Especially noteworthy for those concerned with the care of the ear in industry are the contributions by Enström and his associates dealing with noise-induced cochlear damage, and by Burns and Robinson describing an investigation of the effects of occupational noise on hearing.

The former, using the surface preparation techniques which they have pioneered, illustrate their findings both with electron micrographs and with phase-contrast microscopy. Their pictures show with beautiful clarity, for instance, the damage produced in a single outer hair cell in the organ of Corti after six hours' exposure to helicopter noise. The effects of a variety of different sound exposures, including both white and pink noise, jet engine noise, gunshots, and explosions, are described in great detail. Pyknosis and disintegration of hair cell nuclei as a result of intense noise exposure are very clearly depicted. An illustration is also given of yet another increasing everyday problem, ototoxic antibiotics. The extensive disruption of nerve fibres and nerve endings in a cochlea thus damaged is vividly depicted and should surely give everyone pause to think before administering any drug so potentially hazardous.

The work of Burns and Robinson crystallizes the results of many years' research carried out jointly by the Medical Research Council and the National Physical Laboratory. One of the most important concepts which they propound is that of the noise immersion level (NIL). This is an index of the total sound energy incident on an ear during a working lifetime. In retrospective studies, correlation between NIL and presumed noise-induced hearing loss has been found in terms of rate of onset and degree of hearing impairment.

To date, as far as the factory doctor is concerned, the almost universal method of ascertaining the degree of any hearing defect has been by the use of pure-tone audiometry. A thoughtful and provocative account of alternatives to threshold measurement in the assessment of hearing is provided by Broadbent and Stephens. Perhaps a pointer to the future is provided in their suggestion that measurement of the detectability of sounds of short duration may provide an alternative method of localizing auditory lesions.

Finally, both editors and publishers are to be congratulated for publishing in full at the end of each paper the discussion which ensued. Frequently this underlines the most salient features of each report and other workers in similar branches of research amplify and clarify the findings of the original writers. This is one of the most valuable features of this commendable publication.

D. L. CHADWICK


This conference was attended by some 230 invited experts, of whom 60 were from overseas, mainly from Europe, North America, Australia, and Japan. In view of the increasing problems presented by asbestos in the last decade, it is not surprising that these took pride of place. Mesothelioma is now recognized as one of the most important and maybe most retraceable problems in industrial and environmental health. Review of the present situation in a number of countries are reported, but the extent of the problem will be better judged when some current surveys are completed.

It is impossible in a short review to cite the authors quoted, and one must be content with a few examples. It is contended that the source of asbestos bodies, or these bodies by some other name ('ferruginous' is a favourite), in the general population is probably linked to occupational exposure and mainly to the construction industry and that the incidence of neoplasms is higher in cases in whom these bodies are present; in experimental animals they have been shown to occur only with asbestos and glass fibre among the many substances tested. With vegetable and animal dusts, foreign body granulomata and not ferruginous bodies may be produced, but man-made fibres may produce pseudo-asbestos bodies.

Many of the theories presented merit greater or lesser degrees of credulity. Among the former is the hypothesis supported by considerable proof that chrysotile fibres are less respirable because they are curved and, even when broken, cannot descend into the respiratory tree as easily or as deeply as the straighter fibres of other types of asbestos. There is an engaging explanation of the mechanism whereby pleural plaques are formed without adhesions or associated malignancy. It is based on the theory that the fibres formed in vivo are short and sharp and easily puncture the soft lung tissue in which their migration is facilitated by the lung movement. They are eventually brought up against the harder tissues of the ribs or tendinous diaphragm where they deposit. The plaque is there derived from fibroblast, and not mesothelial, cells. This would explain why plaques are invariably found on the parietal pleura only and do not progress to mesothelioma.

After the excitement of asbestos, coal worker's pneumoconiosis, silicosis, chronic bronchitis, and vegetable dust might have been expected to be pedestrian, but they are still manifestly world problems, and there are many stimulating papers on these subjects. Once again, the relationship between dust and bronchitis (however defined) or lung cancer is facilitated by the lung movement, and of space and energy, although cigarette smoking again emerges as much the arch enemy—or whipping boy—as dust. The dangers from occupational and general environmental pollution make one wonder if the section on the engineering hygiene aspects is not possibly the most important part of the volume. Much work remains to be done, but the originator of this platitude could hardly have visualized a survey, now being done in New York, of one million people in which 68,000 (sixty-eight thousand—no misprint) volunteer investigators from the American Cancer Society are participating.

This is a book for those specially interested in the subject, whether their interest be industrial hygiene, clinical medicine, respiratory physiology, or experimental work, and those engaged in these fields cannot afford not to have it. For the general reader it may be too expensive, but it is full of interest. Much of it is lively and much is new, and what is lively and new than compensates for the inevitable number of dull, pot-boiler papers. A faithful report of the critical discussions following the
presentation of the papers brings many of them into perspective.

