no satisfactory final test system (other than man) has yet been found. Examples are given of compounds found positive in recent years using the Ames Salmonella test, and that are now known to cause cancer in humans.

The importance of the cultural test conditions is stressed; vinyl chloride is found to be positive when tested in the gaseous phase only, and nitrosamines are found to be most reactive when included in liquid suspension or in soft agar.

Professor Sobels (Leiden) and Dr Vogel (Leiden) review the uses of *Drosophila* in mutagenicity screening. This organism has the advantages that a wide spectrum of genetic events can be studied and also that it has the mixed function oxidase system present in mammalian liver cells. Examples are given of indirect carcinogens showing mutagenic potential in *Drosophila*.

The stage specificity of some mutagens is mentioned and this may indicate that compounds need to be tested at varying stages of the *Drosophila* life cycle before one is assured of meaningful results. The sex-linked recessive lethal test is considered to be particularly useful in detecting mutagens, mainly because of its high sensitivity.

The final paper by Professor Loprieno (Pisa) discusses the single-celled eukaryotes, the yeasts, which can be studied in the haploid or diploid state, and in which a variety of genetic end-points can be examined. Perhaps the most useful of these is non-disjunction, since other test systems to examine this phenomenon are expensive and time-consuming.

The various types of assays are discussed and examples given of compounds tested and yeast strains used. It is acknowledged that pro-carcinogens are better evaluated using the Salmonella test system (Ames test). Like the Ames test, urine metabolites can also be assessed in this yeast test system.

In summary, those engaged in occupational medicine should find much of interest in this publication.

D. D. COZENS
M. RICHOLD

Environmental Health Criteria 3: Lead. (Pp. 160; 16 Sw.fr.) WHO: Geneva. 1977.

Interest in environmental lead contamination continues unabated and there seems no letting-up in the number of papers which are published on the subject.

The present booklet is an excellent summary of our knowledge to date. It is both clear and objective, and on this account would make an excellent starting point for someone coming newly to the subject.

The problem of dose-related effects is particularly well dealt with, and it becomes obvious from reading the book that it is naive to talk about a no-effect threshold, unless one specifies the effect to which one is referring. For example, a number of the stages of haem synthesis are inhibited by blood lead levels well within the so-called normal range, whereas higher blood lead concentrations are necessary for, say, anaemia or peripheral neuropathy to develop. Clearly, it is important to ensure that the intake of lead is not sufficient to produce frank clinical signs or symptoms, but we are not told in this book which, if any, of the effects observed in those who are apparently well, should also be avoided. The reason for this, of course, is that very little work has been carried out to determine whether continuous exposure to low levels of lead is, or is not detrimental to health. What work has been carried out has tended to concentrate on the behavioural abnormalities produced in children and here the indications are that these start to manifest themselves only when the blood lead concentration is in excess of 2.2-5 $\mu\text{mol/l}$ (40-50 $\mu\text{g/dl}$). The results of the investigations are well summarised, but it should be noted that the evidence is still far from conclusive and this is certainly an area which merits further study.

Throughout the book one is made constantly aware of gaps in our knowledge, some of which may be filled if due notice is taken of the recommendations for further research which are given. For example, we need to know the contribution of the various environmental sources to the total body burden of lead with much greater precision than at present, since this is critical to the question of controlling intake (if this were to be thought desirable). In the occupational field it would be of interest to know the natural history of the subclinical neurological changes which some authors have reported; is slowing of nerve conduction velocity the first step along a road leading to more severe change, or does it recover when exposure ceases?

There is still plenty for the physician and scientist interested in lead toxicology to do, and one hopes that properly directed research, with less emphasis on the rather

dreary duplication of earlier work will provide some answers for inclusion in the next edition of this very worthy book.

H. A. WALDRON

Fundamentals of Hearing: An Introduction. By William A. Yost and Donald W. Neilson. (Pp. 240; £10.00). Holt, Rinehart and Winston: New York and London. 1977.

I find it difficult to express adequately my pleasure with this book. It is a model of clarity, careful selection of material, organisation and accuracy. It claims to describe the basics of audition at an introductory level. This it certainly does, but it goes well beyond that both in its text and by means of useful supplements, references and glossary. In their preface, the authors state their hope that the book is 'one that any professional who needs facts about audition will want to have readily available': their product more than fulfils their hopes.

Although containing quite a lot of mathematics, it succeeds in its aim to be comprehensible to a student with little mathematical training. It is profusely illustrated with figures, tables, diagrams and, most attractively, with micro-photographs of the cochlear structures. It is thoroughly up to date.

The text is subdivided into three sections. There are three chapters on the physics of sound, four chapters and two appendices on anatomy and physiology of hearing, and six chapters on psychophysics and auditory perception.

Though quite excellent, as indicated, the book contains minor errors. These do not detract from the book's value, but are worth pointing out to the intending purchaser. In table 8.2, the caption should refer to 45 trials out of 700 (not 100). On page 117, there is some confusion between percentages, $P(C)$, and proportions, p , such that both of the equations given are incorrect by a factor of 100. In Figure 13.3, the ordinate is incorrect since a pitch 1000 mels (not 100) should correspond to a frequency of 1000 Hz; in fact, the vertical scale values should read 0, 1000, 2000, 3000 mels (not 10, 100, 1000, 10 000 mels).

