

The development of occupational medicine in Ulster — a personal memoir

J A Smiley

At least since the middle ages physicians have been interested in the relationship of man to his work but it was not until the beginning of the nineteenth century in Great Britain that this was recognised in legislation. Following the passing of the Health and Morals of Apprentices Act in 1802, in the absence of a registry of births, doctors were appointed to certify that the apparent age of young entrants to the mills and factories was above ten years and that they were not unfit. Some of these doctors using the opportunities thus presented to them made observations of clinical interest which prompted their social conscience to protest against the abuses of what came to be known as the Factory System. Such a man was CD Thackrah in Leeds, now regarded as the father of occupational medicine in Britain, but there were others in the 19th century such as Andrew Malcolm and a succession of Purdons in Belfast whose names must be added to the roll of doctors who influenced the legislation which mitigated the effect of factory life on the health of workers.¹ There is some evidence too in the reports of the factory inspectors of the time that a few philanthropic employers did engage the services of a physician to supervise the health of their workers. It would appear, however, that with a few exceptions the certifying surgeons took their work somewhat casually.

In general it was not until the 1914–18 war that the contribution that doctors could make to industry was more fully recognised. The huge proportion of recruits for the services who had to be rejected alerted the nation to the poor physique and inadequate state of nutrition of the working classes. As well two other factors came into operation — the toxicological hazards in the manufacture of armaments, such as trinitrotoluene and lead used by relatively unskilled labour, and the failure, beyond a certain level, to produce more shells by increasing the hours of work. These led to the setting up of the Committee on the Health of Munitions Workers — later the Industrial Fatigue Research Board. As a result the Ministry of Supply engaged a number of doctors in their munition factories to supervise the workers — many of whom were women. A number of these doctors continued in full time employment after the war — some in government posts but others in non-state companies like Imperial Chemical Industries. The economic depression of the thirties militated against any great recruitment of doctors to industry but in the inter-war years the Industrial Fatigue Research Board was re-established as the Industrial Health Research Board — later coming under the aegis of the Medical Research Council. There was a growing acceptance that medicine had a contribution to make to industry.

In 1937 in Great Britain (1938 in Northern Ireland) a new Factory Act was

J A Smiley, OBE, MD, FRCPI, FFOM.
(Dr Smiley died on 31 March, 1988).

enacted. Increased responsibilities were given to certifying doctors who now had to examine the under 16 year olds entering industry and from time to time report on illnesses attributed to industrial processes. They were renamed Examining Factory Surgeons. This led after the second world war to an anomaly — that of pre-employment examinations being carried out both by the Government appointed examining surgeons and where such existed the works medical officer — for during the war years the number of doctors entering industry in either a full time or part time capacity was considerable. This dilemma was resolved by the Ministry of Labour recognising the works doctor as the examining surgeon — thus came into being the Appointed Factory Doctors system. To conclude this account of the metamorphosis briefly, it can be said that during the war years the health and nutritional standards of the young people had improved very greatly and the need for their protection had largely faded. As well, the School Medical Service claimed that during their school years the health of the children was adequately supervised by its staff. Although this was universally accepted, it was realised that changes had to be made.

From all this developed a statutory body — the Employment Medical Advisory Service — staffed initially in Northern Ireland by an experienced doctor (WH Hood) who had experience both as a part time and later full time industrial health physician. In 1987 its chief is Dr Gerald Hall and he has two assistant medical officers. Their function is to advise (on request) management, trade unions and individuals on health matters relating to employment and to co-operate with the Factory Inspectorate. From these elements of what was formerly called “*Industrial Medicine*” there began to emerge a specialty “*Occupational Medicine*” in that its practitioners found themselves dealing with problems arising in occupations other than industrial.

