the disease. If incapacity lasts longer than six months, sickness benefit is payable and so will appear in the Tables as one six-month spell of injury benefit and one spell of sickness benefit for the remainder of the period. Moreover, the report points out that "because in the early stages they are not incapacitating diseases, pneumoconiosis and byssinosis do not attract injury benefit though if they progress to an incapacity stage they do attract sickness benefit".

Tables 7 to 10, showing periods of sickness by occupations, are worth detailed study by all industrial medical officers. (The relevant populations at risk for men are in Table 91.) The total male sickness rates follow the pattern expected, persons in mining and quarrying having almost two and a half times the rate for all men, followed by unskilled workers and foundry workers both with 1.4 times. At the "healthy" end of the scale there are also foremen and overlookers in engineering and allied trades, fishermen, agricultural workers, persons in entertainment and sport, and electricians, "administrators, directors and managers", and several other such groups for whom these figures no doubt do not reflect their true sickness rate. The figures are not standardized for age and this no doubt accounts for some of the differences shown. The Tables also give figures for the most frequent causes of sickness within the different occupations.

Industrial accidents are classified by industry and external cause. About a quarter of accidents to men are caused by a "blow from a falling object" and another fifth from accidental falls. For women falls account for most absences, followed by accidents caused by "cutting and piercing instruments".

Many other points of interest arise from other of the 92 Tables which include analysis by age, geographical region, and duration of sickness.

The report has a full index to the Tables and a good explanatory introduction with full definitions of the sources, scope, and meaning of the statistics, and contain warnings about their possible misinterpretation or misuse. It seems a pity that the report has not been published generally because of the possibility of unintelligent use by people unwilling to read or digest the seven pages of the introduction. One wonders if the compilers of the first reports on mortality at the Registrar General's office met with the same difficulties of unintelligent use or intelligent misuse over a century ago. Fortunately it did not stop the wide circulation of their reports. It is to be hoped that future reports on morbidity by the Ministry of Pensions and National Insurance will take the form of an H.M.S.O. publication available for all.

In the meanwhile, enquiries for copies or information should be addressed to the Medical Department or the Statistics Division of the Ministry of Pensions and National Insurance at 10 John Adam Street, London, W.C.2.

N. M. GOODMAN

Report on the Health of the Army, 1951 and 1952, 24/General 3756. The War Office. London: H.M. Stationery Office. 1954.

The present report covers two years and is of great

interest. The Pulheems system, which underwent a severe test during the Korean War and the recall of reservists (Z men) to training, has again proved its value. Employment standards can be altered without altering the basic assessment, to conform to any necessity, and in these two years they were markedly altered on account of the major shortage of man-power. For the first time Grade III men were conscripted and formed almost 4% of the man-power available. Not unnaturally the number of discharges on medical grounds subsequently increased.

A further interesting innovation was made in 1950 when sergeants were posted to civilian medical boards to undertake simple intelligence testing and to report their findings to the chairmen. As a result discharges on both medical and psychiatric grounds fell appreciably although the report does not state what proportion was lost initially. If there is no serious discrepancy between original rejections and subsequent discharges the method is of obvious value.

In males about a third of discharges on medical grounds were due to psychiatric conditions headed by anxiety neurosis, hysteria, and psychopathic personality disorder. In females about half the discharges were on psychiatric grounds. In both sexes pulmonary tuberculosis was the next highest cause of discharge, followed, in males, by peptic ulcer and accidents.

Research continued in a number of diverse subjects from clothing to insecticides and on all matters of environmental hygiene. The statistical section again takes up a large proportion of the report and is a clear summary on the various aspects of health. With the improvements in general hygiene the Rickettsias are perhaps the greatest potential source of danger because of the assumption of epidemic form in large-scale troop operations.

J. P. W. HUGHES

Studies on Expenditure of Energy and Consumption of Food by Miners and Clerks, Fife, Scotland, 1952. By R. C. Garry, R. Passmore, Grace M. Warnock, and J. V. G. A. Durnin. (Pp. 70. 5s.) Medical Research Council Special Report Series No. 289. London: H.M. Stationery Office. 1955.

This reports a piece of classical physiological research. The fact that such studies are rare nowadays makes this one all the more valuable, but its rarity is, perhaps, understandable when we read that in order to do it at all more than 30 investigators were occupied for a period of five weeks. During this time they were able to study 19 coal-miners and 10 colliery clerks.

The work that was done was to estimate the energy expenditure of the men by measuring their oxygen consumption with a Kofranyi-Michaelis respirometer while they were doing different kinds of work during their shift in the mine and also during all their home occupations, standing, sitting, lying, washing, dressing, cycling, and playing golf—these were Scottish miners. During working hours an observer accompanied each miner or clerk the whole time and recorded what he did in a book ruled into separate columns for every minute of the day. When the men were off duty they themselves

filled in a similar book and the observers had to be content with paying a daily visit to each one's home. In parallel with the collection of information about energy expenditure, food intake was studied by weighing everything eaten throughout the week of survey. The calorie value of the diet and its nutritional composition were calculated from food Tables.

