can only conclude from the programme of this workshop that the study of the effects of toxic substances on animal behaviour for the same purpose is a subject with a great future behind it.

J. M. Barnes


This book gives an account of lung physiology and the environmental lung diseases with special reference to airways obstruction, including its mechanisms and the conditions in which it is an important feature. The emphasis reflects Professor Bouhuys’s notable contributions to these subjects, including the application of the flow-volume curve to a study of the prevalence and nature of byssinosis, and the functional lesion in asthma. The chapters are based on lectures given to specialist audiences. They contain much wisdom, and are lively, attractively illustrated, and supported by references which in the main have been selected with great discernment. However the quality is uneven and the approach does not lend itself to systematic coverage. Thus in the section on physiology the definitions and explanations of terms sometimes lag behind their use, and relatively more attention is given to lung mechanics than to the regulatory, gas exchange, and exercise aspects of breathing. In the section on environment and lung disease there are excellent detailed accounts of the epidemiological approach, the effects of smoking and atmospheric pollution, byssinosis, and the physiology of asthma. Again, the coverage is selective so that, for example, in relation
to smoking no mention is made of the consequent reduction in the lung transfer factor for carbon monoxide. Other lung disorders including those of occupational origin are mentioned briefly but the descriptions add little to what is available elsewhere. In brief the book contains much that is of interest to those who are concerned with airways obstruction of environmental origin; it is a pity that this theme is not more clearly indicated in the title.

J. E. Cotes


Four years ago I started to tell my students, 'Do not buy Bedford, a revised edition will soon be out in SI units'. I was therefore amazed to see on opening the third edition that it was still in Imperial units. In 1974 this is a serious defect in a book as most readers of scientific and engineering texts will now be well on the way to having made the mental switch to SI units and will have lost some of their feel for the Imperial. I had not realized how far the process of change had gone myself until confronted by this book.

Bedford tried to develop an integrated physiological and engineering approach to the basic principles of heating and ventilation based on a sound knowledge of the relevant aspects of human physiology and heat transfer. The engineering details were omitted, being available in standard texts, and the level of presentation was made suitable for non-engineers such as doctors and hygienists. He succeeded very well in this and his book is still probably unique in this respect and remains a standard work because of the need for an integrated approach to environmental control.

Chrenko, in editing and updating the book, has retained Bedford’s original approach and rather than cut out any of what is now history has added a further 134 pages. I was unable to make up my mind whether this was a good move or not. On the one hand I found the historical background developed up to present-day concepts of thermal comfort, freshness, etc. fascinating and interesting but I am not so sure the average student will. A more decisive entry into our present concepts of temperature regulation is required, and neat summaries of recommended standards and good practice should be included at the end of the relevant chapters. The role of deep body temperature, skin temperature, metabolic rate, and clothing in determining how we rate a thermal environment for comfort is now well established, as is Fanger’s comfort equation, and a more detailed discussion of them is called for even if the historical background had to be reduced. Likewise, the practical aspects of using environmental measuring instruments should have been developed.

The book is a substantial text covering all the main aspects of heating and ventilation including heat transmission, heat exchange, comfort, measurement of ventilation, ventilation systems, heating, hospitals, and human performance in hot environments. The style and level of presentation is one that can be recommended to the medical reader. There is also an appendix giving predicted comfort votes from Fanger’s data: a very useful addition as Fanger’s comfort equation is going to become increasingly important.

Throughout the book there are numerous editorial faults ranging from errors that were present in the original edition, the use of old photographs, to incomplete updating—for example, the heat stress index—and the editor’s name being misspelt in the author index. These lapses together with the large amount of space devoted to the history of the subject create the impression that the book is about a past age with no mention of the modern ventilating engineer’s achievements. What is said is good sound stuff but the impression is that a fine opportunity has been missed to produce a modern text which could be as alive and valuable today as the original was in 1948. Nevertheless even with its faults the third edition at £5.50 can be recommended.

G. W. Crockford


This booklet is the first of a series on radiation protection in hospitals, prepared jointly by the International Labour Organization, the International Atomic Energy Agency, and the World Health Organization. The series is aimed at readers who have a ‘basic general knowledge of radiation and biology’ although it may be helpful to ‘national authorities, hospital administrators, supervisors, hospital workers, teachers’ and others with responsibility for radiation safety.

This first volume gives a general review of protection requirements common to all medical applications of x rays, gamma rays, and radioisotopes. The problems relating specifically to diagnostic radiology, radiotherapy, nuclear medicine, etc. will be dealt with in subsequent issues.

An introductory section deals with basic nuclear physics and the units of radiation dose, as well as the instruments commonly used (ionization chambers, GM tubes etc). The biological effects of radiation, especially at low dose rates, are outlined, and in succeeding chapters consideration is given to maximum permissible doses for radiation workers, the relative risk to the patient from a range of typical diagnostic x-ray investigations, and the genetically significant doses from x ray and nuclear medicine procedures. Further chapters deal with operating procedures for x ray and gamma ray beam units; planning of diagnostic and therapeutic radiation facilities; shielding design; the organization of radiation protection arrangements including legal aspects, and radiation surveys of departments and aspects of personnel monitoring and health surveillance.

This useful booklet stresses the importance of integrating radiation protection into the design and operation of hospital departments, and thereby sets the subject in perspective. It will undoubtedly find a place on the shelves of a great many radiation departments, accompanied by its successors in due course.

F. T. Farmer