THE EDUCATION AND FUNCTION OF THE INDUSTRIAL HEALTH TEAM*

BY

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The last 100 years have been remarkable for the technological advances which have changed industrial and domestic life. While these changes have raised standards of living, they have also thrown up new medical and social problems which confront us both as citizens and as doctors. Some of these important medical and social problems are the direct result of the circumstances of occupation, and that branch of medicine which deals with them is called "occupational" or "industrial" medicine. Health cannot be narrowly confined. The doctor must be concerned with the whole life. The field, however, is so vast that it can only be studied in depth if it is suitably broken down. Occupational medicine is concerned not only with the prevention and treatment of industrial accidents and diseases, it includes an appraisal of the many physiological and psychological factors of work. Many complex and difficult problems are involved and their solution calls for the close cooperation of the educationist, the social scientist, and the economist, as well as those whose basic training has been in the medical sciences.

Occupational medicine differs from some other branches of medicine in that its successful practice depends on the sanctions of others. It can achieve little without the cooperation of employer and employed. Both management and workers must understand the purpose of an industrial health service, and the respective roles they play in promoting health in an industrial community. The education of the two main parties in industry must therefore be of considerable importance.

Management

Good management, by preventing unnecessary stress, is in itself an important factor in the health of those comprising an occupational group, and the institution of training for management is a progressive step, and one likely to lead to better health in industry. In bringing order to this training the British Institute of Management is doing a great

service. The Urwick Report in 1947 showed that a common basic course was desirable for the various sections of management. It is to be hoped that in any such basic course general occupational health problems, and management's part in their solution, will be emphasized.

The attitude of good management to industrial health should be critical but receptive, free from sentimentality but conscious of responsibility. Such an attitude is only possible where management is informed.

The addition of fundamental knowledge in the occupational health field is the primary concern of research departments. Its application is the responsibility of industry. This knowledge, however, can be applied only by those who are conversant with the practical working of industry. If, for instance, it is established in the laboratory that certain machine designs are less dangerous and less fatiguing than others, it becomes the responsibility of industry to apply that knowledge, not only for its greater efficiency, but also for the greater comfort and safety of the workers involved. Top management should realize that it has such responsibilities, and delegate them to those with the ability to carry them out.

One of the most important changes in Great Britain in recent years has been the greater value placed on the individual as a human being. In industry this has meant a keener appreciation of the importance of human relationships in the working group. This change followed naturally upon the recognition of the need to safeguard the physical side of the working environment. Important as the subject of human relations is, it is one that does not lend itself easily to research, and new techniques are badly needed. These are being slowly evolved. In the small units personal contacts between master and man are easy and relationships, whether good or bad, are at any rate understandable to the workman. In much modern industry the units are too large for this close contact, and the impersonal atmosphere that results is apt to bewilder him. In such units the need for a

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specialist to deal with personnel problems was soon appreciated. Much good work, based largely on empiricism, has been done for industry by the personnel manager. His work is difficult and depends in no small measure on personal qualities, but there is no doubt that a broad education and wide sympathies are an aid to success. Training has for some time been given for this work, and it is important that it should be broad and practical. In the somewhat nebulous field of "human relations" it is important that the personnel manager should be able to distinguish authoritative new work from the loose pseudo-scientific writing that appears in such profusion. For this a sound background is very valuable, for in this field the value of scholarship and wisdom far outweigh that of technical knowledge.

The Foreman

The personnel manager must not be interposed between the workman and his foreman, for this relationship is of vital importance to the morale of a working group. The foreman holds a difficult post and often needs help with the problems involved in handling groups of people. This has been widely recognized and many courses for foremen pay particular attention to this aspect. This is an important development and one which should be widely extended.

The Workman

Josiah Stamp said that education had three main aims. It should enable those who receive it to get a living, live a life, and mould a world. The education of the workman may be briefly reviewed under these heads.

Industry is keenly alive to the need for training young people, and there is wide provision for promising youngsters on the technical side. It may be that the vocational side is over-catered for, because the tendency to break down complex skilled jobs into routine repetitive operations means that there is not enough skilled work for all those capable of taking the training. Our modern industrial methods tend to eliminate work satisfaction for certain people, and it must be the responsibility of educators to provide for these a substitute. This may be found in the work, or elsewhere.

