10.8% in 1964-67. In some groups of collieries the fall in prevalence is quite marked, while in others the difference between the two periods is small or nil. The overall proportion of newly boarded cases of pneumoconiosis from the coal mining industry has dropped from 3.9 per thousand wage earners in 1962 to 1.8 per thousand in 1967. The rate of fall varies from division to division and is still at the highest level in the south-western division.

Finally, it is pointed out that reorganization of the National Coal Board Divisions will necessitate constructing some of the tables on an area basis instead of a divisional basis.

The Digest illustrates again the slow decline in prevalence of all forms of pneumoconiosis, more marked in the coal mining industry, with the exception of asbestosis which continues to rise. It is pointed out in the Digest that 'a rise in certification figures should not be taken as necessarily indicating that the prevalence of the disease is increasing'. Boardings at which asbestosis was first diagnosed have more than trebled in number since 1962, which could be due to both the recognition of long-standing cases and a true increase in prevalence.

R. I. MCCALLUM

Health Factors Involved in Working under Conditions of Heat Stress. *Tech. Rep. Ser. No. 412.* (Pp. 32; 6s.) Geneva: World Health Organization.

This technical report summarizes the meeting of an international group under the chairmanship of Professor Belding with Dr. Lind acting as rapporteur.

It is a concise and readable review divided into three main sections. The first considers man's responses to heat, the various bodily functions which are affected by exposure to heat, and the extent and significance of the effects. The second section describes various heat stress indices and indicates the circumstances in which each is applicable, and the limitations imposed by the current state of knowledge. The final section considers where future research should be directed.

In its introduction the report remarks, 'Unfortunately, few texts are available that make a serious attempt to provide Governments, industrial management, engineers, medical officers, and hygienists with all the information available, expressed in reasonably understandable language'. While the report does not pretend to supply all the information it does provide a valuable starting point for anyone wishing seriously to study the field.

D. TURNER

A Review of the National Coal Board. Medical Service and Medical Research. Annual Report 1967-1968. (Pp. 43; illustrated; 8s.) London: National Coal Board, Hobart House, Grosvenor Place, S.W.1. 1968.

The Medical Service of the National Coal Board has obviously successfully adapted itself to the new administrative structure of the Board, that is to say, without divisions. Also, the new Institute of Occupational Medicine being set up in association with the University of Edinburgh (opened on April 22, 1969) with the help

of the National Coal Board will bring together the scattered groups that are doing occupational medical research within the Coal Board's Medical Service.

A comparison of the percentage of pneumoconiotics in the pits between the 1959-62 and the 1964-67 surveys shows a drop in all areas, with East and West Wales areas easily top of the list with 24.6/23.3% and 26.6/24.7% respectively; the lowest area is the South Midlands with 3.7/1.9% on the two surveys. Progressive massive fibrosis is again most prevalent in East and West Wales where it was 3.6 and 4.0% respectively during the 1964-67 survey. However, on a progress index the two Welsh areas seem to be in the forefront of those areas showing the best results with their dust suppression measurements.

The Pneumoconiosis Field Research Unit has swung over from particle dust counts to gravimetric measurements and has succeeded in correlating the two methods.

Other prescribed diseases have shown a progressive decline since 1951, except for dermatitis which continues to show a very slight rise. It is thought that this is due either to the loss of elasticity and natural defences in the older miners or to pit water. Investigations are going on in one area to see if, by controlling the wetness of one mine, the incidence of dermatitis can be lowered.

Dr. Duncan Troup, in the Anatomy Department of the Royal Free Hospital, is continuing his studies into the ergonomics of axial rotation of the trunk and the difference in the power developed with legs together and legs apart.

Finally, it should be noted that the National Coal Board is able to make available to other industries its large film mobile units for chest x-rays.

J. GLOVER

Epidemiology of Chronic Non-specific Lung Disease (Chronic Bronchitis). Vol. I: text, pp. 165; Vol. II: tables, pp. 100. By R. van der Lende. (Sewn Hfl. 28.) Assen: Royal Vangorcum Ltd. 1969.

Some of the main difficulties in attempting a comparison between the findings from different field studies of respiratory disease lie in the lack of uniformity of the methods used and in the differing age structure of the study populations. This is not a new discovery but Dr. van der Lende, in his introductory review of earlier field studies, shows how this lack of comparability seriously hinders any detailed international comparisons. It is clear from the description of his Dutch field studies of chronic respiratory disease that he has made a determined attempt to use standardized methods in the collection of his data. For example, he used the European Coal and Steel Community (E.C.C.S.) version of the Medical Research Council's questionnaire on respiratory symptoms, and follows the E.C.C.S. recommendations for spirometers and technique for taking chest x-rays. The three studies he describes were made on a population in a rural area, a country town, and an industrial city with high air pollution near Rotterdam. All subjects had a chest x-ray and interviewer-administered questionnaire. Subsamples of these populations in addition had sputum examination, measurement of ventilatory function, skin tests for evidence of allergy, and a histamine test for bronchial reactivity.

