standards should be modified periodically so as to maintain the desired level of safety.

Chrysotile dust is probably the least dangerous of the asbestos fibres used commercially in this country, because (1) the fibres are curly so that a relatively small proportion are retained in the lung, (2) they may disappear from the tissues faster than the other types, and (3) because the association with malignancy seems only significant when the dosage is high enough to cause asbestosis. Therefore the standards laid down in this booklet should be regarded as the minimum to which more extensive controls should be added for the protection of workers with other kinds of asbestos.

P. C. ELMES

Reference

- Knox, J. F., Doll, R. S., and Hill, I. D. (1965). Cohort analysis of changes in incidence of bronchial carcinoma in a textile asbestos factory. *Ann. N.Y. Acad. Sci.*, 132, 526.

Cancer Epidemiology: Methods of Study. By Abraham M. Lilienfeld, Einar Pedersen, and John E. Dowd. (Pp. 165; illustrated; tables; 62s.) Baltimore: Johns Hopkins Press. London: Oxford University Press. 1968.

For some time a plain statement about how problems of cancer aetiology can be tackled has been needed; this book goes a long way to meet this need. It is directed at people who are not specialist epidemiologists, although they may be working in the cancer field. It should also be a very valuable help in teaching at both the undergraduate and post-graduate level.

It contains chapters dealing with the nature of epidemiology and what can be learned from it; with the important idea that cancer is a term covering a group of diseases with only some features in common; with the underlying principles of prospective and retrospective surveys; and with the uses and limitations of morbidity and mortality studies. Commonly used simple statistical methods are described in an appendix, and the WHO classification of neoplasms is given in another appendix.

Taken as a whole, I think that this is a very good book which should be read by all people interested in environmental cancer research.

Unfortunately there are blemishes, some trivial but one at least serious. Several chemical names are wrong—B- and L-naphthylamine for β - and α -naphthylamine and 9:10 dimethyl chloranthrene for 9:10 dimethyl cholanthrene—in both the text and the index. Aniline is indexed under the heading 'carcinogens' because the authors did not distinguish between substances investigated and substances incriminated when they discussed a survey of chemical workers. In fact, that survey showed that aniline was *not* carcinogenic.

R. A. M. CASE

The Carcinogenic Action of Mineral Oils: a Chemical and Biological Study. M.R.C. Carcinogenic Action of Mineral Oils Committee. Medical Research Council, SRS 306. (Pp. 251; 40s.) London: H.M. Stationery Office. 1968.

The fact that skin cancer is associated with occupational exposure to oils, tars, pitches, and soots has been known for many years and led to the now classic work of Kennaway and his school on the polycyclic aromatic hydrocarbons. Mineral oils used in the engineering industry as 'cutting oils' have been shown to induce cutaneous tumours in man. The Medical Research Council therefore decided to attempt to determine the nature of the carcinogens in these oils and how they might be eliminated. This report describes the way in which mineral oils from three sources were fractionated and the results of biological testing of the fractions. A number of pure polycyclic hydrocarbons were isolated, among which the triterpenoid lactone, oxyllobetulin-2-ene, is of general interest in indicating the vegetable origin of petroleum.

Investigations of this kind are tedious and require large-scale facilities for the assay of carcinogenic activity in experimental animals. These difficulties were overcome by enlisting the co-operation of a number of cancer research centres. The statistical analysis of the results provides useful information about the reproducibility of carcinogenicity tests carried out at different times and in different centres.

The testing of more than one fraction in an individual rabbit by the use of multiple testing sites was a further way in which the animal facilities were minimized. This is shown to be statistically acceptable although, to the reviewer, it appears not to be completely free from objection. The report is a substantial contribution to the study of the carcinogenic action of oils and tars. It suggests that solvent extraction is the most suitable way of reducing the cancer-hazard in the mineral oils. The reader may, however, be forgiven for wondering whether a less ambitious approach with strictly limited objectives might have given as much usable information at a much smaller cost.

D. B. CLAYSON

A Study of Road Accidents in Bombay E.S. & T. Undertaking. By O. N. Ganguly and R. G. Kasbekar. Central Labour Institute, Bombay. Industrial Psychology Division Report No. 4. (Pp. 94; no price stated). Bombay, 1967.

This is a report of some 94 pages together with appendices. It is a comprehensive attempt to investigate the causes of bus accidents in Bombay. A large amount of work has been done to show where most of the accidents occur; this also includes the severity, the time of day, the day of the week, and the month of the year. The figures are tabulated. Unfortunately the investigation was confined to two years only with a break in between. The accidents of each type of vehicle are also recorded. The above constitutes part one of the study.

The second part of the study is on the drivers' records. This includes age and experience, including pre-employment experience.

Part three is an analysis of the results of interviewing groups of drivers. Attempts were made to compare like groups of 'accident-free' drivers and 'accident repeaters'. The state of health, living conditions, family history, and attitudes to work were checked.