Certain pioneer firms have led the way in providing continued part time general education up to the age of 18. Often it has proved difficult to avoid making this continued education too technical, since the youngsters themselves are apt to resent training which they regard as having no immediate practical application. This, however, is

a matter for skilful teaching, which must satisfy the adolescent need for understanding his place in the adult world, and his emotional relations and for developing his independence of parents. When the county college scheme becomes operative these facilities will be available for all young persons, as well as for the favoured few who happen to work for progressive firms.

The Education Act of 1944 not only envisages the part time education of young people up to 18, but also continued education facilities throughout adult life. These are little more than dreams at present, though the blueprint is there. Such a scheme might provide an outlet and a satisfaction for those who find the unrelieved drabness of monotonous work insufferable. Education could lead to a better use of the leisure which is being made so much more abundant by our technical advances, and by so improving the quality of life it can raise the standard of health. We cannot escape the fact, however, that the absence of work satisfaction in much of present day industry is one of our major industrial health problems.

The increasing responsibilities of the workman in the conduct of industry can only be successfully undertaken if he has a fuller education, a particular requirement of the trade union official and the shop steward. Such education should lay particular emphasis upon his own responsibility for his health. Without his cooperation no safety measures will be truly effective, and the more willing and informed this cooperation in any health programme, the more effective will it be.

Medical Personnel

The training of all doctors, and those who are to work in the industrial health services must be considered.

General Medical Training.—It has been quite unrealistic to divorce the teaching of medicine from a consideration of the environment of the patient, but such has too often been the case in the past. Following the recommendation of the General Medical Council (1936), however, attempts to show the medical student something of the part played by social and occupational factors have been made in many of our medical schools over the last 14 years. These have met with varying degrees of success.

The Goodenough Report (Report of the Inter-departmental Committee on Medical Schools) published in 1944, regarded "the promotion of health as the primary duty of the doctor". It urged that the foundation of training in this subject should be laid in pre-clinical days and that during the clinical

period the student's training should include personal investigation of social and industrial conditions.

The Royal College of Physicians Committee on Social and Preventive Medicine (1943) recommended that all medical schools should recognize the importance of problems associated with industrial medicine, but wisely went on to emphasize that "the medical student is not expected to become an expert in occupational diseases. It is much more important that he should acquire knowledge and understanding of the social problems relating to industry and be able to recognize the mental and physical response of his patient to fatigue, overwork, monotony, and unsuitable hours or type of employment. For this purpose the practical course in preventive medicine should bring him into personal contact with industrial conditions".

It will be seen, therefore, that during the second world war the bodies influencing the teaching in our medical schools recognized the importance of paying due attention to occupation as a factor in general, preventive, and social medicine, and in 1947 the General Medical Council endorsed these opinions.

A later expression of opinion in Great Britain comes from the Medical Curriculum Committee of the British Medical Association (1948), which again emphasizes the importance of regarding the patient and his environment as a whole. It too points out that instruction in the preventive aspect of disease should be given emphasis by all teachers throughout the clinical period. It opposes the teaching of industrial medicine to the undergraduate as an independent subject, but recommends its inclusion as a special aspect of social medicine. It recommends that examiners in general medicine should expect the student throughout his answers to have regard to social, occupational, and economic factors in illness.

In those medical schools where a department of occupational health exists, however, there are special opportunities, and these should be used for experiment in teaching method. The objects of this teaching must be kept clearly in mind. It should be directed to help the future doctor to understand the society in which he lives. He must learn to recognize the mental and physical responses of the individual to occupational factors. He should have a proper appreciation, not only of the harm associated with certain occupations, but also with the therapeutic value of work and the important part it plays in the treatment of the patient. All this is difficult. It must be remembered that the medical student is not very interested in health, his interest is rightly in diseases. He is learning to be a doctor, and this entails a knowledge of recognized departures from health. It may be held that this

is impossible without first having a very clear conception of health. This is attempted during the pre-clinical period, but although anatomy and physiology are taught in detail, health remains ill-defined. Disease, on the other hand, is tangible and more readily capable of demonstration and it naturally remains the first concern of our medical schools. The doctor's basic training must make him familiar with a general picture of disease processes. Already the demands made on the medical student are very heavy and no further overloading of the curriculum is to be countenanced. All that is possible, until some pruning has taken place, is that the effect of home and occupation, and of leisure, on the patient shall be remembered by teachers throughout the undergraduate training, and shall be demonstrated regularly as occasion permits.