I am most glad to have had the opportunity to review this book (and thereby acquire a copy for my own use). I shall certainly recommend it to my own students and for our Departmental and University libraries. It should find great

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use by otolaryngologists, audiologists, psychologists and physiologists. In the context of this review for the *British Journal of Industrial Medicine*, it is recommended for industrial medical officers and hygienists where they have major interests (practical and/or academic) in occupational deafness, as it will provide a useful and fascinating background of knowledge on the function, hearing, which they are seeking to conserve.

R. R. A. COLES

Notices

Third Congress of the International Rehabilitation Medicine Association

The International Rehabilitation Medicine Association (IRMA) will hold its third congress in Basle, Switzerland, from 2-8 July 1978. IRMA is an interdisciplinary association of more than 2000 doctors, all of whom have a special interest in the rehabilitation and re-integration of their patients, and who represent many specialised fields in 67 countries. The aims of the congress are to provide information on the latest developments in medicine and also to supply doctors working in developing countries with practical means of rehabilitation using simple resources. The focal points of the scientific programme will include the rehabilitation of patients with brain damage, rheumatism, cancer, depression and schizophrenia, and will outline the latest developments in the control of pain. Great importance is attached to prevention, to evaluation of the techniques used in rehabilitation, to problems of communication, and to the standardisation and statistical processing of the methods of investigation. Further information may be obtained from the Congress Secretariat, IRMA III, CH-4021 Basel, Switzerland.

ILO Symposium on New Trends in the Optimisation of the Working Environment

An international symposium on New Trends in the Optimisation of the Working Environment, organised by the Turkish Ministry of Labour in collaboration with the International Labour Office, will be

held in Istanbul, Turkey, 16-19 May 1978. This symposium will be of interest to all those concerned with occupational safety and health, ergonomics, working conditions and environment. Items scheduled for discussion include new developments and policies; the role of modern technology and new forms of work organisation; the quality of the working environment and the prevention of mental stress; and methodology at the plant level. Round Table discussions on employers' and workers' co-operation in the optimisation of the working environment, and on this optimisation in developing countries, will also take place. Simultaneous interpretation will be available in English, French and German, and discussions will also be translated into Turkish. Registration fees for participants are US \$100 and for those accompanying, US \$50. This includes participation in the social programme. Further information may be obtained from the National Organising Committee, Çalışma Bakanlığı Araştırma Kurulu, Tuna Cad. 7 Yenışehir ANKARA, Turkey, telephone 182472 Ankara.

Third Advanced Course in Industrial Toxicology

The Institute of Occupational Health is arranging the Third Advanced Course in Industrial Toxicology, to be held in Helsinki, Finland, 7-12 August, 1978. The course is sponsored by the Nordic Council of Ministers, and therefore applicants from the Scandinavian countries will be given preference, to a maximum of 30. Nevertheless, a limited number of research workers from other countries will be accepted, although the financial aid received from the Nordic Council cannot be used to support non-Scandinavian participants, whose registration fees will therefore be higher. The course fee is US \$50 for Scandinavian participants, and US \$250 for those from other countries. Neither sum includes meals or accommodation, and all those registering will be asked to pay an incidental fee of US \$25 on notification of acceptance. The course will be held at the Institute of Occupational Health and the curriculum includes concepts and definitions in industrial toxicology, as well as study of exposure to chemicals, metabolism of industrial chemicals, carcinogenic, teratogenic and mutagenic aspects, hazards relating to metal ex-

posure, neurotoxicity, modern toxicity testing, occupational lung and skin diseases, and the concept of TLV-MAC. In addition, participants will take part in workshops and group work, and should therefore be familiar with basic toxicology and possess a good knowledge of English. Applications should be sent by 1 May to Dr Harri Vainio, from whom further details may be obtained, c/o the Department of Industrial Hygiene and Toxicology, Institute of Occupational Health, Haartmaninkatu 1, SF-00290 Helsinki 29, Finland, tel. 413 622.

International Training Course in Occupational and Environmental Toxicology

Every alternate year an International Training Course in Occupational and Environmental Toxicology is held in Belgrade, and the third of the series is planned for September-October 1979. The programme covers four weeks, with an additional week of special training in a field selected by the individual participant. The course programme has been designed in collaboration with Dr. M. A. El Batawi, Chief of the Office of Occupational Health, WHO, Geneva, and covers various fields of toxicology including environmental (air, water, food), experimental, industrial, clinical, pesticides, radio-toxicity and aspects of basic occupational health, safety and industrial hygiene. The purpose of the course is to give chemists, physicians and other health personnel an ecological and epidemiological approach to health hazards in the environment. Laboratory training in simple, practical and reliable field methods will be given, with the aid of a manual describing 35 relevant procedures. Seminars will be held to review the occupational health problems in participants' specific countries, with particular emphasis on heat, malnutrition and endemic diseases. The official language will be English, and the course fee is US \$400. Further information and application forms may be obtained from Dr. D. Djurić, Chairman, or Dr. M. Stanković, Secretary, Institute of Occupational and Radiological Health, 11 000 Beograd, Deligradska 29, Yugoslavia.