As the second world war loomed the manufacture of armaments had begun to absorb the hordes of unemployed — at first men and then women. Short Brothers, then in Rochester, because of their vulnerable position near the east coast were persuaded to open an aircraft factory in Belfast. As the certifying factory surgeon in East Belfast in whose district the new factory was situated I had been invited to train First Aid workers and soon found myself absorbed into the ARP (Air Raid Precaution) organisation. Soon I had become a part time member of staff and with the help of an able nursing sister (Miss IM King) organised a casualty service not only in Queen’s Island but in a number of widely dispersed units outside Belfast. We insisted on the employment of competent state registered nurses to deal with casualties. The policy was widely approved both by the managements of the local hospitals (especially Brigadier TW Davidson of the Royal Victoria Hospital) and by the employers who reckoned that less time was lost by instant and local treatment than by transport to a hospital casualty department. As well these women (for at that time nursing was essentially a profession for women) made a very considerable contribution to the morale of the workforce (which now had a large number of women in it) especially in the dark days of the conflict. No account of the development of industrial medicine to occupational medicine would be complete without reference to the tremendous contribution made by the nursing profession.

It soon became evident however that the somewhat informal relationship of the works doctor with management, while it had advantages, was from time to time

fraught with difficulty. Because he was appointed by the company, paid by the company, accommodated by the company and had his stationery supplied by the company, the claim was made by the company's solicitors that the doctor's records belonged to the company and that when accident claims were made by injured workpeople, they the company solicitors must have access to them. For a number of years when claims were made the battle for the confidentiality of medical records had to be fought time and again. Eventually the lawyers came to recognise that like themselves doctors had to behave within the ethical parameters of their profession.

Because the service was regarded as a casualty service by a not very experienced management, observations and then recommendations by the doctors about working conditions were not always well received. Inevitably shop stewards found their way to the medical centres with complaints on alleged health matters and the difficulties of charting a course of action bore heavily on a sensitive conscience. Over difficult months and years the right of the doctor to comment on working conditions came to be recognised until eventually it was a responsibility imposed on him and his successors by legislation. At the outbreak of the second world war I had become a part time member of staff of what had now become Short and Harland's. After the air raids on Belfast my practice had dispersed to the country, and, although most of my time was spent in and around the various units of the aircraft company, I was pressed into service with the Belfast Ropeworks Company,² Chloride Electrical Storage Batteries (lead), Mallory Batteries (mercury), the York Street Flax Spinning Company (byssinosis)³ and two flour mills — and later the British Petroleum oil refinery.

At the end of the war the shipyards were busy helping to replace shipping which had been lost and the board of Harland and Wolff fell into line with the growing practice of enlisting medical help to their management team. Dr FE Fletcher, who had served in the RAF during the war and who was also qualified in law, was their choice. Unfortunately, such was the pressure of casualty work and the consequent number of claims under the Workman's Compensation Act that little time was available to him for monitoring working conditions. There was, however, on the staff of the Ministry of Health's Referee Service Dr Ben Swain who later recognised the high incidence of asbestos-related disease and the sources of origin of these cases. Asbestos had been recognised early in the 19th century as being a risk to health but it was not until 1930 with the increasing use of the material that its serious hazards to those inhaling it were fully appreciated. There are those who feel that the Factory Inspectorate were at fault in not requiring safer working conditions, but during the war the need for production was deemed to be the prime consideration. The plight of those workers disabled and dying as the result of working with asbestos was taken up by Professor Peter Elmes who soon came to be a recognised authority on asbestos-related conditions.⁴

Boiler makers deafness was a condition by tradition recognised as inevitable for those who spent a lifetime in that trade. It was not a condition recognised for compensation purposes. (Although deafness is a social disability, it does not prevent the deaf from earning their living — such was the justification made for disregarding it). Years later when claims at Common Law were initiated and awards made, a number of large companies were brought to the verge of bankruptcy. In the aircraft industry the effect of exposure to noise was recognised

early. The protection of technical staff working at, or in the vicinity of, the wind tunnel was ensured by withdrawing from exposure where possible or by the use of ear muffs. There was however resistance by the workers on the factory floor to the use of ear protection from the noise of rivetting, and supervisory staff were at fault in not insisting on its use. This again demonstrated the somewhat anomalous position of the doctor in industry. He had no executive function (nor has he) outside his own department. It illustrates too another of his functions — that of educating management and men in health care, which in this case was not fully successful.

