Certainly no-one interested in occupational mortality should fail to read this decennial supplement, at least in part. The serious epidemiologist will also want to have access to the fiches. However, it is to be hoped that anyone using the wealth of material contained in the supplement and the fiches will exercise the same caution as Dr John Fox and avoid the eye-catching and sometimes misleading headline. Dr Fox, according to the Registrar General's preface, 'did the lion's share of the work' in preparing the commentary and analysis—truly a remarkable performance.

ANN PETRIE

Crowner's Quest. By Thomas Rogers Forbes. (Pp. 52; \$6.00). Transactions of American Philosophical Society, Philadelphia. Volume 68, Part I. 1978.

Coroners were first appointed in England in 1194. Their main responsibility was financial rather than judicial: convicted felons had to forfeit to the king their goods and chattels, worth being determined by the coroner who also imposed fines on the community for failing to maintain law and order. At first coroners were not paid and their status declined because responsible persons refused to accept a position that was time-consuming and unpaid. Extortion was widespread with coroners demanding payment before calling inquests. In 1751 an Act was passed to give proper payments: 20 shillings for each inquest plus 9d a mile travelled. The act also made it possible to remove a person from this life-time appointment for misdemeanour or neglect of duty. Since coroners had to keep records of inquests of those who had died from other than natural causes, in prison, suddenly or in suspicious circumstances, they unknowingly assembled valuable data. The Births and Deaths Registration Act of 1836 regularised the reporting of deaths and reformed coroners' duties. It became much more difficult to conceal homicide and it revealed occupational causes of death.

Dr Thomas Forbes, Professor of Anatomy at Yale University, has given a fascinating history of the coroner and the inquest. He has analysed the surviving records of over 6000 inquests conducted by the coroners for the City of London and Southwark, from 1788–1829. He gives an account of the development of the Coroners' system to the modern ideal from a time when it was at its nadir, with the unqualified coroner, open hostility

with the justices of the peace, lack of regulation for disposal of the dead body and lack of adequate medical evidence. There was a gradual but conspicuous increase in the proportion of post-mortem examinations done at inquests. It rose from less than 1% at the beginning of the period to about 20% at the end. This was probably due to a growing interest among the medical profession in pathology and dissection of the human body. Inquests on the deaths of hospital patients in the City and Southwark Hospitals, which included St Bartholomew's, St Thomas's and Guy's, increased 15-fold in 25 years.

During this time when London's population doubled, deaths from burns increased more than seven times, fatal falls tripled, drownings remained at the same level, while deaths involving vehicles and horses kept pace with the population growth. All other fatal accidents tripled, an increase in risk which probably reflects the impact of mechanisation. Out of 3316 accidental deaths, 944 were classified as occupational. The commonest cause was falls, particularly from ladders and scaffolds. Between 1825 and 1831 about 800 men were employed building London Bridge; 40 of them are said to have lost their lives, mostly by falls. Accidents to chimney sweeps are a sad reminder of the child abuse of those times. Much of this work was done by young boys chosen for their small size and deliberately malnourished, it is said, to retard their growth. If they survived suffocation or injury they might live to develop pulmonary tuberculosis or scrotal cancer. Alcoholic intoxication and infection were common contributory causes of death. Drunkenness seemed frequently to have been the cause of falls from ships and barges, and infection repeatedly caused death after recovery from the original injury.

There are other sections which deal with suicides, homicides and deaths from illness. All these and particularly the historical aspects of the coroners' work will interest many people. It is, however, the section on occupational accidents which will absorb practitioners and students of occupational health.

RICHARD SCHILLING

Criteria (Dose/Effect Relationships) for Cadmium. (Pp. 202; £9.50.) Published for the Commission of the European Communities by Pergamon Press: Oxford. 1978.

This report is similar to the Swedish report, *Cadmium in the Environment* (2nd edition) and covers the complete story of cadmium from its chemical and physical properties, its natural occurrence, concentrations in the environment, metabolism, toxicological effects, and some existing guides and standards for environmental levels.

The last two chapters are devoted to needs for further research and a tentative proposal for a no-effect level for long-term exposure to cadmium. These two chapters are the most interesting in that they provide a summary of world thinking concerning problems of cadmium in the environment, and even though this is primarily a European study (and it is obvious from the format that this is mainly the work of Professor R. Lauwerys), the philosophy follows the international line.

The needs for further research include some very interesting subjects, but apart from the cadmium metabolism section the toxicity studies suggested will require very long and patient surveys throughout the world. Because of the relatively small numbers of people who are exposed to cadmium compounds, it is most important that the practising occupational health doctor should take part in these surveys. Most of the work which has so far been commented on is basically talking about current exposure levels in the general population, and although a lot of information is coming from Japan and Itai-Itai disease, there is still a considerable amount of uncertainty about the result of these surveys. It is essential that exposure risk criteria are evaluated for people with known high exposure to the various cadmium compounds, and it is only in the study of those at work that this could be evaluated by means of retrospective and prospective studies.

The increasing use of sensitive biological tests makes it imperative that there should be standardisation of methodology, and potentially high exposure groups in the general population should certainly be investigated.

