which has all too often been neglected. It is no discovery that accidents often hurt people and are usually caused by people but we too frequently talk about the subject as if metal was the only thing that got bent and the real problem was how to handle the statistics. However, the subtitle *Psychological Concepts and Principles which bear on Industrial Safety*, gives a more accurate indication of what this book is attempting. There are four chapters: Organizational psychology; Engineering psychology; Training; and Behaviour modification, and the same format is followed in each. The authors put forward four or five main sections and group in all some 20 guidelines in these sections. For example, in Engineering psychology, the sections are: A. Work organization; B. job characteristics and demands; C. Workplace design and layout; D. Task characteristics and demands; and E. Control-display characteristics. Under the last category, we have E-19 Stimulus-response (S-R) compatibility (population stereotypes), E-20 Coding and identification, E-21 Display design, and E-22 Control design.

It will be appreciated that when a similar format has been followed for all four sections in each chapter, the impression is one of safety concepts being hung on to the framework of established disciplines; it is rather on the lines of saying, 'Here is how engineering psychology works; this is how it will influence safety if given the opportunity'. There is nothing wrong in such an approach, but in each chapter safety is secondary to the interests of the main subject and perhaps surprisingly there is no concluding chapter which tries to put the spotlight on accidents and integrates the various approaches.

Within the self-imposed limitations each of the chapters is a useful summary of the work in its field and how it might be applied to accident prevention. The chapter on engineering psychology is thorough and its references wide-ranging. I found the chapter on organizational psychology the least rewarding. I must be getting old but too many of its guidelines baffled me with their tautology, such as (a random selection):

'0-2 Organizational objectives. The objectives of an organization are reflected in its policies and practices. To promote safety, organizational actions should suggest to employees that safety is an important objective of the organization:

It is all done with a straight face but when 19 guidelines have been trotted out in a neat table and then exercised at length over 32 pages, concentration wanders. Yet overall the authors do succeed in bringing together 'those important principles in the behavioural sciences which appear to have significant bearing on occupational accident prevention'. To this extent the book can be commended although it offers no new insights into why man so often injures himself, injures others, and injures his world with much that is in it. This reminds me to add that within its stiff covers this book is most expensively produced and will cost the reader \$11.50 for its 144 pages.

HARRY KAY

A Laboratory Guide to Clinical Diagnosis, 4th edition. By R. D. Eastham. (Pp. 303; £2.50). Bristol: Wright. 1976

The number and variety of laboratory tests used in the diagnosis of disease increase with bewildering rapidity

each year, and there is also a greater range of diseases which may be encountered. This pocket book has been prepared as a guide to the effective use of the laboratory by the hospital doctor and the general practitioner. However, it is only of use in cases in which the diagnosis is known or suspected for there is no cross-reference system to enable the significance of an abnormal result to be determined. The guide is comprehensive, covering microbiology and some histology as well as chemical pathology and it includes a large number of rare conditions which are most unlikely to be encountered by a physician in occupational medicine.

By contrast, occupational disorders are inadequately covered. While, for example, disorders of metabolism are covered fully, the chapter on the investigation of intoxications is very short and not always accurate. This chapter includes a note on 'Haff' disease but does not include cadmium poisoning and makes no mention of organophosphorus or of any other form of pesticide poisoning apart from paraquat. Again, the only mention of poisoning by any of the aromatic or aliphatic series of hydrocarbons is limited to ethyl alcohol and halothane. In chronic beryllium poisoning, the text informs us, the urinary output of beryllium is increased, but this is not necessarily true. Unqualified didactic statements are made, which is a fault associated with many pocket books which attempt to cover too wide a field.

The text is most useful for its record of biochemical and microbiological features and also for its summary of important negative findings associated with specific disease states and syndromes.

G. KAZANTZIS

Manual on Radiation Protection in Hospitals and General Practice, Vol. 3: X-Ray Diagnosis. By B. E. Keane and K. B. Tikhonov. (Pp. 96; tables, figs; Sw. fr. 18.) Geneva: WHO. 1975.

This WHO publication meets effectively a fairly narrow but very worthwhile objective. Much theory and experience in radiological protection is condensed in this book into a clear set of widely applicable recommendations. All those responsible for providing diagnostic x-ray facilities or for monitoring their safe use will find it a valuable guide. In particular it will give authoritative support to those who, having a scientific background but limited experience, find themselves in the position of having to advise other professional groups such as administrators, architects, or medical practitioners.

C. B. CLAYTON

The Physiology and Medicine of Diving and Compressed Air Work, 2nd edition. Edited by P. D. Bennett and D. H. Elliott. (Pp. 566; £17.) London: Baillière Tindall. 1975.

In recent years more attention has been paid to the environment as a challenge to health, and the constraints of conventional medicine are giving way to the broader concepts of occupational and community medicine. Man himself has evolved to function effectively within a relatively narrow range of environmental changes. He demands a precise microclimate and an accurately monitored and maintained inner chemistry. He is basically

conditioned to a two-dimensional existence in a temperate climate breathing a mixture of oxygen and nitrogen which varies little from that of the sea level atmosphere. The fact that he must breathe a gaseous mixture renders him vulnerable to changes in environmental pressure.

