contain triorthocresylphosphate, trimetacresylphosphate, triparacresylphosphate, triphenylphosphate, 2,3 trixylenylphosphate, triorthocresylpyrophosphate, triortho-ethylphenylphosphate, and phenyl-orthocresyl-2,3 xylenylphosphate. It can at once be seen how difficult it was in the Moroccan outbreak to solve the problem from the toxicological point of view. The three American oils were neither identical nor exclusively composed of TOCP. But worst of all, the adulteration was not confined to one and the same product nor carried out in equal proportion.

The book is beautifully produced and the typography pleasing. The English translation is excellent, and, as to misprints, nothing much worse than *und* for *and* is to be found. Adequate maps and diagrams are provided, and the photogravure blocks of paralysed patients as well as of high-power histological pictures of nerve fibres and striated muscle are superb.

DONALD HUNTER

Emotional Stress. Proceedings of an International Symposium arranged by the Swedish Delegation for Applied Medical Defence Research, Stockholm, February 5-6, 1965. Edited by L. Levi. (Pp. 280; 81 figures; 10 tables; 99s.) Basel and New York: Karger. 1967.

This book contains the papers read at a symposium on emotional stress arranged by Dr. Lennart Levi. Dr. Levi is an international authority on this subject who contributed to the World Psychiatric Association's recent symposium on anxiety in London. It is not surprising, therefore, that he collected a representative and expert group of contributors. The subject matter is divided into four parts: the psychological reactions to emotional stress, the physiological reactions, the psychophysiological reactions, and the clinical implications of emotional stress.

The first difficulty in this type of work is defining what is meant by emotional stress. The original use of the term 'stress' in clinical medicine was a mechanical concept: the stressor was the force applied and the stress or strain the result. Nowadays stress may mean either the force applied or the result of the force. A further difficulty is that emotional stresses may have different effects on different people. This is the theme of Professor Lazarus of the University of California, who points out the importance of intervening mental states between the exposure to emotional stress and the development of physiological effects. He shows that the end result depends upon what the particular stress means to that patient (appraisal). Altering the patient's appraisal changes the physiological response, *e.g.*, the effect of a horror film can be changed from acute fear to indifference by reminding the observer that the film is only fantasy. A further variable is that the subject may decide to fight or flee: depending on which of these 'coping' processes is decided upon, one of two very different action patterns (fight or flight) may follow the same stimulus.

There are a number of papers on the ways the body reacts to stress: the mental appraisal of the stimulus is followed by hypothalamic activation. The hypothalamus

activates both the ACTH mechanism and the autonomic nervous system. Autonomic activation affects reticular arousal mechanism and the complex vascular changes *i.e.* heart, muscles, intestines, and blood sugar that help the fight and flight reaction. These complicated changes in physiological patterns of activity are controlled by nerves and hormones: the feedbacks in this elaborate neuroendocrine control are so complex that it is difficult to know which mechanism is producing a given result, *e.g.*, if the tachycardia of anxiety is mediated via neural or endocrine controls.

The symposium contains excellent work on the adrenergic mechanisms and the role of ACTH in relation to stress. There is some very helpful advice on how to grade psychic stimuli by direct and indirect scaling methods.

In the clinical evaluation of the experimental work on emotional stress, military situations which involve the extremes of stress are the easiest readymade testing ground. There is excellent work from the Royal Swedish Air Force and Army on the application of emotional stress research but this did not preclude the investigation of stress in industrial situations which is of paramount importance in everyday life.

I found the book a very helpful review of current work on anxiety and an excellent source of reference to the literature on the subject.

P. J. O'CONNOR

The Analytical Toxicology of Industrial Inorganic Poisons. By Morris B. Jacobs. (Pp. 943; illustrated; 200s.) London: Interscience Publishers (John Wiley). 1967.

The Analytical Chemistry of Industrial Poisons, by Morris B. Jacobs, was one of the first books in its field, and became a standard reference to those of us then learning, and developing, occupational hygiene. It was first published 20 years ago—a very long time in this discipline. *The Analytical Toxicology of Industrial Inorganic Poisons* is essentially an enlarged version of the earlier book.

To the occupational hygienist of today the first five chapters, on the need for, and the instruments used in, atmospheric sampling, are overdescriptive and in many ways uncritical, giving an optimistic view of some instruments and notably omitting size selective devices. There follow two chapters on dust evaluation, the first dealing in detail with counting techniques and the second with quartz analyses, where, surprising in this decade, X-ray diffraction yields pride of emphasis to petrographic and chemical techniques.

Morris Jacobs was best known for his analytical procedures, and these are given in detail in the later chapters. Many of them are in common use in our laboratories today, evidence of the continuing value of well-tried, and even traditional, methods. It is, however, unfortunate that they are presented in excessive detail, to the exclusion of analytical tools and techniques which are now freely available to the hygienist. While to some extent this must be the fate of any book giving analytical methods at a time when our concepts of analysis are changing, in this case the omissions are serious.