The thoroughness of the whole investigation makes it a model of its kind. Information reported in detail of the energy expenditure for different kinds of activity represents a valuable addition to the literature, where, all too often, figures derived from long-forgotten experiments have been copied from one authority to another. An interesting observation arising from a statistical review of the data is that there is a highly significant relationship between the expenditure of energy for many kinds of activity and the body weight of the men carrying them out. This holds not only for walking, where a man is obviously carrying himself about, but also for such work as hewing coal and "girding".

The average estimated energy expenditure of the miners of 3,660 calories a day compares with 3,820 and 3,360 calories for German miners studied in 1943-44 and with 4,070 calories estimated by Moss for English miners in 1935. It is interesting to notice that in comparing the nutritional value of the diet with the British Medical Association's estimate of what a good diet ought to provide, no strictures were passed on the vitamin C content, which used to be a traditional target for doubts. The only possible weakness suspected in some few instances was as to whether there was enough riboflavin.

More and more in up-to-date industries machines are used in place of men to do mechanical work. In this coal-mine in Fife the energy expenditure of clerks and miners outside their working hours was almost identical. At work, however, the miners used 1,750 calories a day and the clerks 890 calories. Yet, as the authors point out, for three hours out of the eight-hour shift the miners could do no work because for much of this time breakdown of the mechanical haulage system prevented their doing so. Moss assessed how low was the mechanical efficiency of a man shovelling coal while crouching in a mine. No such calculations were made in the present study. Nevertheless, in addition to the debt we owe to the authors of this valuable piece of physiological investigation, we shall owe them more if it enables us to relate in terms of modern engineering logic the human energetics of coal-mining to the job to be done.

MAGNUS PYKE

The Protection of Workers against Ionising Radiations. Report submitted to the International Conference on the Peaceful Uses of Atomic Energy, August, 1955. (Pp. 66; 11 figures. 50 cents; 3s.) Geneva: International Labour Office. 1955.

It is greatly to the credit of the International Labour Organization that it was able, at short notice, to produce this useful summary of the problems of radiation protection in time for the International Conference on the Peaceful Uses of Atomic Energy in August, 1955. Although little originality can be claimed for the material

of the report, it is a welcome addition to the general literature on this subject and it will be of immediate interest, particularly to those who are contemplating these problems for the first time.

From an outline of the hazards of radiation work, the report goes on to consider the essential problems of radiation protection and it describes the special precautions appropriate to a range of the more common applications of radiation in industry, medicine, and agriculture. With the rapid expansion of the uses of radioactive substances there is growing concern about the safe transport of these materials, and the report contains an interesting section on this subject.

The authors are to be congratulated upon the fact that they have refrained from adding to the confusion which surrounds the genetic implications of irradiation. The list of references is surprisingly brief and will barely satisfy the keen student of this subject. It is apparent that the International Labour Organization and International Commission on Radiological Protection have many common interests; even now, they are being joined by the World Health Organization. It may be that the time is not far distant when some formal agreement will be required to clarify the relative responsibilities of these three bodies.

A. MACLEAN

Clinical Orthopaedics, Number Five. Edited by Anthony F. DePalma. (Pp. viii + 242; 158 figures. 40s. per copy subscriptions; single copies 60s.) Philadelphia and Montreal: J. B. Lippincott Company; London: Pitman Medical Publishing Co., Ltd. 1955.

In 1953 a group of distinguished American orthopaedic surgeons launched an unusual periodical, of which this is the fifth issue. Each number appears in book-form, cloth-bound, and so far two have appeared each year. Each has been divided into two sections, a collection of essays on one particular orthopaedic topic being followed by a series of papers on miscellaneous orthopaedic subjects.

This fifth issue, which was published in late July, 1955, devotes its first section and three-quarters of its pages to 17 papers on backache and associated problems. There can hardly be a subject in the whole field of medicine which gives more difficulty more often to more practitioners in almost all fields, and it must be said at once that these essays will prove stimulating to anyone who is interested in the back. The orthopaedic surgeon, to whom they are primarily directed, will find much help in these pages and this issue, like its predecessors, is an essential book for any reasonably comprehensive orthopaedic library.

Your reviewer feels bound to doubt the real practical value, though not the interest, of this publication to the industrial medical officer. Four of the papers in the first section are mainly or wholly concerned with operative techniques, four others offer rather personal views on physical treatment and on manipulation, another is devoted to the evolution of the back, and one more is purely biographical. There is sound sense and good advice in T. A. Willis's paper on "The Inadequate