Unfortunately the accident report form used on which

much of this study is based did not include sufficient relevant information. In addition the Inspectors' reports of the accidents were not impartial. The authors point out these faults and recommend the formation of a small research department. They are unable to come to any definite conclusions in their summing up.

The report itself is very economically produced. The references are not clearly marked. Probably a map of the area would have helped to make some of the comments clear.

G. C. ACRES

Occupational Health of Construction Workers in California. (Pp. 66; copies are available free as long as supplies last, from the address below). Bureau of Occupational Health, 2151 Berkely Way, Berkely, California 94704. 1967.

The extent and kinds of occupational disease and injury among California's 389,000 construction workers, mainly for the year 1965, are surveyed in this report. The populations at risk by occupation within the industry in 1965 are estimated based on a census of 1960. The incidence of occupational injury and disease was obtained from doctors' reports. The Californian Workmen's Compensation Act requires each doctor, who attends a patient for an occupational injury or disease causing absence from work of one day or more, to furnish a report with the Division of Labour Statistics. It is probable that there is some under-reporting. There were 4.2 fatal accidents, 7.7 disabling and nondisabling occupational disease reports, and 76.1 disabling industrial injury reports per 1,000 workers per annum. The occupational disease rate ranged from 3 reports per 1,000 workers in carpentry and wood flooring to 16.4 reports per 1,000 in excavation and foundation workers. Of the 2,497 reports of occupational disease, 56% were due to skin conditions, 22% to conditions of the eye due to noxious materials, and 7% due to chemical burns. There were a small number due to respiratory conditions, the effects of toxic material, and the effects of heat and infectious and parasitic disease but they tended to be more serious cases.

Nearly 35% of the reported cases of occupational disease were attributed to the handling of poison oak and 16% to cements, plaster or mortar. Alkalis, acids, paints, petroleum fractions, plastics, solvents, and gases are also mentioned as causes of disease. The underlying data are set out in detail in various tables.

It is considered that pneumoconiosis, asbestosis, noise-induced hearing loss, and malignant neoplasms related to occupational exposure are much under-reported in the data.

There were 51 deaths of construction workers in the decade 1956/65, excluding those attributed to pneumoconiosis. Of these deaths, 16 were blamed on sunstroke [*sic*], 11 to toxic materials, and 5 to infectious disease. Most of these deaths could have been prevented.

This report underlines the hazards of the industry and the great difficulty in reducing the hazards.

P. A. B. RAFFLE

Urban Worker Mobility. By Laurence C. Hunter and Graham L. Reid. (Pp. 215; 22s. 6d.) Paris: Organ-

isation for Economic Co-operation and Development (OECD 2 rue André-Pascal, Paris XVIe). 1968.

A mobile labour force is particularly important in periods of rapid technological change like the present. Hence government and other agencies have to consider whether or not action needs to be taken to influence mobility in the desired way. This necessitates study of the factors which lead workers to change their jobs and places of abode—a complex problem not made any easier by the fact that authors from various countries who have published their findings have not always adopted the same frames of reference, which hampers comparison of different national experiences.

The Organisation for Economic Co-operation and Development, which comprises the governments of the European countries outside the Communist bloc, with Canada and the United States of America, has commissioned this book, which is based on a review of no fewer than 213 publications from the various member countries. This has been carried out by two members of the Department of Social and Economic Research in the University of Glasgow, who have added their own conclusions and conveniently summarized them. They examine the effects of age, seniority, company policies, home ownership, and geography, among other things, and conclude that occupational mobility is more often than not in the direction of greater economic advantage, but that it is not possible to say whether this movement is optimal. They advocate an environment in which voluntary mobility can flourish (which presupposes conditions of full employment) but recognize that this may conflict with security and stability, which are generally regarded as equally desirable objectives, and call for more fact-finding, particularly at regional or area level, to assist those responsible for developing economic policy.

This is not a book to be recommended for light or cursory reading, but it is no doubt a useful work of reference for the professional economist or sociologist.

F. H. TYLER

Evaluation of Factors Determining the Results of Vocational Rehabilitation. By Anders Chr. Gogstad. (Pp. 155; 48 N.kr.) Oslo: Universitets-forlaget. 1968.

This book by the former head of the State Rehabilitation Institute at Bergen is a careful and detailed examination of the multiple factors in addition to the medical condition itself which influence the outcome of all attempts at rehabilitation, whether the emphasis is on medical or industrial aspects. Sickness absence and particularly the long-lasting variety, with which organized rehabilitation is concerned, should be a matter of great interest not only to industrial medical officers but to every clinician, since one of the major causal factors is failure to give continuity of treatment until work is resumed. The long interval between completion of active treatment and starting industrial rehabilitation mitigates strongly against success. Those familiar with the detailed working of the British industrial rehabilitation services will note the close similarities with the Norwegian Institute, except for the high staff-patient ratio enjoyed in Norway.

Effective measurement of the results of rehabilitation