

## BOOK REVIEWS

**The Application of Scientific Methods to Industrial and Service Medicine.** By various authors. (Proceedings of a conference held from March 29th to March 31st, 1950.) Medical Research Council Report (1951). London: His Majesty's Stationery Office. 26 figs., 5 tables. Pp. 112. Price 3s.

Modern total war means that industrial health and Service efficiency are both at a premium. The two world wars, therefore, gave medicine with this slant a strong fillip. Psychology especially was stimulated, as exemplified by the work of Sir Arthur Hurst on hysteria in the first world war, and by that of Sir Frederic Bartlett and his Cambridge school of experimental, or physiological, psychology in the second. After the first war very much was forgotten, and the lessons taught then had to be learned all over again a generation later. It may be, however, that after the second war less will be forgotten and, as a suggestion that this is in fact so, comes this Medical Research Council "pink" publication which is the report of a conference held in the spring of 1950 when members of the main M.R.C. units, many of whom themselves worked in Service medicine during the war, met and described their work before an invited company.

In this type of medicine the physician is replaced by the statistician as the authoritarian father-figure, and in this report the general principles of conducting field surveys are presented by Professor Bradford Hill who enlivens them with characteristically amusing examples. The more seriously minded readers may feel here that the style is a little light for a scientific contribution to a symposium, but they will come to no harm if they keep in mind the adage that many a true word is spoken in jest. Professor Bradford Hill points out that careful thought must be given to when, why, and how a survey must be conducted. Not more than five unmistakably clear questions should be put to those who are being surveyed. Selection must be avoided, the sampling of the population must be truly random, and the results carefully controlled and clearly reported. Following this paper on principles, a number of other experts describe the use of the survey method for specific problems. Even if the main limitations of asking people questions are psychological, the statistician here shows clearly how to lessen them by careful conduct of the survey.

Fluorosis and beryllium poisoning are chosen to represent toxicological problems, and the interesting point is made that the early animal work with beryllium suggested that it was not poisonous.

In a section of the report on the improvement of human performance by laboratory studies it is shown that accidents increase when the temperature of the

working environment rises too high or falls too low. Acclimatization to high temperatures means earlier sweating and more sweat is produced for each temperature increment. From the anthropometric point of view human performance can be improved if the dimensional range of men is known, because then machines can be made to fit them better, if the maker can be persuaded to take advice. Moreover, if the direction, amplitude, and force of movements are also known, then the functional fit will be better still. The accuracy, or otherwise, of this can be measured by the metabolic cost of the work, the frequency of accidents, or by the speed and accuracy of skilled performance. But Sir Frederic Bartlett points out that skill (which is replacing fatigue as a subject for discussion among psychologists) must be considered as a rhythmic whole, and not solely as a mosaic of easily detachable pieces. In doing a skilled task a psychological reflex arc is involved with its receptors and effectors, and whether it becomes fatigued or not depends upon the load, speed, and tolerance limits which are set. It is being confirmed experimentally that "intelligence" is much more a matter of knowing how to travel hopefully than of merely arriving at the right answer.

The last part of the report discusses the effect of dust on the lung, which is the most important pathological problem in occupational medicine today. Contributions by the members of the Pneumoconiosis Research Unit show clearly the difficulties of work in this field. For example, it has not yet been possible to produce a coal pneumoconiosis in animals although a wide range of them has been tried. Moreover, it is not yet known what it is in coal dust which scars the lungs of human beings, and silica is looking much less like the convenient scapegoat than it did. After discussing the variation between different observers in taking histories and in reading radiographs of the chest, the report ends by discussing the apparently simple but really difficult and fundamental question, "When is a man short of breath?"

In the field of pneumoconiosis, perhaps, the method of radiological categorization is being made to carry a load of more apparent precision than it is capable of doing. There is a debatable stage in every scientific observation where the normal shades imperceptibly into the abnormal. This is probably represented, in young men, by Category 1 of the chest radiograph classification method, but in many elderly men it is sometimes very difficult to say whether a film should be classed as 0, 1, or even 2.

It is clear from the report of this conference that industrial and Service medicine is much wider and more general than its classical clinical counterpart. About a

third of the report is taken up by the subject of field surveys, another third by fitting the machine to the man, about a fifth by pneumoconiosis, and a sixth by other kinds of toxicology. This balance fairly sets out the distribution of interests in industrial medicine at the present time, and the report is reasonably complete as a description of the activities of the main Medical Research Council units working in this field. Its subtitle might well be "Recent Advances in Industrial Health", but it lacks a section on accidents which represent an enormous wastage of human effort, especially in the heavy industries in general, and in the coal mining industry in particular.