Because of rivetting, the vibration white finger syndrome was recognised as a problem but it was largely eliminated by altering the frequency of the vibration of hand-held tools. Nowadays whole body rather than segmental vibration is the subject of investigation. In the ropemaking trade there was a serious risk of deafness in the area where ropes and cords were plaited. Plaiting involved the clatter induced by inter-digitating metal cogs through the centre of which passed strands of yarn. The din caused by upwards of forty of these machines at a time was painful to the ear of the casual visitor. The workers communicated by sign language. Various attempts were made in the years following the war to mitigate the noise by mounting the machines on artificial rubbers and by substituting the newly discovered material, nylon, for the metal of the cogs. These experiments were successful only in reducing noise levels to approximately 100 decibels. As a result a policy was adopted of recruiting for this department only those who were already deaf! In the event by the 1950s the use of plaited ropes and window cords was diminishing and no new cases came to light. In the ropeworks and in the various spinning mills acquaintance with young people soon revealed what was called by them "Mill Fever". The condition occurred during the first few days of employment and usually subsided in 2–3 days. The youngsters felt miserable, complained of headache and usually had a slight elevation of temperature. The trades being familial, parents recognised the symptoms and in most cases insisted on the victims remaining at work. Their belief was that if they did not, on return later the symptoms would recur. With the greatly improved conditions in the mills and probably as the result of the substitution of man-made fibres for the natural fibres of flax, cotton and hemp, the condition is not now seen.

The story of the recognition of "pouce" as being identical with cotton byssinosis has been told,³ but there were other problems of a transient and minor nature which caused much distress inside factories and offices where women were employed in large numbers. Following the air raids on Belfast the working population of the industrial areas of the city were dispersed. Whatever the cause, lice infested hair and scabies presented problems not only to the Public Health Authorities but to factory managements as well — giving rise to personnel embarrassments which had to be resolved by the nursing staff. By and large, however, the largest medical problem confronting industry both during and after the war was that of contact dermatitis. It was mitigated to some extent by improved washing facilities, so-called barrier creams and replacement inunctions — especially in those cases where the cause was oil and its various additives, rust inhibitors and antibacterial agents. The problem, however, remains with the introduction to industry of new and powerful adhesives — replacing to some extent welding. Soon after the war industry turned from the manufacture of

armaments to more peaceful projects. Shorts ventured into a number of fields, one of which was the provision of milk churns for a war devastated Europe. The introduction of this enterprise presented me with the one and only outbreak in my experience of metal fume fever. The components of the churn were made separately, galvanised and then welded together. Within hours a procession of men attended the medical centre at one of our dispersal units and being informed that there was a sudden "flu" outbreak, we went to investigate. A reorganisation of the process to ensure that the assembly was done before galvanising resolved the problem. Human error is curtailed in its effects only by being conscious of its possibility. Eight men out of a total of seventeen developed chrome ulcers, with in three cases complete perforation of the nasal septum, when an extractor fan in a lip extraction process was wrongly installed.

Lead poisoning was a not uncommon condition in the middle years of this century. It was caused mostly by the cutting of red leaded plates in the break-up of ships and shipyard cranes. When Chloride Electrical Storage (Exide) established the manufacture of storage batteries the supervision of the workers fell to me. The statutory requirement of examination at fortnightly intervals was farcical — examine buccal membrane for a "blue line", ensure that each worker could stand on tip toe and had no wrist drop! Blood lead estimations were at that time not feasible. Professor RE Lane, who was consultant to the company in Manchester and to whom the elimination of lead poisoning in the manufacture of accumulators was largely due, instituted a system based on his experience of the industry. Anaemia being an early objective sign, haemoglobin estimations and blood counts were done on those most exposed at monthly intervals. Eosinophilia occurring in an individual might not be significant to that individual but if a number of workers in a process displayed the phenomenon, in his opinion the workplace and the process had to be investigated, and no cases of intoxication occurred in that factory. In an adjoining Belfast factory (PR Mallory) there was a mercury hazard where miniature batteries were manufactured and several cases of erethism alerted us to some failures of technique.