One area which is constantly neglected is mortality studies in people with long-term exposure to cadmium. It is extremely difficult to argue that excess β_2 microglobulin in the urine, for example, is not a positive sign of kidney damage. However, it is well known that there are many workers who have had this type of proteinuria for 20 years or more and seem to have a normal life expectancy.

The collection of this kind of mortality data would be helpful, as it may be that the appearance of excessive amounts of β_2 microglobulin in the urine may be similar to the abnormalities found in lead absorption, e.g. raised ALA dehydrase levels. Thus, the critical effect level, which is based on the risk of kidney impairment (the production of increased amounts of β_2 microglobulin), may not be valid as a critical amount to which people should not be exposed in the general environment.

In a changing environment, change in the response of the human does not always mean that there is an effect on mortality or morbidity of the person concerned.

Most of the world literature concentrates on the renal effects of cadmium, but it is well known in the industry, particularly where cadmium fume is produced, that where death results it is most certainly due to lung pathology. It is not very well documented that kidney failure is very rarely reported in mortality studies of people who are exposed to very large amounts of fume; for example, in the cadmium/copper industry where exposures during wartime exceeded 200 times the present threshold limit value for respirable fume.

The most interesting feature of this report is an evaluation of safety factors, which compares tentative threshold effect levels and the estimated current amount of cadmium absorbed. If the recommendations of this group were to be accepted, then it is difficult to see how industries which handle cadmium and its compounds could continue to function.

H. HOLDEN

Hygiene Standard for Cadmium. No. 6 of a Series produced by the British Occupational Hygiene Society. Committee on Hygiene Standards. Published in *Annals of Occupational Hygiene* (1977), 20, 215-228. Price £2.00 from Mr P. J. Hewitt, Honorary Business Secretary, BOHS, University of Bradford.

This latest addition to the Hygiene Standards series of the British Occupational Hygiene Society deals with a current problem the importance of which is shown by the increasing number of papers on this subject; there is considerable activity both in America and Europe with demands for stricter standards and a reduction of pollution levels in air and water effluent.

This hygiene standard gives a short summary of the effects of cadmium on the human body and differentiates between the effects of cadmium oxide fume, cadmium oxide dust, and cadmium sulphide pigments. The suggested standard includes three categories of exposure levels, one for cadmium fume (or other respirable compound) of $50 \mu\text{g}/\text{m}^3$, which is similar to current standards in most other countries but does not go as far as the standard of $20 \mu\text{g}$ which is used in Sweden, or the NIOSH $40 \mu\text{g}$ TLV. The level for soluble cadmium dusts, that is dusts which are soluble in 0.1N hydrochloric acid, is a departure from previous standards and indicates the differing absorption levels between the various cadmium salts. It has been known for some time that cadmium dust workers and cadmium pigment workers show kidney changes, such as excess β_2 globulinuria, but in cadmium copper alloy workers exposure to fume causes both kidney changes and lung damage. There is very little emphysema among cadmium oxide battery and cadmium sulphide pigment workers, and this seems to be partly a function of particle size but also has something to do with the solubility of such particles in biological fluids. The standard for soluble dust, (total dust, whether respirable or not) therefore, is $0.2 \text{ mg}/\text{m}^3$. The total weight of the acid-insoluble compounds should not exceed the nuisance dust level of $10 \text{ mg}/\text{m}^3$.

The difficulty of estimating whether renal tubular dysfunction contributes to an alteration in the morbidity or mortality patterns of the cadmium-exposed worker is an obvious area where practical epidemiological studies in the workplace are going to help to settle this very vexed question. Increases in the total amount of β_2 globulin excreted in the urine have been noted in all cadmium workers, but the significance of this change can be ascertained only by long-term epidemiological studies which will indicate alterations in the mortality and morbidity patterns of the workers. Because of the small number of people involved it is to be hoped that future surveys will, for example, combine all UK cadmium workers or all European cadmium workers so that significant conclusions can be reached.

A controversial aspect of the standard is the new Special Short Exposure Limit for cadmium fume. Although it is a practical response to the occasional need for the workers to be exposed to levels much higher than the normal time-

weighted exposure it can be applied only when the airborne concentration is known before the work is undertaken; this is seldom the case. However, it has been pointed out that the same problem arises with any peak value and it is possible that an integrating dosimeter will be developed. The Standard generally is a practical approach to the care of cadmium workers and will be welcomed in most industries where cadmium is used, even though there is sure to be an outcry from the purist who is interested in the kidney tubule.

H. HOLDEN

Notice

Occupational Dermatology Symposium

This course, which will be held at the University of California Hospital, San Francisco, March 26-28, 1979, will summarise principles and practices of occupational dermatology, stressing the latest relevant advances. Presentations are aimed at physicians, nurses, and allied health scientists involved in the prevention and treatment of occupational skin disease. Workshops and field trips are on an optional basis. The course is jointly sponsored by the ICDRA, NACDA, NIOSH, and the University of California. For information, write to Extended Programs in Medical Education, University of California Hospital, San Francisco, California, 94143, USA, or telephone (415) 666-4251.