The experienced hygienist will gain little from this book, and the learner should be forewarned of the uncritical treatment of sampling, and the limited treatment of analytical procedures. Occupational hygiene owes much to Morris Jacobs, and it is with regret that the reviewer cannot envisage this book taking the same position in our libraries as the earlier version did in its day.

E. KING

Occupational Mycotic Diseases of the Lung. By F. Kováts (sen.) and B. Bugyi. (Pp. 212; illustrated; 70s.) Budapest: Akadémiai Kiadó. 1968.

In 1936 Dr. Kováts discovered the relation between the lung disease of paprika slicers and the inhalation of spores of *Schizomycetes*. The authors have made a deep study of fungi which could be of importance in pulmonary disease. But they have not produced a balanced book: their conviction that nearly all diseases produced by the inhalation of vegetable dusts must have a fungal origin is emphasized throughout and often is at variance with generally accepted opinions today. For example, the statement that 'All authors agree in that the fungi occurring in the dust of cotton, hemp, flax, jute, sisal, etc. play some presumably decisive role in the induction of byssinosis' cannot be accepted, nor can the statement that 'Byssinosis greatly resembles the lung disease of harvesters, threshers, and farmer's lung in general'. On the other hand, the mummy disease, an occupational hazard of art historians and archaeologists opening Egyptian tombs and examining their contents, used 'to be regarded as the revenge of the mummies, as the effect of the curse on sacrilegious hands that interfered with their last sleep'. The present authors would rather consider it an occupational toxomycosis. Here they may be on stronger ground.

This book must be regarded as expressing a 'minority opinion'. But minority opinions should not go unheeded; often germs of truth lie disregarded within them, and the reader of this volume will find much to interest him. The clearly written section of Chapter 1 on the elements of mycology, the breadth of respiratory disease covered and, in some instances, the unusual aetiological theories all make it worthy of study. Unfortunately there are some errors of fact: for instance, Roach and Schilling are quoted as advocating a maximum allowable concentration for cotton dust of 250 mg./m.³, a figure one hundred times too great. There are no references after 1962, and most are much older.

Although this volume cannot be recommended as a text on occupational lung disease it has more to favour it as a monograph dealing with one aspect of causation.

C. B. McKERROW

Dust Sampling in Mines. Occupational Safety and Health Series, No. 9. (Pp. 88; free.) Geneva: International Labour Office. 1967.

In occupational hygiene it is airborne dust sampling which requires the greatest technical expertise. This is partly due to the inherent difficulties of evaluating a mixture consisting of particles of different physical size and chemical composition. However, it is also in large

part due to the extraordinary variety of available methods of dust sampling, the results from which seem to have little in common.

In this report some 35 important dust sampling instruments are described together with the methods for evaluation of the samples obtained. A brief comparison is made between them with the inevitable conclusion that an air quality standard has no significance unless the equipment and methods are closely specified.

The maximum permissible concentrations of mine dusts which are in operation in 17 countries are described and compared. Each country naturally favours its own method of sampling and the M.P.C.s are therefore not strictly comparable.

A proposal is made for some standardization by the adoption of a common dust sampling method. The method proposed is gross gravimetric sampling on the grounds of its undoubted simplicity and its fairly good correspondence with other methods. The author of the report is from Belgium where routine control of dust concentrations is provided by gross gravimetric sampling. This report is not well produced and many of the diagrams are undecipherable. However, it does collect together in one place a bibliography of 152 references on dust sampling in mines, which is a useful guide for further reading.

S. A. ROACH

The Prevention and Suppression of Dust in Mining, Tunnelling and Quarrying, Third International Report 1958-1962. (Pp. 531; free.) Geneva: International Labour Office. 1966.

This report is a more or less systematic summary of 32 national reports on the airborne dust problems in mines, quarries, and tunnels covering the period 1958-62. The material is very uneven; some countries give numerous hard statistics whereas others make only a few general observations. Also the number of undertakings in different countries varies enormously. It appears, for example, that Niger boasts only one quarry whereas France has some 50,000.

The pneumoconiosis statistics make interesting reading although their value for comparing the risks experienced in different countries is rather limited. The number of cases found depends very much on the manner of selection of the people examined and on the particular diagnostic criteria used. In South Africa the number of people with pneumoconiosis in mining occupations is effectively reduced by the simple rule that 'no Bantu person with pneumoconiosis is allowed to remain at work'.

Doubtful explanations for some of the trends are given. In Canada the sharp decline in silicosis prevalence is 'not only coincident with the institution of aluminium powder but is the direct result of this measure'. In Czechoslovakia 'An atomiser has been developed for mass inhalation cures'.

The section on research is concerned more with indicating the type of investigations in progress than with describing specific results.

General ventilation and wetting of the minerals are the principal means of successful dust control. The