this enables the surgeon to 'protect . . . the underlying major vessels' (which should not be encountered), nor how deliberate pressure on the abdominal veins during the operation 'in order to render the epidural veins more visible . . . makes it easier to avoid injuring (the latter)'. Dr. Semmes is curiously conservative about bilateral exposure, even when the leg pain itself is bilateral. He rightly stresses an adequate removal of disc tissue and a routine exploration of two disc spaces. Dr. Semmes is opposed—probably rightly—to the routine use of spinal fusion in the management of disc lesions, but his discussion of this point is too brief and dogmatic to be very helpful.

In describing his results, Dr. Semmes has analysed the results of a questionnaire circulated to 3,000 patients, taking (apparently arbitrarily) the first 1,500 answers received. Although the great majority of patients felt benefited by their operation, only 48% were completely relieved of backache and 53% of sciatica. Just over 6% of the patients required a second operation. Although it is said that 72% of the patients are back in their original employment and that 12% are doing heavy work, we are not told how many had been doing heavy work before operation, nor is there any way of deducing this from the figures given.

This book will be read with interest by those who are engaged in the management of the lumbago-sciatica syndrome as the point of view of a sensible and experienced clinician. Unfortunately for the surgeon-in-training, there is no adequate survey of the views and methods of others.

A. N. GUTHKELCH

Occupational Disability and Public Policy. Edited by Earl F. Cheit and Margaret S. Gordon. (Pp. 437; 90s.) London and New York: John Wiley. 1963.

This book, one of a series from the Research Programme of the Institute of Industrial Relations, University of California, has as its hopeful purpose the reduction of the gap between Workmen's Compensation critics and the mood of the state legislature in the United States of America.

The work consists of essays by 14 authors, including the two editors, dealing with major policy issues relating to the industrially disabled. Although the work is intended mainly for readers in the United States of America, the student of the social and economic consequences of industrially induced disablement in any country will find much to interest him. The two chapters in Part 2 dealing with foreign experience both before and after the second world war are to be commended to readers in this country. It is a sad fact that, although the National Insurance (Industrial Injuries) Act has been in operation here for more than 15 years, the general public, including the medical profession, is still largely ignorant of its detailed provisions. The more people in this country, both medical and lay, who are informed of the basic facts of past and present provisions for the industrially disabled in this and other countries, the better the outlook for future developments will be.

J. WATKINS-PITCHFORD

The Handicapped School-Leaver. Report of a Working Party Commissioned by the British Council for the Rehabilitation of the Disabled. (Pp. 172; 15s.) London: The British Council for Rehabilitation of the Disabled. 1964.

These two reports, one for England and Wales and one for Scotland, were commissioned to investigate the needs of physically and mentally handicapped school-leavers, to study means of meeting their needs, and to make recommendations. They are to be welcomed for drawing attention to these problems, which concern at least 3-6% of school-leavers, and no doubt it would be expecting too much of a slim paperback volume to look for complete answers.

Attention is called to the needs of many handicapped youths for further education, vocational guidance, and training if they are to be settled into productive and satisfying roles in adult life. At present there are many gaps in the services available to them in the difficult years after school leaving. The reports are a timely reminder to all concerned, school doctors, youth employment officers, industrial medical officers, and welfare workers in particular, of the danger that the work of the well developed system of special education for handicapped children should be undone for lack of adequate follow-up services for school-leavers.

JOYCE LEESON

Safe Handling of Radioactive Materials. Handbook No. 92. Recommendations of the National Committee on Radiation Protection. (Pp. ix + 107; 40 cents.) Washington, D.C.: U.S. Department of Commerce, National Bureau of Standards. 1964.

In this handbook, which supersedes Handbook 42 issued in 1949, an attempt is made to include the main considerations of safety in the handling of radioactive materials gained from experience in research and the atomic energy industry.

The present handbook has been produced with reference to the adequate protection of the user in research and industry generally, where the quantities of radioactive material and the complexities of operation are not as great as in the atomic energy industry.

The handbook will be especially useful to all those concerned with the safe use of radioactive materials as a supplement to any local regulations. This well sectionized set of recommendations includes 87 entitled references.

G. E. HARRISON

Radioactivity. Handbook No. 86. Recommendations of the International Commission on Radiological Units and Measurements. (Pp. viii + 53; 40 cents.) Washington, D.C.: United States Department of Commerce, National Bureau of Standards. 1963.

One of the important objects of the International Commission on Radiological Units and Measurements is to collect and evaluate the latest data and to make recommendations on the measurements of radioactivity and dosimetry. The present handbook is one of a new series, each of which is intended to cover development in a special field.

This handbook, which supersedes parts of Handbook 78 (1959), presents recommendations agreed at the Meeting of the International Commission on Radiological Units held at Montreux in April 1962. It consists of four sections: 1. Direct and relative measurements of the activity of radioactive sources; 2. Low-level radioactivity in materials and its relation to radioactive measurements; 3. Availability of radioactive standards; 4. Techniques for measuring radioactivity in samples and living subjects.