So far as my own experience went, the incidence of scrotal cancer with a fatal outcome in a felting works was for some years deeply embarrassing, until the insurance company raised the insurance premiums to the extent that the offending firm went out of business. During all these post-war years other enterprises were being undertaken by colleagues. In particular Dr Edwin James in the Tyrone County Hospital was seeing and writing about farmer's lung which was very prevalent in his area and Dr Tom Milliken came to be recognised as a very considerable authority on the hazards of agriculture generally — and on his retirement from his hospital appointment has taken up a new career with the Belfast Corporation.

One of the civil engineering projects having a considerable medical input was the tunnelling from the Bog Meadows to the river Lagan. Most of the tunnellers employed had previous experience on the Silent Valley undertaking and travelled to and from work. There were occasions when anxious to get home they cut short the decompression process and by the time they reached Ballynahinch, felt the "bends", necessitating their return to the pressure chamber. My recollection is that a case came to court in which a tunneller, having developed neurological symptoms, attributed them to the nature of his work. These are only illustrations

of the rich variety of experiences which fall to doctors who have an interest in and a care for the work which their fellows undertake. To some extent gross excesses in faulty working environments have disappeared — especially in large scale industry but occupational diseases are not quite a thing of the past. They still occur from time to time in the many largely unsupervised factories and workshops where a substantial number of the workforce is still employed.

Occupational health physicians have now become familiar with work induced stress, with musculo-skeletal problems, with exposures which might affect behaviour or reproduction but the subject most discussed at present when they meet is the “sick building syndrome”. This is the phrase used to describe that group of conditions brought about by air conditioning, visual display units, miniaturisation of assembly units and the effects generally of modern technology. In the immediate post-war years industry was thriving and the number of companies in Great Britain enlisting the advice of medical men greatly increased. Unfortunately (for whatever reason is debatable), absenteeism, especially absenteeism attributed to sickness, became a serious problem and managements looked to their medical advisors for help. It was some time before it was recognised that this was essentially a management problem and that the role of the industrial health physician in it was minimal although of course he was involved. In the meantime a number of doctors on a part time basis had been engaged in various undertakings to advise on this problem, and their appointments were continued in many cases even when it was realised that the solution lay mainly with personnel management. About the same time a not unrelated problem, that of stress occurring mainly just below board level, was causing anxiety, and numerous schemes for routine examinations of senior staff were inaugurated without much thought of their value. There is no doubt however that the full time occupational health physician fully acquainted with his colleagues and their work, on an informal basis and with ready access to senior management, proved to be useful. It should be mentioned too that a large company (Short's) with several hundred staff, pilots and technicians at any one time scattered over the world had a concern for their health and wellbeing. The responsibility for these and the implementation of an immunisation programme fell to the occupational health physician.

By this time I had left general practice and was engaged fully in the practice of occupational medicine, and Dr Fletcher was at Harland and Wolff. As early as 1935 in Great Britain a small group of full time medical officers had formed an association which met on a quarterly routine at the London School of Hygiene and Tropical Medicine, which I was invited to join in 1947. In the early 1950s a group of this rapidly growing association was formed in Northern Ireland composed of part time practitioners. Lord Nuffield in these years was distributing his massive benefactions to various medical interests — guided largely by the eminent London surgeon, Sir Ernest Rock Carling. Nuffield proposed to endow two university chairs of Industrial Health. This aroused a bitter controversy in which the medical officers of health, who by the inauguration of the National Health Service had lost control of the Poor Law hospitals, claimed that industrial health was part of their province. There was a suggestion too that a national industrial medical service be set up and integrated with the National Health Service. A committee, presided over by Judge Dale, recommended a “wait and

see" policy suggesting that until the lines of natural evolution emerged it was premature to make a decision. Eventually the chairs were established — RE Lane in Manchester and RC Browne in Newcastle. At the same time the Conjoint Board of the Royal Colleges, and the Society of Apothecaries, announced their plans for the award, following examination, of a Diploma of Industrial Health (DIH). After study in Manchester I took the diploma of the Conjoint Board and shortly afterwards gained an MD (Belfast) for a thesis on accident proneness. This led to an invitation to read in 1955 the Milroy Lectures to the Royal College of Physicians of London.⁵ Subsequently, I read the Scott-Heron lecture³ which led, after further investigation by the Department of Social Medicine QUB under Professor John Pemberton, to the definition of byssinosis being extended to include flax and hemp dusts (1965). In 1970 I read the BMA Mackenzie lecture⁶ to a meeting of the Society of Occupational Medicine (successor to the Association of Industrial Medical Officers) in Dublin.