The department of occupational health will be most successful if it can influence teachers in charge of some of the older departments, and arouse the enthusiasm of young demonstrators and clinical teachers. It is through these teachers who are in daily contact with the student that the most useful and effective training in this field can be achieved.

Although most of the student's instruction will be given while he sees patients in the wards and out-patient departments, he must see for himself something of industrial conditions. For this the collaboration of industry is essential. I have been deeply impressed by the very ready help I have continued to receive on all sides in this respect, and I am convinced that industry will gain handsome dividends from such a policy. How often in recent years have we heard an outcry from industry about doctors' certificates? The industrialist has tried to enlighten the doctor by inviting him, busy and overworked as he is, to visit the factory and see for himself conditions of work, and then has been deeply disappointed at the meagre response to his invitation. Seeds must be planted in the undergraduate days and carefully nurtured during the whole clinical training.

Special Training for Medical Personnel Entering Industry

Doctors.—The advance of the subject of occupational health ultimately depends on the quality of those who are attracted to it, on their imaginative approach and on their sound basic training. Occupational health is based on clinical medicine, on the social sciences and on what Ryle called social pathology. A knowledge of the social sciences will make possible a better understanding of the structure of society and of the dynamics of our way of life, and social pathology makes possible

scientific study of the quantity and cause of disease and methods of its prevention. The young doctor who is going to work whole time in industry should receive some special training. This was the object of instituting the Diploma in Industrial Health, which was so strongly advocated by the Factory Department of the Ministry of Labour during the last war, and also by the Association of Industrial Medical Officers (1945). The Diploma in Industrial Health has been in existence now for four years and it is perhaps time to reconsider its value. A diploma is granted by two bodies in England and two in Scotland. For three of these diplomas an academic year's training is required. For one, only practical experience in the field is insisted upon. So far 145 diplomas in all have been granted. What has been achieved? A body of people have received training, and it is to be hoped that their contribution to industrial medicine has been better in consequence and that they have been able more quickly to apply sound principles in the industrial communities in which they have found themselves than their predecessors, who, speaking from experience, had to flounder and learn for themselves and often waste several years before achieving a level of efficiency of real value to their industrial community.

Appropriate training of this nature before undertaking responsible work in industry would be regarded by most people as desirable, yet it is surprising how many large firms do not worry about this and are prepared to accept any doctor as being of equal value to them. Until industry demands well trained men and women it will continue to build up its health services on uncertain foundations. A number of men will, in time and after trial and error, overcome the handicap of inexperience; others will find it impossible. But industry is usually wide awake to its interests, and we must ask ourselves why this state of affairs exists. In part it is because industry is unaware that special training is available, or indeed necessary. As teachers we must ask ourselves if the training programmes offered are good enough to attract the better graduates. We must look critically at both our teaching and the syllabuses demanded by the examining bodies. We must see that those who hold diplomas in industrial health are fully capable of meeting the medical demands of industry. Industry, for the most part, is neither familiar with the full scope of industrial health services nor with their contribution to its competitive efficiency. It is for this reason that the trained man is so essential.

The D.I.H. should be regarded as ensuring a *minimum* standard of knowledge. Its mere possession should not entitle the holder to specialist or

consultant status. Such a status will depend on additional training and experience, usually in the practical field of industry. The standard of the four examinations for the D.I.H. has been maintained at a uniform level throughout the country, and there is advantage in this in our present state of development. Such a policy is not without danger, however; it would be disastrous if it became rigid and unimaginative, and the time has now come for bolder experiment.

It is essential that training in occupational health should be neither stereotyped nor too elementary; what is needed is an imaginative treatment of general principles of preventive medicine, plentifully illustrated with examples from the best current industrial practice. Here lies the great responsibility of those entrusted with the teaching of the subject in this formative stage. The teachers must keep before them a clear idea of the function of the doctor in industry; he is not there to deal with the end results of faulty environmental conditions, but to anticipate trouble and to prevent it. He is to practise medicine among a "normal" group; he will have the opportunity of detecting the earliest departures from health and of observing the effects upon people of their occupational environment. He will be concerned with questions of morale, and with the medical manifestations of low morale.

