Minimum standards of job training and working rules are defined, and the need for adequate arrangements for washing and changing is discussed.

The suggested methods of medical control make use of the short MRC respiratory questionnaire, together with measurements of FEV\textsubscript{1.0} and FVC using a dry spirometer. Pre-employment screening and periodic health checks are recommended. The standards of acceptability for work with TDI are stringent and may sometimes be difficult to achieve in practice. The possible significance of a fall in FEV\textsubscript{1.0} and notes on the practical limitations of simple spirometry are helpful. A useful inclusion is a concise but clear set of recommendations for first-aid treatment.

The comprehensive appendices contain the text of the MRC questionnaire and notes on its use, much practical information on the use of spirometers, and a list of the names of manufacturers of protective respirators.

This book is more than a simple Code of Practice but rather a valuable collection of information on many practical aspects of working with di-isocyanates. It should prove to be of great value to all who have to deal with these materials.

K. S. WILLIAMSON


Volume IX in this highly important series of historical publications was designed to close many of the gaps left by the earlier and more highly specialized volumes, especially at the administrative level, and in this it achieves its purpose admirably.

In a lucid foreword Lieutenant General Leonard D. Heaton, who held the appointment of Surgeon General for longer than any other officer in modern times, points out that not only was the army the largest employer in the U.S.A. of civilian and military workers in plants of all types, ordnance shops, and a vast variety of manufacturing enterprises but that disabilities due to environment and climatic factors were recognized to assume a new and unprecedented importance, more than in any other campaign in modern times. Chapter IV, which contains invaluable statistical material not available hitherto, recounts how cold injuries were very largely confined to the front lines in Europe, whereas, perhaps surprisingly to some people, heat injuries (excluding sunburn and burns) were three times as numerous in the continental United States as they were in foreign theatres of the war.

A remarkable chapter (VII) on Medical Laboratories, re-written relatively recently by Professor G. J. Dammin of Harvard, with 196 references and an addendum listing 92 outstanding papers, which are representative of the wide scope of the studies completed by the army's laboratory investigators in time of war, turns what could have been a relatively humdrum account into a fascinating story of how the conditions of war put army medicine on a new scientific basis.

Chapter V describes the arrangements made for the collection of medical intelligence to assist in the medical and strategic planning and conduct of operations which laid the foundations of the post-war organization for handling this important aspect of military medicine.

General Bayne-Jones is the author of chapter VI on preventive medicine for enemy prisoners of war, an important and humanitarian topic largely neglected hitherto by medical historians. Chapters I, II, and III, on Training, Health Education, and Occupational Medicine and Industrial Medicine respectively, should become required reading for all with a special interest in the development of preventive medicine.

This very attractively produced miscellany has many messages for many people and, in these days of ever more expensive texts of every sort, it is remarkably cheap at $8. It should not only be on the shelves of all medical libraries and departments of preventive medicine but would be a valued addition to the private libraries of all with more than a superficial interest in preventive medicine and the history of military medicine.

F. P. ELLIS


This is a brief and comprehensive assessment of the whole problem of occupational exposure to cadmium and its salts and is a good review of the current problem of cadmium poisoning. The authors stress that occupational poisoning by cadmium is almost invariably due to inhalation of either freshly formed fume or cadmium oxide dust, while non-occupational cadmium poisoning usually follows ingestion. The sources of cadmium in industry and the various processes in which exposure may occur are listed together with the common names of various alloys containing cadmium. Apart from commenting on the occurrence of environmental cases of an obscure disease in Japan ascribed to cadmium exposure this pamphlet refers only to occupational cadmium poisoning.

There is an excellent account of acute poisoning in which the causes are listed and methods of prevention and treatment are given. A full account of two typical cases of acute cadmium poisoning is included as an Appendix.

Threshold Limit Values for cadmium are discussed but it is not clear whether these refer exclusively to the prevention of acute poisoning or whether chronic cadmium poisoning is also considered. Chronic cadmium poisoning is fully described, together with suggested significant blood and urinary cadmium levels. In discussing the typical low molecular weight proteinuria no mention is made of its being accompanied by aminoaciduria and hence its significance in indicating tubular dysfunction. There would not be universal agreement with their suggestion that in certain cases there is a regression of the symptoms of the chronic form of the disease, but their cautious approach to the question of administering
chelating agents and their stressing the contraindication of dimercaprol (BAL) in acute poisoning are welcomed. This excellent bulletin includes an account of the strange environmental Japanese 'itai-itai' disease. These are cases of bone and joint pain occurring in a proportion of elderly women living in the vicinity of old mining workings where cadmium, lead, and zinc have been mined. Rightly or wrongly, this disease has been ascribed to exposure to cadmium.