The findings from these studies are presented in a comprehensive series of tables. Most of these are in Volume II; Volume I consists of text and main summary tables only. The main findings follow the familiar pattern found in other such studies; smokers have higher symptom prevalence than non-smokers; urban dwellers have more respiratory symptoms and lower ventilatory function than their rural and country town compatriots. The author compares his findings with those from British field studies and shows that these Dutch populations have a consistently lower symptom prevalence even when differences in cigarette smoking are taken into account. The tests for allergy, blood eosinophilia, and the intracutaneous skin tests showed no excess among subjects with chronic bronchitis. On the other hand, positive reactors to the histamine threshold test were more often found among the chronic bronchitics. These findings are as yet unexplained and are included, among other items in the summary, as requiring further investigation.

This is not an easy work to read. However, it is a useful contribution to chronic respiratory disease epidemiology and can be recommended as essential reading for anyone starting work in this field.

J. R. T. COLLEY

Permissible Levels of Occupational Exposure to Airborne Toxic Substances. Sixth Report of the Joint I.L.O./W.H.O. Committee on Occupational Health. World Health Organization Report Series No. 415. (Pp. 16; 4s.) Geneva: World Health Organization. 1969.

This booklet describes the international philosophy of permissible limits, and it points out that the limit set depends upon the biological response. It mentions the difficulty of assessing long-term effects, particularly when these are genetic or carcinogenic, and it stresses the limitations of laying down a limit when a few members of a working population display hypersensitivity. When reading this, our experience in this country with isocyanates comes to mind. 'Most' of the committee members favour a four-tier classification of the biological effects of occupational exposure, but it must be remembered that these effects will, in fact, form a spectrum. There is a paragraph on the problems of 'developing countries' which, it is said, need urgent study. But should these countries, one wonders, have limits any different from any other country? The speediest way of producing a safe working environment is probably to have a strict set of factory laws, strictly enforced with a dash of 'prep school' discipline – or is this an unacceptable old-fashioned approach? The differences in limits set by the western and eastern blocs are mentioned. These really reflect the problem of relating function to structure, or the behaviourist, as seen in Pavlov, to the morbid histologist, as seen in Virchow. The behavioural approach east of the Elbe in theory leads to lower limits which, in practice, cannot be worked to, and the final result is often less hygienic than would be the case in a western country. But this is also the result of an important difference in thinking between east and west. Eastern man tends to be more interested in the theoretical plan, but western (and particularly English) man on the final result

which he often reaches in a theoretically untidy way.

Some of the suggested limits differ by as much as a factor of 80, and the committee makes the very reasonable suggestion that a list of substances for high priority study should be compiled. It also suggests that international reference centres should be set up where methodology can be developed and standardized. Acute toxicity testing with two separate species of animals is put forward, but might it not also be worth considering whether, in addition, a pregnant group should not be included? We do not want the lesson of thalidomide to be wasted. But here the theoretician will doubtless object that thalidomide is the business of the department of pharmacology rather than that of occupational hygiene. If so, this pragmatic reviewer must ask, in reply, whether the biological organism can detect the finely drawn divisions of administrative structure.

As a discussion of many of the problems of permissible levels this pamphlet is well worth a place in the library.

R. C. BROWNE

Noise and Man. By William Burns. (Pp. 336; 50s.) London: John Murray. 1969.

Noise and Man is by far the best of a number of books published recently on noise and its effects on people. Just less than half the text is devoted to hearing, its measurement, deafness, and the effects of noise on hearing. The remainder covers the other effects of noise on people, acoustical physics, aircraft noise, and impulse noise. The book is well written and there is a lot of information in it but I am not quite sure whether it is aimed at the proper readership. According to the introduction it is intended for a wide range of specialists, not expert in acoustics, who may find themselves confronted by noise problems. Medical officers in local government and industry are specifically mentioned, and, as a reviewer, I looked at the book from their point of view.

Medical officers of health are likely to be interested in Professor Burns' advice on how to decide whether a particular noise is a nuisance for the purposes of the Noise Abatement Act. Unhappily, the Act receives no mention, and the discussion of annoyance from noise would not help very much with any practical problems on nuisance as a statutory matter which might be facing them.

An industrial medical officer might be seeking information on the prevention of occupational deafness. Professor Burns, following American thought, includes routine audiometry among his recommendations. Few authorities give really convincing reasons why this procedure should be adopted as a matter of course. Professor Burns advises us to do it, despite its pitfalls and obscurities, because of the variation in susceptibility between individuals. Elsewhere in the text he makes the point that if hearing protection is adequate audiometry would serve only to identify the individuals who are not wearing their hearing protection. On preservation of hearing he writes '... each person's hearing must be measured before employment and at intervals throughout the period of employment if a hazard is judged to exist'. Much depends on what is meant by that last phrase; if a hazard can be removed by providing ear defenders then it is clear that audiometry is seen as an alternative to