During the decade 1950–59 and succeeding years there was agitation stimulated by the trade unions that the benefits accruing to large scale industry able to employ full time doctors should become available to industrial workers generally. This presented difficulties as over 80% of all workers were employed in factories with a workforce of less than 500, where the employment of a full time doctor was neither necessary nor feasible. With encouragement from the Nuffield Trust an experimental Industrial Health Centre was established in a huge industrial estate in Slough (Buckinghamshire) — staffed by a number of full time doctors and nurses with a mobile dressing station which daily visited the factories associated with the scheme. At the invitation of Rock Carling I was invited to join the Slough Industrial Health Advisory Committee to share my experience of working in Belfast. Some years later a similar invitation from the Minister of Labour, Barbara Castle, to join the Ministry of Labour's Industrial Health Advisory Committee was accepted — as was the renewal by her successor, Ray Gunther. For some years I sat too on the British Medical Association Occupational Health Committee so it was no surprise that what was happening in Northern Ireland evinced considerable interest amongst colleagues in Britain. In 1963 the Association of Industrial Medical Officers (shortly to be re-named Society of Occupational Medicine) held a very successful four day meeting in Belfast. In 1967 I was elected its president.

During all these years the relationship of a multiplicity of industrial medical services was a source of controversy on many grounds but so far as the medical staff were concerned the two most important were the absence of a career structure and the lack of provision generally for education in what was coming to be recognised as a new discipline. It had become clear that the experience of the Slough experiment could be applied only to compact industrial estates, and the lesson of other experimental units (notably at Harlow) pointed the way to the employment of part time general practitioners under the leadership of a doctor experienced in the specialty. In Northern Ireland about fifty such appointments were made — some without much regard to competence or experience in the environmental aspects of the work. Although Belfast was and remains an important industrial centre, the university paid scant regard to the needs of the factory workers as such. In the Department of Social Medicine a few lectures were given to undergraduates each year and the small number of post-graduate

students for the Diploma in Public Health (DPH) examination were exposed to some aspects of occupational medicine. A few physicians in their ward rounds and teaching generally drew attention to occupational aspects of the subjects under discussion but in the main the local meetings of the Society of Occupational Medicine were the means by which the educational process was conducted, amongst those who had joined the society.

Professor Owen Wade and Professor Peter Elmes too evinced considerable interest in research in industrial health subjects. The aggregation of large numbers of work people where good records are maintained provide research workers with material for scrutiny. During the war Short's co-operated with the Medical Research Council in an investigation of the value of giving vitamins A & D in maintaining health, and later in the use of anti-flu vaccines. Wade and Elmes later worked there too on a series of men whose medical histories met the criteria to justify a diagnosis of chronic bronchitis — and in a controlled observation over a number of years charted the response to the daily exhibition of antibiotics. Meanwhile some full time appointments were being made — notably Dr Jack Stutt by Belfast Corporation and later Dr Rory L Carson by Du Pont in Londonderry — Carson having had experience of public health work. Two general practitioners who were active during these years were Dr William Colquhoun of Dunmurry and Dr Trevor Hamilton who had an interest in Mackies and the Great Northern Railway.

One of the difficulties experienced by the exclusion of the occupational health service from the National Health Service was that whereas trainees in the NHS were indirectly employed by the state while being trained, apart from a few large companies which could afford a junior doctor and give time for study, no specific provision was available for the large number of part time occupational physicians. However, in 1976 the Royal College of Physicians of Ireland established a Faculty of Occupational Medicine and for the purpose of accreditation as a specialist, the Board of the Faculty was recognised as advisor to the Accreditation Board. Two years later the London College also established a similar Faculty and the medical centre of Shorts was recognised by the JCHMT as a teaching appointment — the only one in Ireland. In passing it may not be inappropriate to suggest that the apprenticeship system in the absence of a formal academic programme is not without its value. Each of the young doctors who served in Shorts demonstrated this — one became an associate professor of occupational medicine in British Columbia, another after developing an interest in contact dermatitis became professor of dermatology in Melbourne, another was awarded a personal chair in epidemiology before becoming a vice-chancellor and yet another became professor of Army Health at Millbank. The man who succeeded me in Short's not only developed the service he inherited but has been making a considerable contribution to the community in general as chairman of the Northern Ireland Youth Committee and vice-chairman of the Police Authority.

