

complaints, however justified, against the disastrous effects of international capitalism and of corruption of local elites. Cueto does not propose easy solutions—there are none—but his studies indicate that some improvement can take place even under difficult conditions and with limited material means, and that even in the poorest areas long-term policies which associate central planning with the participation of local communities can make a significant difference in limiting epidemics.

A final remark: Cueto's book is in Spanish, and is destined for the Peruvian (and more broadly Latin-American) market, as indeed it should be. It is, however, of interest for Western investigators as well because of the intrinsic interest of the historical materials it contains, and above all because—unlike the majority of historical studies on colonial medicine and medicine in developing countries—it is written from a non-western point of view.

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**Claudia Clark**, *Radium girls: women and industrial health reform, 1910–1935*, Chapel Hill and London, University of North Carolina Press, 1997, pp. xii, 289, \$49.95 (hardback 0-8078-2331-7), \$17.95 (paperback 0-8078-4640-6).

Most medical students have been told of the fate of the young women who in the 1920s painted clocks, watches and other dials with luminous paint containing radium; of how they developed radium toxicity and bone cancer. Few doctors know the full story of what happened. I became interested in these extraordinary events about ten years ago when I was writing an account of the causes of a form of cancer of the bone known as osteosarcoma. I burrowed deep into the original accounts and contacted some of the physicians who were still alive who had worked with the doctors who established the connection between the dial painters' exposure to radium and the illnesses which they developed.

The history can briefly be summarized. During and after the First World War the discovery by Sir William Crookes that radium, when mixed with zinc sulphide, gave a luminous material, was exploited by several companies set up in the USA and Canada to paint watches and other dials. These companies mainly employed young women school-leavers who painted the dials with a fine brush which they "pointed" between their lips. After a few years, the women began to get ill with falling teeth, necrosis of the jaw, anaemia and, later, osteosarcoma and cancer of the sinuses of the skull. It was some time before it was realized that the radium was responsible. It caused radiation necrosis of the jaw by direct action in the mouth where radium was deposited around the teeth. It caused bone marrow failure and bone cancer at distant sites because the young women swallowed the radium paint which was partially absorbed in the gut and deposited like calcium in bones. The process of medical discovery of the mechanism is fascinating and one man, Harrison Martland, made an outstanding contribution to the events. Martland was also involved, for a time, in helping the young women get some form of compensation from the employers—often rather shifty companies who would close at one site to reopen in another and who denied the association between radium and the illness it caused. Martland, in his papers in the 1920s, gives full vent to his disgust at the legal and industrial attitudes towards these young women.

Claudia Clark's book is a detailed, fascinating, and lucid account of another part of the story. This is the fight undertaken by the women for recognition of what had happened and to gain compensation. In her introduction she gives her motive as striving to tell "not only the moving story of the discovery of radium poisoning . . . but also to analyse the changing knowledge, attitudes, and institutions that affected the dial painters' struggle . . .". She succeeds in these aims.

Clark takes us through the early stages of the establishment of the factories, the state of the existing industrial legislation and the social attitudes towards radium which then prevailed.

## Book Reviews

Through the eyes of some of the women—and many of their accounts are available—she shows how the medical consequences developed and the attitude of employers towards the accumulating weight of medical evidence showing the effects of the ingestion of radium. Derisory sums were paid in out of court compensation for the early cases. An ineffectual Bill was passed in 1926 which precluded claims for compensation for injuries caused before that date. It was difficult to prove that the main employers (US Radium) knew before 1926 that they were doing harm to their employees or that they had failed to take adequate measures to safeguard them. Clark explores the attitudes, compromises, and sometimes downright dishonesty of company officials, their lawyers and some of the medical experts involved. The reaction of the public and press at the time are very well described. Later the factories moved to Illinois, where one factory owner, Joseph Kelly, translocated his business to Ottawa, setting up in an old school house. It is clear that the exposure greatly diminished in the 1930s, but women continued to work in unsafe conditions with no official standards in place until 1941. Even in 1943 it was calculated that 15 per cent of workers were receiving more than the “tolerance” dose of radium.

The social and political climate in which this industrial poisoning occurred are very well documented in this book. It is, of course, a description of US labour laws and practices, but it has uncomfortable similarities with the difficulties encountered in enforcing safety standards for asbestos workers in the UK.

The book is a considerable achievement. In my opinion the medical part is not fully described—it is very much more fascinating than Clark’s account—but this was not her point in writing. It is a salutary and sobering story of the damage inflicted on a very vulnerable group of young women and of the reactions of confusion, denial, subterfuge and sometimes frank dishonesty which the emerging facts provoked.

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**Roger Cooter and Bill Luckin** (eds), *Accidents in history: injuries, fatalities and social relations*, Clio Medica 41, Wellcome Institute Series in the History of Medicine, Amsterdam and Atlanta, Rodopi, 1997, pp. x, 273, Hfl. 40.00, \$25.00 (paperback 90-420-0093).

The phrase “accidents in history” perhaps suggests a historiographical volume encompassing such “what if” questions as: would the First World War have happened if Archduke Franz Ferdinand’s chauffeur had not attempted a three-point turn in the streets of Sarajevo in June 1914? But this volume is more concerned with the automobile as an engine of destruction (exclusively so in the case of Bill Luckin’s study of road traffic accidents in Second World War Britain) than it is with either the assassin’s bullet or the so-called “accidents of history” with which historians have such fun. Billed, in part, as the product of a one-day conference held at the Institute of Historical Research in 1991, the collection actually includes only one of the papers presented on that occasion. The single survivor is Roy Porter’s characteristically erudite and entertaining essay on ‘Accidents in the eighteenth century’. For the rest we have chapters on the philosophy and sociology of accidents, accidents in the home, on the road, and at work, disease and risk management, the rise of the civilian ambulance movement, and reasons for a temporary surge of public interest in accidents during the late nineteenth century. The spatial and temporal spread of these contributions encompasses Europe and North America from the eighteenth century to the present day, though within these boundaries Britain, Germany, and the USA in the period 1870–1945 loom particularly large.

One of Cooter and Luckin’s main objectives in this volume is to rescue accidents involving physical injury and death from the historical neglect they have supposedly suffered. That the history of accidental injury has been insufficiently considered is no doubt true, though, as the select, but still extensive, bibliography supplied here indicates, the point