Every research worker in the field under review can read the report, each section of which is written by an expert in his subject, with benefit, and merely dipping into it will tell industrial and Service doctors what original work is being done in their subject. On the other hand, the lay industrialist, the man who has to put into effect all that is prescribed therein, will probably not even read it at all. The problem of the distillation of recent research findings which can be applied to industry and their clear, even popular, presentation to the layman is more pressing than ever, and indeed it was underlined by a number of the speakers themselves in the reported discussions. A factory manager is a conservative man in a powerful executive position, and his first choice for bedside reading is not a government report. For him the pill must be sugar-coated, and presented in an attractive wrapping together with a persuasive list of the benefits which he may expect from swallowing it.

R. C. BROWNE

**Report of a Committee of Enquiry on Industrial Health Services.** 1951. London: His Majesty's Stationery Office. Pp. 35. Price 1s. 3d.

A committee to examine the relationship between industrial health services and the other health services of the country was set up by the Prime Minister on June 1, 1949. Its terms of reference indicated that the major part of the investigation would be concerned with the distribution of medical manpower (defined as doctors, nurses, and auxiliary medical personnel) employed in all these services, and to what extent overlapping existed.

The Committee's report was presented by Mr. Attlee to the House of Commons on February 26, 1951, in the following terms (*Hansard*, Vol. 484, No. 59):

"The Committee have found that, in general, doctors and nurses are well employed in the industrial health services without overlapping with the general health services; and they do not think that any developments of the industrial health services likely to take place in the immediate future will prejudice the general position in this respect.

"The Report recommends that development of the industrial health services should be encouraged and properly co-ordinated with the general health services, and it makes recommendations for the establishment of co-ordinating machinery to that end. I should like particularly to invite the attention of employers to paragraphs 72 and 73 of the Report, which refer to the need for close collaboration with other organisations providing health services and for consultation with the appropriate Government Departments.

"The Government accept the Report generally, subject to detailed consideration of the co-ordination machinery proposed. Accordingly although the need for the utmost economy in the

use of medical manpower still persists, the suggestion I made on 1st June, 1949, that further development of industrial health services should be postponed for the time being, is to be regarded as no longer operative."

The Report describes the structure and function of the various sections of the national health service, and of the existing industrial health services, with reference to the manpower situation. It then discusses the possibility of overlapping in medical and nursing services generally, using for comparative purposes a summary of the functions of the industrial medical officer and the industrial nurse. The Committee found, for example, that there is overlapping where the industrial medical officer is not the Appointed Factory Doctor for statutory examinations of young persons. They "think" (and by using this word appear to avoid specific recommendation) that the industrial medical officer should, "in general" (whatever this means), be appointed to carry out these statutory examinations. A further section describes how doctors, nurses, and first-aid workers should be deployed in industry. The final part of the Report mentions steps to be taken by the Government and other parties concerned.

In view of the magnitude of its task the Committee can be commended on the relatively early appearance of its report, which in many places is informative to those without experience in industrial health services. The major recommendation is that a standing joint advisory committee should be set up by the Ministry of Health, the Ministry of Labour and National Service, and the Ministry of Fuel and Power to "co-ordinate the development of industrial health services." On this advisory committee would be representatives of employers, workers, doctors, and nurses, and the chairman would not be drawn from any government department. Judge Dale's Committee thus side-steps one vital and basic issue. What individual Ministry, if any, is to sponsor industrial health? There is little doubt that one good reason for the Prime Minister himself setting up the Committee, rather than one Minister or several Ministers jointly, was precisely the difficulty he or his advisers had in answering this question. By contrast, some seven years ago the Royal College of Physicians of London vigorously proposed that an industrial health service should be planned as an integral part of the national health service to come generally under the Ministry of Health. And the British Medical Association has specifically recommended that industrial health should come under that Ministry, using arguments difficult to refute. This Report says that "for the most beneficial development of the National Health Service, public health service, and industrial health services, the three must be co-ordinated". But there is no mention of how this could be done. It is perhaps kindest to think that the Committee felt such matters to be outside their terms of reference. But no doubt the point would eventually appear on the agenda for the proposed standing joint advisory committee.

It is now many months since the Report was published and accepted by the Government. It looks as if it were permanently on the shelf. Those who hoped for constructive proposals and a bold lead may well agree that this is the best place for it. DONALD STEWART



## The Application of Scientific Methods to Industrial and Service Medicine

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