The problem of providing educational facilities has to some extent been met by a Distance Learning course based on the Department of Occupational Medicine in Manchester. From this source some fifty specially prepared manuals are sent out at monthly intervals to individuals taking the course — in the main mostly paid for by the employer. In any one area the students meet from time to time and by means of a telephone link with an authority discuss the subject under review.

There is a local tutor in each area to supervise and organise the scheme. In Northern Ireland (at present, 1987) Dr Gerald Hall acts in this capacity.

Stimulus to these developments had been given by a number of appointments to statutory bodies and other large establishments — Dr WA Eakins to the Post Office, Dr Raymond Pritchard to the Northern Ireland Electricity Service, Dr James Sweetnam for a few years to succeed Fletcher at Harland and Wolff, (several medical advisors joined and left the shipyard within a few years), Dr Ben Bolton to the Civil Service and later, and perhaps most significantly, two full time medical advisors to the Royal Ulster Constabulary — the first such appointments to a police force in the British Isles. The appointment of Dr David McLean as occupational health advisor to Queen's University threw an interesting light on the occasional anomalous situations in which a physician may find himself. He was one of a number of doctors working in the Student Health Service. Over a number of years persons in the employment of the university found it convenient to use the service and registered as National Health Service patients with it. Occasions arose when an employee of the university gave medical reasons for his failure to carry out his duties. The personnel manager applied to the Student Health Service for advice but was unable to gain it as its staff was in a confidential relationship with the employee. Following consideration of the problem, and the effect of industrial legislation regarding safety at work which was made applicable to organisations other than industrial, a university occupational health service was set up.

Since about 1960 the use of artificial glues, resins and the manufacture and use of plastics has become commonplace in industry, giving rise to a number of skin, respiratory and other toxicological problems — notably so far as Northern Ireland is concerned in the aircraft industry. The evolution of isocyanates, giving rise to acute and long term respiratory embarrassment in particular, led to the introduction of routine respiratory efficiency testing on entry and thereafter at yearly intervals, or at other times where considered necessary. During this period too, actions at law for alleged noise induced deafness led to the institution of audiometric monitoring, increased efforts to reduce noise levels and insistence on the use of hearing protection. The use of X-rays and radioisotopes especially for the inspection of aircraft parts and joints added new responsibilities which were shared by physicists and others. Another function which has recently fallen into the lap of the occupational health physician is that of advising on the preparation of Data Sheets. As a member of the Health and Safety Committee of British Petroleum, with others the company requires us to prepare information for the customer as to the hazard of using each and every one of its products and the precautions necessary to minimise or avoid risk. It will be seen that those who propose to enter the field of occupational medicine must prepare themselves to accept the impositions of these burdens.

The largest employer of labour in Northern Ireland is the National Health Service and until recently apart from the doctors who cared for the nurses in residence, no account was taken of other aspects of health care. Some years ago discussions foundered when the matrons on the informal committee set up by the Ministry of Health at Stormont insisted that they were acting *in loco parentis* to the nursing probationers, and that therefore they must have access to occupational health records. This demand proved to be unacceptable. The structure of hospital

management having changed in recent years, an occupational health service for the NHS is now (1987) in process of being formed. Almost inevitably difficulties have arisen as to the status of the occupational health physician, *vis-a-vis* the consultant staff in any particular hospital. Occupational medicine is a multi-disciplinary subject and there are on the staff already doctors and others who can speak authoritatively on almost every aspect of health care — immunisation programmes, radiation hazards and their use. With goodwill these difficulties will be overcome as others in different spheres have been resolved.