There is much room for experiment in all medical teaching, and this applies particularly to post-graduate education. It must not consist of handing out to the student secondhand information, but rather of teaching him to tackle problems for himself. Ample opportunity for practical work must be given and full use must be made of the historical approach. It is of the greatest importance that others besides medical people be brought in to the discussions: social psychologists, engineers, and industrialists, for it is only by widening our horizons that doctors can do their best work in industry.

At present, in Manchester and Edinburgh, a three months' course of general social and preventive medicine is given before six months of specialized industrial training. In other schools, however, much greater attention is given to general preventive medicine, and a shorter period of special industrial training. It may well be that the best solution lies somewhere between the two. For much industrial health work a sound clinical training is essential. The application of clinical knowledge to special industrial health problems rightly finds a place in this course, but doctors who take this course must already have a sound knowledge of clinical medicine.

The Part-time Industrial Medical Officer.—The British Medical Association Report on the Training of the General Practitioner (1950), points out that over 3,000 general practitioners are already doing part-time work in industry. This is a sound arrangement and is of advantage to both doctor and industry. It enables the general practitioner to see for himself the manner in which many of his patients spend their working lives, while he benefits personally from contact with professional people other than those associated with medicine. It enables industry to secure the services of one who can often throw light on difficult human problems, as a result of his knowledge of social conditions outside the factory. The report draws attention to the need for providing training for these men. It would be quite unreasonable and unnecessary to expect them to possess a Diploma in Industrial Health, but a short introductory course of two weeks would do much to orientate the newcomer whose life had largely been spent in curative medicine. Experience during the war showed that such courses were of considerable value, and were well supported by general practitioners. Teaching in these courses must be imaginative and must largely depend upon discussion and practical demonstration. Such courses are likely to raise the quality of the work of all doctors practising in an industrial area, whether or not they hold a post in industry.

The Teacher and Research Worker.—At the present time some of the men most important to the development of this branch of medicine are those engaged in teaching and research, and the best training possible should be available for them. This should be wide and include a thorough training in some branch of medicine with, if possible, a higher qualification, followed perhaps by a fellowship or research post in one of the university departments of occupational health, followed again by a few years in industry, where as wide an experience as possible is secured. It is important that industry should recognize the need for such men and encourage their training.

Nurses

There are probably some 5,000 State Registered nurses in industry. Before considering the education required for a nurse, it is necessary to have a clear idea of her function. Is she a casualty dresser or has she a bigger role to play? I am convinced that she has, and that to use nurses in industry as nothing more than "finger tiers" is wasteful and wrong. The nurse in industry must be a health worker and she must be able to act for the doctor in many

situations. She must, of course, have plenty of human understanding and commonsense, but this alone is not enough, she must also have a clinical sense. She must be a skilful and unobtrusive health educator. Though much can be done to prepare the nurse for her work in industry by giving her a post-graduate course, this will not secure its maximum results unless her standard of education and her basic training are good. There have been many critics of the present nurses' training and I do not wish to enter the fray, except to draw attention once more to the Working Party Report (1947), which emphasized that the explicit aim of nursing training should be the development of a nursing service in closer accord with modern ideas of social and preventive medicine. While, however, student nurses are required to staff our hospitals, and while so much domestic work is left for them to do, this aim is a long way off, but it is hoped it will not be lost sight of.

With the present shortage of nurses it is essential that the trained nurse who comes into industry should fill a position of responsibility. She must not be wasted. She should teach and supervise assistant nurses and industrial first aid attendants. This, in fact, should be one of her most important functions and she should be trained to teach.

Credit must be given to the Royal College of Nursing for the pioneer work it has carried out in this field over the last 16 years. During the war Birmingham University became the first university to undertake the training of industrial nurses. This experiment was successful and a flourishing school for industrial nurses now exists in that city. The Manchester University Department of Occupational Health has trained industrial nurses for three years. To meet the needs of many who have been unable to secure training a part-time course extending over two years has recently been started as an experiment. It is too early yet to pronounce on this scheme, but with proper safeguards it appears to have much to recommend it. The whole question of the best preparation of the nurse for industry is beset with difficulties. One thing only is certain, that we must on no account fail to use her services to the full.

