

Disease caused by asbestos

Asbestos and Disease. By I. J. Selikoff and D. H. K. Lee. Pp. 549. (Academic: New York, San Francisco and London, 1978.) \$31.50; £20.45.

DR SELIKOFF and Dr Lee have attempted to provide a comprehensive review of disease caused by asbestos dust "to provide non-specialists with easily comprehensible and meaningful data". With help from many colleagues at the Mount Sinai School of Medicine, the text ranges widely over asbestos and its production, disease effects (asbestosis, cancer, pathogenic mechanisms), and prevention and control. "As individuals we naturally have come to our own conclusions but we have tried to present the evidence for and against the various interpretations so that readers can attempt their own interpretations if they wish."

This is a laudable aim, but in at least one most important aspect it does not seem to have been attempted. Asbestos may be divided into two quite distinct groups: the amphiboles and chrysotile. Indeed the excellent chapter on the nature, occurrence and properties of asbestos minerals considers the distinction in detail. Yet the epidemiological evidence for there being differing biological effects is largely ignored or skipped over. This epidemiological evidence was already extensive enough in 1970 for the UK asbestos regulations to be ten times stricter for crocidolite than for chrysotile. Selikoff and Lee comment that this is characteristic of the British evaluation—implying their disagreement—but they do not provide any contrary argument.

The treatment of the positive epidemiological evidence is somewhat brusque. Braun and Truan (*Arch. Ind. Health*, 17, 634-653; 1958) are criticised because in their study of chrysotile miners there was only a 97.8% follow-up. The data of McDonald *et al.* (*Arch. Environ. Health*, 22, 677-686; 1971; a long-term mortality study of 10,421 chrysotile miners and millers) are described as "meager". The evidence from asbestos cement workers (Weill *et al.* in *Inhaled Particles*, 4, 789-798; Pergamon, 1977) exposed to crocidolite and chrysotile is not even discussed. In the four cohort studies by the Mount Sinai investigators, the fourth has the lowest mortality ratios for cancer of all sites and for pulmonary carcinoma (Table 12-1), yet the reader is not reminded that this is a chrysotile-exposed group until twenty pages on. Nor is the reader told that the asbestos miners and millers in the Urals (Kogan *et al.*, *Gig. Sanit.*, 37,

29-32; 1972) with lower mortality ratios are chrysotile exposed. The size component of Timbrell's 1972 theory (in *Assessment of Airborne Particles*, 429-445; Charles C. Thomas, 1972) to account for differences based on aerodynamics of fibres was discussed. It is a pity that the shape component was not, as this accounts acceptably for observed differences.

It has been well known for many years that Dr Selikoff does not accept that crocidolite and chrysotile have different effects even in degree. Even though he was a member of the International Advisory Panel on Epidemiology to the Director of the International Agency for Research on Cancer in 1972 (IARC Publication 8; Lyon, 1973) he did not attend the panel meeting and he dissociated himself from the advisory report, which emphasised "that there are clear differences in risk with type of fibre". This book would have been an excellent opportunity to justify his opposing view.

The proof reading of the text was obviously very careful as your reviewer found only two spelling errors and

these were both on the first page. However, the unusual presentation of scales in Figure 10-4 has led to an error; the captions to plates 12-1d and e have been interchanged; several references in later chapters to Figures 10-6 and 10-7 should be to 10-4 and 10-5; and Merchant *et al.* (*Br. Med. J.*, 1, 189-191, 1975; page 237) are wrongly quoted. A list of these and a few other errors has been sent to the authors and is available on request.

Presumably the power of the name of Selikoff will mean that most specialists in the USA will buy this book. However, the proceedings of the 1972 working conference on the *Biological Effects of Asbestos* (IARC Publication 8; Lyon, 1973) provide an equally extensive review and the proceedings of the 1979 working conference on the *Biological Effects of Mineral Fibres* (IARC: Lyon) will provide one more up-to-date.

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Plant pathogenesis

Genetic and Molecular Basis of Plant Pathogenesis. By J. E. Vanderplank. (Springer: Berlin, Heidelberg and New York, 1978.) DM48; \$24.

THIS is the sixth volume in the Advanced Series in Agricultural Sciences and the third on plant pathology. The first of the three is reasonably idiosyncratic, the second more so. The third could have been written only by Dr Vanderplank, distinguished for his work on the epidemiology of plant diseases and well known for his provocative views on the population genetics of pathogens and their host plants, one of the two main subjects of the book. In his treatment of it in this book Dr Vanderplank uses freely the data of other scientists for analyses, comments and hypotheses. He emphasises that he is concerned almost wholly with diseases in which genes for resistance in the host are matched by genes for avirulence in the pathogen, especially blight of potato caused by *Phytophthora infestans*, and rusts of cereals caused by *Puccinia* spp. There are stimulating accounts of related and unrelated variation in disease resistance and pathogenicity, of the gene for gene hypothesis, of population genetics of the pathogen, and of horizontal resistance. Short chapters of seven pages deal with common antigens of host and pathogen, and host-selective toxins. Another ten pages is on the role in specificity of a wide range of large molecules such as DNA, RNA, glyco-

proteins, lectins and polysaccharides. These three chapters are, for the most part, non-controversial. They are very brief, considering the complexity of the subjects.

Most of the rest of the book is about an all-encompassing protein for protein hypothesis which aims to account in quite simple terms both for gene for gene relations between pathogens and their host plants in vertical resistance, and for horizontal resistance. Thus, the penultimate and summarising chapter states quite unequivocally "... Vertical resistance or susceptibility is determined by polymerisation [of proteins]. Horizontal resistance or susceptibility is determined by catalysis or the products of catalysis. The hypothesis is as simple as that and it fits the facts ...". simple as that and it fits the facts ...". the facts is quite another matter

Both the exposition of the hypothesis and its derivation from the data selected for the purpose are very controversial and speculative and I doubt that they are well placed in a text such as this. But they make for interesting, if at times somewhat outraged reading, and, with the less provocative parts, a book to which I shall often return. However, most of it is for the experienced and the initiated and parts of it are for the somewhat sceptical who, if like me, would dearly like to be proved wrong.

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