Sections 1, 3, and 4 are extensions and revisions of the 1959 recommendations; section 2 appears for the first time and deals specially with the contamination of materials used in counting equipment, radiation shields, and in chemical reagents used in the preparation of samples for radioactive measurement.

The present recommendations are supplemented by over 250 entitled references.

G. E. HARRISON

Coalminers' Attendance at Work. The report of an investigation by a National Coal Board research team. By R. B. Buzzard and F. D. K. Liddell. (Pp. 180; 42s.) Medical Research Memorandum 3. London: National Coal Board (Medical Service). 1963.

Industrial absence is a pressing problem. When that due to known sickness is omitted, much still remains. Some think this reflects too high wages; some that it represents hidden ill-health; some that it implies failure of work incentives to complement full employment; some even that it portends social decay. There has been much research on 'certified absence'; little on other types. The problems are scarcely more formidable than with accidents, which have been extensively surveyed. This *ennui* is puzzling and unexplained.

This is a highly professional study based on over six years' enquiry by many experienced research workers. It is a distillation of previously published reports and is written mainly for the non-specialist. For stated reasons, all absences are pooled, and the indices used are thus heterogeneous for causation. The terms of reference are limited to compiling data on 'attendances' (at 26 collieries) over periods of up to one year, and to studying how they and working capacity are affected by work methods and conditions. Chapters are orthodox to a survey of this type. Unfortunately, even using a hierarchical approach, the separate effects of confounding factors could not always be identified, even with the very large population (38,000 men) studied. There is an extensive appendix, glossary, and selective bibliography.

The authors tackle the difficult problem of comparing rates based on skewed distributions of the events and disparate denominators by two methods: first, 'balanced samples' to equalize denominators within groups, and a transformation of the variate to normalize the variance. (This transformation, the square root, is well chosen and has the added advantage that the variance of $\sqrt{x}$ is independent of the mean, if x is Poisson*); second, weighted means, which is less satisfactory. With both methods, differences between means are apparently taken

to be real and not due to sampling errors, which is a dangerous assumption. Much emphasis is placed on 'trends'. Formal tests of significance, and standard errors of all estimates, are omitted. This is surprising, even though examination of some of the data has previously been published; presumably the 'general reader' was not to be deterred. This is this reviewer's only substantial criticism of an excellent study.

Some of the results are of practical and academic importance, and the book is essential reading to all with a *bona fide* interest in industrial absence. Unfortunately, circumstances did not permit greater depth of enquiry (including personal interviews) into the causes of absence, especially short-term absence. Perhaps they will later; industry, especially the nationalized industries, has a responsibility in this field.

P. FROGGATT

L'Exploration Fonctionnelle Pulmonaire dans la Pneumoconiose des Houilleurs. By L. Brasseur. Hasselt, Belgium: Institut d'Hygiene des Mines. 1963.

The problem of coal-workers' pneumoconiosis as well as other pneumoconioses is to correlate all the various measurable aspects of the disease, *e.g.*, length of exposure, pathology, radiology, and physiology. This book describes a study of the relation between the latter two of these, but within these limitations the findings are of considerable interest. The author has been at pains to find out the effects of pneumoconiosis itself, to the exclusion of complicating factors such as age, bronchitis, emphysema, and psychological influences due to compensation problems. He has done this by selecting a group of coal-miners aged 35 to 45 with no complaints, still at work, having been exposed to dust for at least 10 years and with *x-ray* categories ranging from Z to C. Further possible cases of bronchitis and emphysema not so excluded were eliminated if the RV/TLC ratio was greater than 40%, or if the F.E.V.₁ fell below an expected value. The final group comprised 101 miners and 16 surface workers of the same age group acting as controls. The results of tests of ventilatory capacity showed a significant correlation of F.E.V.₁, V.C., and F.E.V.₁/V.C. ratio with *x-ray* changes from category 3 onwards. Blood gas studies at rest showed some arterial desaturation from category 2 onwards, but these changes were poorly correlated with the radiological grade. Of greater significance were the changes of SaO₂, PaO₂, A-aO₂ difference on exercise due to reduction of the scatter of observations (probably because the increased blood flow eliminates the ventilation perfusion imbalance seen at rest even in normal subjects). For example, it was common to find a man with category C changes with a satisfactory F.E.V.₁ but rare to find one with a normal saturation or A-aO₂ difference on exercise. No cases of hypercapnia were seen.

A group of 69 older workers, many suffering from bronchitis and emphysema, was examined, and again it was shown that exercise desaturation was a better guide to the *x-ray* category. Hypercapnia was present only in those miners with an F.E.V.₁ of less than 1.2 litres. A further group of six miners in the terminal phases of

*Irwin, J. O. (1943). *J. R. statist. Soc. A*, 106, 143.