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## Book reviews

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**Stress and Distress in Response to Psychosocial Stimuli.** Edited by Lennart Levi. (Pp. 166; £3.50) Oxford: Pergamon Press. 1972.

This book is primarily a collection of reports of five experiments on stress in human beings. There are also, however, introductory and final chapters setting out a general point of view and implications, and a chapter outlining methodological problems of such studies. Each chapter is very copiously provided with references to the literature in the subject.

The experiments themselves all take the form of exposing a group of people in a laboratory to a situation broadly resembling something met in real life. In one case, it was the viewing of films of the ordinary commercial thriller or comedy kind, and in another case the viewing of sexually arousing 'blue' movies. Two other studies were the sorting of ball-bearings in a noisy and distracting environment, and doing clerical work with and without payment by piece-rate. Lastly, a group of soldiers were expected to fire on a simulated shooting range, with infrequent breaks for food, for three days and nights. The main effects examined were the excretion of catecholamines, although in individual experiments other measurements were taken of performance or of physiological state.

The main conclusion is that every one of these conditions increased the excretion of adrenaline, and the book therefore provides a handy refutation to any sceptic who thinks that such a change cannot be produced by an abstract and psychological condition such as the method of payment for work. There are also a large number of interesting detailed points: for example, the fact in the military experiment that the reported fatigue and distress of the subjects was negatively correlated with the excretion of adrenaline, but positively correlated with that of noradrenaline. These points will certainly be of interest to research workers taking the matter further.

For immediate practical application, there are unfortunately still some difficulties. The editor links the results to the possible rôle of the social environment in causing disease, and indeed there may well be such a link. The difficulty lies in the very unspecific nature of the response to stress: it appears to sexual stimuli, or to watching 'Charley's aunt', and if we use it as an argument against piece-work we should presumably use it also as an argument against these other stimuli. How much arousal is beneficial, and how much harmful? How far is exposure to factory conditions for a year or more the same as exposure for a couple of days in a laboratory?

These questions remain for further investigation. At the present stage, perhaps the most practical point is the reminder that pleasant and sought after forms of excitement may have some of the same effects as those which are disliked and shunned. The implications here are the same as those of more epidemiological studies which relate illness to the number and size of preceding changes in style of life. Apart from this general implication, the volume is a useful sample of the current state of the art of measuring the bodily effects of mental events.

DONALD E. BROADBENT

**Pesticide Residues in Food.** World Health Organization Technical Report Series No. 502. (Pp. 46; 40p.) Geneva: WHO. 1972.

This is a report of the November 1971 meeting of the Joint FAO/WHO Working Party of Experts on Pesticide Residues in Food, the latest of an almost annual series of meetings begun in 1961. It provides some interesting references to the difficulties frequently encountered in obtaining enough experimental animal data on which to base sound toxicological judgements, and to the multitude of factors which influence the extent and significance of a chemical residue in food before and after cooking. The general impression created is that despite the technical difficulties encountered, the experts find no reason to be anxious about the levels of pesticide residues occurring or likely to occur in foodstuffs. Usefully, an appendix lists all FAO/WHO recommendations on acceptable daily intakes and tolerances for all those pesticides so far considered by the Working Party. This comparatively reassuring report will be of most interest to those directly concerned with food safety, crop protection regulations, and pesticide toxicology. Less specialized industrial medical officers may well envy the deliberate effort to create international standards of safety for these potential food contaminants by comparison with similar standards for air contamination levels in workplaces where these and other chemicals are manufactured.

E. F. EDSON

**Environmental Mercury Contamination.** Edited by Rolf Hartung and Bertram D. Dinman. (Pp. 345; £9.40.) Chichester: John Wiley. 1972.

A number of symposia have been held over the last four years in response to increasing interest in the rôle of the

heavy metals as environmental pollutants. This volume is based on the proceedings of one such supposedly international but largely North American conference on mercury held at Ann Arbor, Michigan in 1970. The work is divided into four parts: the occurrence of mercury in the environment and in man; methods of analysis; environmental dynamics of mercury; and the biological effects of mercury compounds.

The statement in the foreword that man has repeatedly underestimated the pervasiveness of environmental toxicants was well illustrated by the finding of raised mercury levels in fish and wild life based not only on Lake St. Clair, but also over large tracts of the Great Lakes and other major waterways in North America. However, while higher mercury levels were found in blood and hair in limited population surveys in those persons with a high fish consumption, these levels were on the whole lower than comparable figures reported from Scandinavia, and there were no recognizable symptoms of mercury poisoning.