There is much important work to be done which can safely and properly be delegated to assistant nurses and others. It is not my purpose here to discuss the matters relating to their supervision and training, but only to emphasize that they are members of the industrial health team, and their training is our responsibility.

One of the chief values to industry of medically trained personnel, be they doctors or nurses, is that they bring to industry a different outlook and a different ethic. This they do by virtue of their

basic training in our medical schools and hospitals, and though one has criticized this in detail, it cannot be too strongly held that the fundamentals of this medical education have been imparted in the traditional teaching of our profession.

Industrial Hygiene Engineer

No consideration of the training of the specialists needed for occupational health work in industry would be complete without reference to the industrial hygiene engineer. It is his duty not only to be able to appraise physical environmental conditions, but also to give technical help regarding any modifications and improvements required. Much of this work is carried out by factory inspectors, who have a wide and practical knowledge of these problems. The fact remains that industry needs more technical assistance than can be reasonably asked of a public servant.

In the U.S.A. considerable attention has been given to the industrial hygienist. In Harvard University the Department of Industrial Hygiene is under the able control of Professor Philip Drinker, an engineer. The basic training of these specialists may have been in one of several fields, engineering, chemistry, or physics, for example. Following upon this professional training and some practical experience in industry, a course extending over a year is given, and in Harvard this is taken side by side with the doctors.

There is little doubt that in this country we have lagged behind in this part of the field, and that steps should be taken to repair this omission. It would seem that those universities with departments of occupational health would make good training centres for these men, who could retain the full facilities and support of their own particular faculty in the university.

These specialists are important members of the industrial health team, and the need for training a few such men for British industry is urgent.

The responsibility for education in occupational health must rest with the universities. A university must be closely linked with the life of the community, and, in an industrial society such as ours, will find in occupational health a subject fully worthy of its close attention. It is right, therefore, that a few university departments of occupational health have been established. This has been made possible by the generosity of the Nuffield Foundation. The university department, however, can do little without the wholehearted support of industry, for both teaching and research in this subject require industrial communities as their laboratory. Industry will rightly demand that the responsible teachers of such departments will be fully aware of

the pitfalls associated with fieldwork in an industrial community, but with such assurance should be prepared to offer full collaboration. In my experience this collaboration has usually been readily accorded.

The future development of industrial health services is at present the subject of enquiry by a Government committee. Should this committee recommend immediate expansion it would presumably be a Government responsibility to provide suitable training for personnel. On the other hand, should the committee decide that such action would be precipitate, it would presumably be left to industry to develop its own services. If these services are to make a real contribution to health and efficiency, the size of the problem must be appreciated, and industry would be well advised not only to go out to recruit its due share of the best brains in the medical profession to its service, but to pay due regard to their training. University departments of occupational health exist and are already doing important work; it is industry's responsibility to see they are used to the full, for only in this way will they be stimulated to adequate growth and be able to attract the right quality of recruits.

Recently the question of overlapping between the doctor and nurse in industry and in the National Health Service has been raised. There should be no such overlapping if the doctor and nurse know their proper functions. Industry has every right to a proper proportion of the medical personnel of the country, but it is responsible for seeing that they are not wasted. This means sound training for the special work they are to undertake.

I have tried to indicate that occupational health is concerned with the quality of life as it is affected by occupation, and is the joint concern and responsibility of industry, the educationist, and of medicine. Medicine's contribution is through research and service. At this early stage the growth and development of this branch of medicine must be a matter for experiment. For this, inspired and informed leadership is essential, and much of this must come from the ranks of our profession—particularly from those who work in industry. This applies not only to those who have the actual task of teaching, but to those who are working in the field. The future development of this branch of medicine depends in no small measure on the educational opportunities we provide for it, and these must be related to demand. Talk about education and industrial health is of little value unless we have a clear idea of what we are after. This, I repeat, is the responsibility of each of us and not just the few. Let each individual define

his aims and objects and those he considers to be proper to this branch of medicine, for what Montaigne said 400 years ago is abundantly true today :

"No wind makes for him that hath no intended port to sail unto."

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