T. S. SCOTT


Oxygen is essential to cell life and lack of oxygen is a common factor in a wide range of diseases. It follows that, in theory at least, patients suffering from diverse disease processes might be expected to benefit from a better supply of oxygen. This can be achieved by giving oxygen at increased atmospheric pressure, commonly described as hyperbaric oxygen. The re-introduction of treatment with hyperbaric oxygen in recent years has been associated with the development of small one man pressure chambers, and with the construction of much bigger compression chambers capable of taking a surgical team and equipment. Possession of a large and very costly chamber has been an added incentive to exploit its possibilities fully, and it seems unlikely now that there is any condition in which lack of oxygen might play a part which has not been treated in a hyperbaric chamber.

At the Fourth International Congress on Hyperbaric Medicine held in Japan in 1969, there were 90 scientific papers from a number of countries, including several from Scotland, and the range of enquiry is impressive. The first two sessions deal with experimental work on oxygen toxicity which, because it is an intractable problem at pressures substantially higher than atmospheric, seriously limits its use. From the papers which follow it is evident that hyperbaric oxygen has been used in circulatory disorders including haemorrhagic shock, peripheral arterial disease, pulmonary oedema, and coronary disease; in gas gangrene and carbon monoxide poisoning; in organ preservation for transplantation; in the surgery of heart disease, skin grafting, and skin burns; in the treatment of cancer, and on people with chronic lung disease. In spite of such intense activity it is still difficult to assess how much progress has been made since the previous international congresses in defining the scope of hyperbaric oxygen. Evidence is presented to support the view that hyperbaric oxygen is essential treatment for gas gangrene and carbon monoxide poisoning but it is still not clear how substantial is the improvement using hyperbaric oxygen over present treatment and whether hyperbaric facilities should be generally available for the treatment of all such cases. The treatment of decompression sickness in tunnelers and other compressed air workers was briefly discussed and attention was drawn to the very serious fire hazard of oxygen at high pressure especially when this treatment is given at a construction site. It is this risk which has so far deterred the civil engineering industry in the United Kingdom from introducing oxygen treatment.

Concern was shown for possible hazards to staff working in large hyperbaric chambers who are in compressed air while the patient is given oxygen. Although the claim that hyperbaric chamber workers are exposed to the same hazards as those working on civil engineering contracts may seem a little exaggerated, Professor Boerema of Amsterdam refers to bends occurring in three anaesthetists and paralysis of a leg in a surgeon.

In spite of all the intense effort that has been put into the investigations reported in these Proceedings, there are still too many uncertainties to predict that hyperbaric chambers will become an essential part of the equipment of a large general hospital for the treatment of medical and surgical conditions other than decompression sickness.

R. I. MCCALLUM


This carefully documented book deals with the position of disabled people and with the complex of factors likely to affect the outcome of rehabilitation programmes designed ostensibly to reintegrate them into a ‘healthy’ society. Despite the (almost) exclusive concern with recent experience and research in the United States the book has value for the British reader.

The author aims to analyse critically the multidisciplinary social institution of rehabilitation within a framework of theoretical sociology yet in a way which will appeal to practitioners and students in all occupations concerned directly or indirectly with the physically disabled. The chief interest for readers in disciplines outside sociology lies in the author’s persistent questioning of both the philosophy behind long-accepted methods of societal response to the needs of members made deviant by the fact of disability, and also of the efficacy of these methods. She makes a searching enquiry into the attitudes and expectations directed towards the disabled—both historically and cross-culturally. For example, we are brought face to face with the ambivalence inherent in rehabilitation programmes which help men and women to overcome their vocational deviance (unsuitability for employment) while conditioning them to accept permanent social deviance (a disabled status with its accompanying societal segregation).

A number of specific problems familiar to British readers are discussed. The average general practitioner’s lack of knowledge about jobs and the physical abilities needed to perform them is one. Another, the plight of those hard-core unemployed who are physically disabled, is dealt with at some length. They tend to be rejected as unsuitable for scarce places in rehabilitation facilities although their need for help is greater than the need of people with a better prognosis.

While British administrative processes of assessment and rehabilitation are more objective and fair in several directions than those of the United States, Constantina Saflios-Rothschild’s criticisms will find an echo here. This country does not yet operate the ‘general governmental disability insurance program for all disabled regardless of type or cause of disability’ attributed to it on page 24.

Summing up her analysis, the author demonstrates how little we know objectively about the disabled and their treatment (should they not devise their own programme of rehabilitation?) or how to achieve what she calls their ‘real’ integration into society. It is perhaps