Man's restlessness and competitive striving for gain has led him to exploit environments beyond the confines of the land, over and into the seas, and into the air and outer space.

Two thousand years or so ago the pearl divers of the Pacific perfected simple techniques to enable them to collect riches from the sea bed. Since then man has extended diving, first for salvage and underwater engineering, then for warfare and sabotage, and more recently for pleasure. Lately, however, the discovery of oil beneath the sea and the requirement for massive engineering structures at great depths has given diving man a new potential. The rewards are great, but so are the dangers, for to be effective he must expose himself to great pressures, to unaccustomed respiratory demands, weightlessness, and profound physical and emotional stress.

It is fortunate for the divers and those who employ them that even before their services were required the interest of the underwater environmentalists, mostly naval, in their problems was aroused. There was little need for trial and error and a wealth of experience and experimental data already existed. Without this the present underwater achievements would be impossible.

This second edition has been published at a very opportune moment. The first was published in 1969 but since that date major developments in deep diving with particular reference to the offshore oil industry have become of great significance. So much so that the editors, with the new underwater demands in mind, have redirected this volume to current needs.

Seven additional chapters have been added to the original 22 and many others have been modified and updated. The remaining, and little changed chapters are those which cover the basic principles of diving, the physics and physiology of gases under pressure, and those adversities peculiar to diving, for example: inert gas narcosis, oxygen poisoning, carbon dioxide poisoning, and decompression sickness, by authors such as Kylstra, Behnke, Schaefer, and Walder, all distinguished pioneers in this field. The fundamentals of engineering and breathing apparatus are updated and a new chapter on the physiological principles of breathing apparatus by Morrison, full of valuable data, is a welcome addition.

Fundamental to survival in the artificial environment are the Life Support Systems and the well-illustrated presentation by Miller is also a welcome and indeed necessary addition. It is generally assumed for practical purposes that fluids and body tissues are incompressible and the only worries underwater are those associated with gases. However, evidence is growing that pressure itself may have its effects on physiology and biochemistry and a timely warning is given by Macdonald under the heading hydrostatic pressure physiology.

Another relatively new complication of deep diving is the high pressure nervous syndrome. This was first attributed to helium narcosis, possibly associated with carbon dioxide retention, and seemed to put a final limit on depth. However, the study of this problem in both

animals and man as presented in two new chapters by Brauer and Bennett gives hope that the addition of carefully controlled amounts of nitrogen to the oxy-helium mixture could be the answer.

Other very real complications have received additional attention: cold exposure by Webb, bone necrosis by McCallum, and auditory and vestibular function by Farmer and Thomas.

The arrangement of the chapters is subtly appropriate and the abundance of expertise is neatly contained between a new opening: a short history of man in the sea, and a formal review of diving accidents by Hanson and Young. One cannot escape the significance of the comment that most accidents are due to carelessness or ignorance. The engineers and the doctors have done their best for the divers in their dangerous environment. The rest is up to the divers themselves to ensure that they are well trained and fit and that they fully appreciate the environmental hazards they face.

Finally in support of this exceptional publication it should be stated that, although mainly concerned with a relatively limited field of human activity, it offers a blue print for anyone interested or indeed involved in the adaptation of man to his environment.

The printing, illustration, and format of the book are excellent and rarely does one find such an abundance of references. The editors and contributors are indeed to be congratulated.

STANLEY MILES

Radon and its Daughters in Various British Mines. By J. C. Strong, A. J. Laidlaw, and M. C. O'Riordan. (National Radiological Protection Board Report R. 39). (Pp. 24; 50p). London: HMSO.

The element uranium is widely distributed and most rocks contain it at concentrations of around a few parts per million. Among its decay products are the radioactive nuclides radium-226 and its daughter radon-222, which is chemically an inert gas. Workers in mines inhale minute quantities of radon which diffuses from the rocks and there is a potential radiation hazard, both from the radon itself and from its short-lived decay products. Specifically, prolonged exposure to high concentrations is known to increase the incidence of lung cancer.

Duggan and co-workers have shown that radon concentrations in coal mines are relatively low but that higher concentrations occur in metalliferous mines. Consequently in 1973 the NRPB made an extensive survey of radon concentrations in non-coal mines and this is its report.

At present there is no statutory regulation of radon exposure in this country, although the International Commission on Radiological Protection recommends a concentration limit (averaged over a year) of 30/Ci per litre for radon-222 and an equivalent 'working level' is in force in the USA. The most important result of the survey is that 745 of the 1788 miners surveyed (that is, 40% of the sample) might well have been subject to exposure above this limit; 87 workers apparently had estimated exposures above five times this limit. Some reduction was noted in a later survey.

The number of persons in other occupations whose annual exposure to ionizing radiation regularly exceeds the appropriate limit is negligible. It appears therefore