This publication would be very useful to any industrial medical officer or industrial hygienist concerned with the protection of persons exposed to cadmium or its compounds in their work.

J. A. BONNELL


In aspects of occupational medicine which involve radiation the physical quantities and units used must be chosen with extreme care. An international body concerned with units (ICRU) had to be established (1925) before progress could be made in setting acceptable levels of exposure to radiation. Any system of radiation units must serve many purposes. It must be useful in relating quantities measurable external to a worker or patient, to quantities resulting from his interaction with the radiation; and it must also provide a language which is useful for discussing the biological mechanism of radiation effects in man. For many years the roentgen was used both as the unit of environmental exposures and as the unit of dose received by a man exposed to that environment. In the last 20 years the distinction between the environment and the absorbed dose has been clarified and additional physical concepts (such as kerna and dose equivalent) have been introduced.

By 1962 the family of units was essentially complete, and the last ICRU report issued in 1968 contained only limited modifications. It provided a self-consistent set of concepts for adding the effects of different sorts of radiation, and even for adding the effects of inhaled or ingested radioactivity to those of external irradiations.

The present report retains the same fundamental units with their meaning of range of applicability. However, some of the formal definitions have been made more rigorous and, although this will not affect their use in industrial hygiene, it will avoid ambiguity in theoretical studies. The most valuable additions in the present report are those concerned with microdosimetry, a growing subject which is proving important in radiobiology. To accommodate differences between stochastic processes and the mean (or expectation) value when many such processes occur in a finite volume, it has been necessary to introduce very precise language. Some of the consequential changes in nomenclature will be noted with regret, for example, Integral Dose becomes Mean Energy Imparted.

A departure from previous Reports is the publication of a separate section, Part II, dealing specifically with Quantities and Units for Use in Radiation Protection. This part of the Report introduces two new quantities, Absorbed Dose Index and Dose Equivalent Index. These indices are maximum values in a tissue equivalent sphere of 30 cm diameter. Many physicists will question the need for introducing further quantities into an apparently complete family, and it is certain that many industrial doctors will suspect that the study of 30 cm spheres may divert effort from the main objective of protecting workers. There is an urgent need to examine the quantities used in radiological protection, some of which are so poorly defined that several interpretations are possible. The present Report gives little hope that ICRU intends to perfect a self-consistent set of units which can be unambiguously applied to radiological protection. The new quantities, Absorbed Dose Index and Dose Equivalent Index, are unlikely to find general acceptance, and it seems improbable that the Report will have any impact on the operational aspects of radiation protection. However, the clarification of fundamental quantities and units, which provide the language for advancing the physical and radiobiological basis of health physics, is well done and welcome.

J. A. BONNELL


This annual report appears in a slightly changed format but the contents are essentially the same. The overall figures for pneumoconiosis give no reason for satisfaction and appear to have been more or less static over the last few years. In coal mining, for example, boardings at which the disease was first diagnosed have not significantly decreased since 1966. The situation in the coal mining industry is further illustrated by the rate of boarding in Doncaster, which in 1970 was 4.6 per 1,000 wage earners overall compared with 1.8 in 1968, and in East Wales, which was 6.2 per 1,000 in 1970 and 3.2 in 1968.

In industries other than coal mining the number of boardings shows the same tendency to remain static during this period with the exception of asbestos working in which the numbers diagnosed are higher than in the previous two years. Coal mining still accounts for over 65% of the new pneumoconiosis cases diagnosed, and pottery manufacture, slate mining and quarrying, iron foundries, and work with asbestos stand out as the problem industries.

In the year under review, 44 men (4.3%) were given a 10% disablement assessment but the great majority of boardings were less than 40%. Most men in whom pneumoconiosis was first diagnosed were over 45 years of age, but it is significant that 21 men in the coal industry and 9 men who had worked with asbestos who were accepted at boardings during 1970 were under 40 years of age. The number of deaths also appears to be rather static and 870 death benefits were awarded in 1970, the average over the preceding four years being 867. The total number of men who are in receipt of disablement benefit is falling very slowly year by year but there are still over 46,000 of them. These include 150 coal miners and 80 men from other industries who are all under the age of 40 years.

For coal miner's pneumoconiosis the overall rate per 1,000 of all wage earners employed is 2.7, the range being from 0.4 (Northumberland) to 6.2 (East Wales). In 1964 this overall figure was 2.4 per 1,000.

The slow improvement in eradicating the dust diseases is disappointing, particularly where the effort has been