From my earliest days in industry the function of the doctor was to help provide and maintain the health and welfare of people at work. In the beginning and especially since the second world war much emphasis was put on trying to fit the worker to the job especially in the case of partially disabled persons. (On the few occasions on which students came to see the working of our occupational health unit we brought them to see two machinists who had been blinded by drinking methyl alcohol left by the Germans in a post they had overrun. They were astonished to find totally unsighted men working with machine tools). Under the Disabled Persons Act each company employing more than 25 workers was required to engage a quota (which varied from time to time) of disabled persons — whatever the nature of the disablement. This led to the practice of pre-employment examinations for all to ensure, for example, that candidates with respiratory embarrassment were not subjected to dust or fumes, men with elevated blood pressure were not required to mount cranes or work at heights or inaccessible places, that diabetics were facilitated as to their dietary arrangements, that epileptics were located and supervised in appropriate work places, and that patients on return to work after illness or injury were assisted in their rehabilitation. This latter in the main was achieved by organising concessions from management about times of starting or finishing work, rest periods and occasionally by changing jobs.

We had a duty as well to ensure that the workplace was safe. Safety from mechanical hazards was obviously the responsibility of the engineers but as the medical staff were the first to see the results of accidents and engineers regarded production as their prime aim, it was not long before the medical department staff had a role to play in prevention. Similarly the doctors had the earliest intimation of toxic and other hazards as they manifested themselves in the workforce. This, of course, we recognised as being quite unsatisfactory. However, in our efforts to make early diagnoses and remove those affected from further exposure, much information was gained, especially when the help of hygienists, chemists and physicists was enlisted. It was now possible to determine the levels of dust, fumes and noxious agents generally in the environment. Experience in the workshop and experimentation in the laboratories led to the establishment of threshold limit values (TLV) of a large number of substances used in industry, values which must not be exceeded. The occupational health physician now co-ordinates the work of a team of industrial hygienists, safety officers, physicists, personnel managers and engineers concerned to provide a healthy, happy and safe working environment.

In the half century of my experience the range of responsibilities and interests of occupational health physicians has been enormously extended. With them have come new techniques and scientific disciplines which if used effectively should

remove all but the human element from the hazards of industrial life. In the meantime, as the older risks are being eliminated new ones come to light. The use of agrichemicals in the agriculture industry, the hazards of compression in diving and accidental decompression in high flying, the behaviour of groups of people in varying industrial situations, the substitution of mineral fibres for asbestos, the carcinogenic effects of a host of materials, various kinds of radiation hazards, the total body vibration syndrome are only a few of the subjects which engage the attention of the occupational health physician to-day. But however much he is involved with others in helping to provide and maintain a safe working environment, he has and always will have a day to day personal relationship with those for whom he has responsibility.

This memorandum was prepared by request of Dr JS Logan, Archivist to the Royal Victoria Hospital. Only a minimum of biographical detail was included and only such as seems relevant to the story of the evolution from industrial to occupational medicine in Ulster. It may however be added that in 1985 Dr Smiley was elected to membership of the prestigious Ramazzini club (25 members in Europe, 25 in USA) and that in 1987 the academic respectability of the subject was recognised by the award of an honorary doctorate from the Queen's University of Belfast.

REFERENCES

1. Smiley JA. Andrew George Malcolm and CD Purdon: Pioneers of occupational medicine in Belfast. *Ulster Med J* 1986; **55**: 41-6.
2. Smiley JA. The hazards of rope-making. *Brit J Ind Med* 1951, **8**: 265-70.
3. Smiley JA. Background to byssinosis in Ulster. (Scott-Heron Lecture, Royal Victoria Hospital, 1960). *Brit J Ind Med* 1961; **18**: 1-9.
4. Elmes PC, Simpson MJC. Insulation workers in Belfast: mortality 1940-66. *Brit J Ind Med* 1971; **28**: 226-36.
5. Smiley JA. A clinical study of a group of accident-prone workers. *Brit J Ind Med* 1955; **12**: 263-78.
6. Smiley JA. Some aspects of the early evolution of the Appointed Factory Doctors' Service. *Brit J Ind Med* 1971; **28**: 315.