is indisputably an exhaustive work of reference, the detailed bibliographies are invaluable as a starting point for those researching in related fields. It is also eminently readable.

> Ghislaine Lawrence, The Science Museum, London

Christopher C Sellers, Hazards of the job: from industrial disease to environmental health science, Chapel Hill and London, University of North Carolina Press, 1997, pp. xv, 331, illus., \$45.00 (0-8078-2314-7).

Occupational health—or "industrial hygiene", as it was known in the early twentieth century—has hardly figured in most accounts of the workplace. Business historians are mostly management oriented; medical and social historians have yet to give the subject the attention it deserves. Christopher Sellers' book is therefore particularly welcome.

It traces the history of industrial hygiene in America from its beginnings in the late nineteenth century to the late 1940s, a period which also saw industrial hygiene switch its interests from industrial disease to wider environmental problems. To provide an insight into the status of occupational health in the late nineteenth century, Christopher Sellers begins by describing events at the Chicago Exhibition of 1893, where the 'Hygiene of the Workshop and Factory Exhibit' was virtually nonexistent. It proved an appropriate symbol, as the organizers had decided to coat the buildings with tons of white lead paint-a long-recognized poison-which had predictable health effects on the painters. The example of lead is used throughout the book as a theme to highlight the development of industrial hygiene.

In the 1890s, American occupational medicine was backward, government regulation lacking, and industrialists avoided liability for any health problems. In the Progressive era before 1914, social scientists and labour organizations—notably the American Association for Labor Legislationtargeted with some success known industrial diseases, such as the "phossy jaw" of the matchmakers. The investigatory strategy of social scientists and the networks they created paved the way for the first industrial hygienists. These included Alice Hamilton, a physician for the US Bureau of Labor, who was a key figure in establishing occupational disease research. Although industrialists were persuaded rather than compelled by Hamilton and others, by 1914 occupational health had become a marked function of the state. The baton of occupational health research was picked up during the war years by the Public Health Service (PHS), by which time state legislatures were drafting compensation laws, thus raising the spectre of liability for errant industrialists. This in turn stimulated the hiring of company physicians, a trend which continued after 1918.

In the inter-war period a reaction occurred. The studies of the PHS were attacked by industry, especially those that focused too narrowly on the workplace. Leading health researchers now put their faith in a more scientific approach, in which health hazards were examined primarily in the laboratory. By the 1920s, Harvard scientists had become the leaders in industrial hygiene research. The emphasis was on pure research, usually led by upper- and middle-class individuals who took no interest in politics and industry, yet had their work funded by businessmen. Not surprisingly, the era saw a marked convergence between scientists and industrialists, with industrial hygienists operating as a testing laboratory for toxic substances so that business could reassure the public of the safety of its products. In the depression and its aftermath, these scientists used the knowledge that they had acquired through occupational health to address wider environmental concerns such as air pollution. It signified a move in state resources and attention away from industrial health narrowly defined, a trend that was not halted until the 1970s.

Christopher Sellers' text is densely argued (with the endnotes occupying nearly a quarter

of the book). This does not always make for easy reading, especially since the heavy referencing is not accompanied by a bibliography. On the other hand, he covers a wide canvas and is very good at highlighting the dilemmas always present for industrial health researchers and physicians: without industry the profession can hardly exist, yet working with industry nearly always involves compromises. These dilemmas were made worse by the outlook of the medical men themselves. In a telling photo caption of an industrial physician at his desk, the author notes that such men hardly ever agreed to be photographed with workers, preferring to be seen with emblems of their science such as sheafs of statistics and x-rays.

On the whole, though, Christopher Sellers suggests that industrial hygienists did a good job, imposing a discipline on the workplace through the courts, compensation boards, and even directly through the boardroom via their research links with industry. This may not convince everyone. Historians who have looked at individual industries have painted a more depressing view of industrial physicians as company-oriented individuals, whose work did little to ameliorate a system heavily stacked against the worker. This book makes little mention of corporate suppression of research, suggests that state laws compensated workers (without offering any detailed case studies from business records), and argues that medical networks ensured that industrialists paid for the hazards they inflicted on their workforce. That is certainly not the experience of many victims of industrial disease, either in America or elsewhere.

Overall, however, this is an impressive book, which will obviously be required reading for anyone interested in the history of occupational health.

> Geoffrey Tweedale, Manchester Metropolitan University

E M Tansey, P P Catterall, D A Christie, S V Willhoft, L A Reynolds (eds), Wellcome witnesses to twentieth-century medicine, vol. 1, Occupational Publications, No. 4, London, The Wellcome Trust, 1997, pp. v, 135, £9.00, \$17.00 (plus p&p) (1-869835-79-4). Orders to: Mrs Tracy Tillotson, Wellcome Institute, 183 Euston Road, London NW1 2BE, UK.

Where contemporary history is concerned, it is not enough to trawl the written evidence. The scientific paper is partly, if unintentionally, fraudulent, giving as it does a sanitized account of what actually happened; and unpublished archives may be incomplete or even unavailable. So, whenever possible, the original participants in the events of interest must be interviewed; indeed, the Wellcome Trust makes it a condition of certain awards in the history of twentiethcentury medicine that the grantee should attend a course in interview technique.

The witness seminar, of which Tilli Tansey has organized more than a dozen at the Wellcome Institute for the History of Medicine since 1993, is a natural extension of this principle. Instead of dispatching a research assistant to interview individual makers of history, you gather together fifteen or so key figures and allow them to talk freely about events, supporting or correcting one another as may be. This book contains the proceedings of four such seminars: the discovery of monoclonal antibodies (used as a MacGuffin for a discussion on technology transfer, a theme that deserves much more attention), theories about autoimmunity (or, as we are told to call it, autoallergy), the discovery of endogenous opiates, and the establishment of the Committee on Safety of Drugs (later to become the CSM). These accounts are as problematic in their own way as written sources are: memory is fickle-tales of events are befogged by forgetfulness and moulded by the retrospectoscope; a written transcript cannot convey the nuances of expression or the body language that inform the audience; and the absence of certain important individuals (e.g. Hans Kosterlitz from the meeting on endogenous opiates) can alter the balance. But