The conversion of mercury in nature to the highly toxic methyl form is a most important phenomenon in mercury's rôle as an environmental pollutant. This methylating process is dependent on a number of environmental factors and, as pointed out in the discussion, present theories on the dynamics of this conversion have been based on relatively small samples and few observations. It is an undoubted fact that methyl mercury can be elaborated in bottom sediments and concentrated in food chains, but modifying factors and the significance of this reaction have not been fully evaluated.

The biological effects of mercury, and of organic mercury compounds in particular, are briefly reviewed. The dose response relationship and the possibility that untoward biological effects might occur, which are not at present recognized as due to the absorption of mercury, are also considered. In this respect a constructive epidemiological approach to the problem is outlined.

While this book gives valuable and interesting information, it seems to me a pity that the presentation is on the whole didactic and that the report of the discussions is so short. There must have been controversy on such a subject at the conference, and a book based on the conference surely provided an opportunity to underline the more contentious issues in the rôle of mercury as a pollutant of our environment.

G. KAZANTZIS

**Digest of Pneumoconiosis Statistics 1971. Department of Trade and Industry.** (Pp. 17; 41p) London: H.M.S.O. 1972.

These useful tables, which refer to the year 1971, are published in the same format as last year. Table II (Periodic X-ray Scheme of the National Coal Board) and the Introduction are reprinted, without any changes, from the report for the year 1968. This is unfortunate because the information given on the assessment of chronic bronchitis or emphysema occurring as a complication of pneumoconiosis is incorrect. An assessment for part of the effect of these conditions may be added to the assessment for pneumoconiosis, even if this is

under 50%, but the assessment for these conditions must not exceed that given for the pneumoconioses.

The digest is mainly concerned with new applications for boarding during the year and the resulting number of cases of pneumoconiosis diagnosed for the first time. These are considered by age, by percentage assessment, by industry, and in the case of coal mines by area. In addition, there are single tables of awards of death benefit and of the total number of living subjects by age and by percentage assessment who were receiving disablement benefits at the end of 1971. Many of these tables also give comparable figures for the four previous years.

Once again the majority of new cases of pneumoconiosis (623) are coal miners. This is a reduction of 150 from 1970; slate-quarry workers also showed a substantial drop (from 40 to 16) but there were no material changes in other types of industry. The total number was down from 1 108 to 900, about one third of the number diagnosed in 1963. Once again the number of applications for consideration (about 10 000) greatly exceeded both the number of diagnoses and the number of boardings. This was particularly marked in east and west Wales where there must now be over 5 000 coal miners somewhat disgruntled at being turned down in 1971. Again, one must ask if there is in this region an occupational disease of the lungs, perhaps due to 'powder reek' which is distinct from pneumoconiosis.

Pneumoconiosis is a mild disease affecting the retired miner. Over half of the subjects receiving benefit were more than 65 years old and nearly two-thirds of them had assessments of 20% or less. Over 80% of new cases in miners had this degree of disablement, but cases of asbestosis tended to be about 10 years younger and to be more seriously disabled. The attack rate of coal workers' pneumoconiosis was lowest in the south midlands and highest in the north-western region, closely followed by north Durham and east Wales. These regional differences cannot be ascribed to different standards in the various Pneumoconiosis Medical Boards because Northumberland, with the low rate of 0.4 cases per thousand wage-earners, sends its cases to the same Board as north Durham (4.4 per thousand).

The value of this publication would be greatly enhanced if similar figures could be given for the other industrial pulmonary conditions, byssinosis, farmer's lung, and mesothelioma, and I ask the Department of Trade and Industry to consider this suggestion for next year.

G. L. LEATHART

**System of Ophthalmology. Vol. XIV. Injuries.** By Sir Stewart Duke Elder, and Peter A. MacFaul. (Pp. 1356; 690 illustrations; 26 coloured plates; £17.50). London: Kimpton. 1972.

This latest volume in the *System of Ophthalmology*, edited by Sir Stewart Duke-Elder in his usual impeccable style, is in two parts, Mechanical Injuries and Non-Mechanical Injuries, and contains 200 more pages of text than the corresponding volume in the previous *Text Book of Ophthalmology* and slightly fewer illustrations (1 020). The two most important industrial hazards dealt with in the first part are intra-ocular foreign bodies and the indirect ocular effects of mechanical