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Editorial/Editoriale

Selikoff, asbestos and *"la trahison des clercs"*

Selikoff, l'amianto e "la trahison des clercs"

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Summary

Irving J. Selikoff lived by Virchow's axiom that "Physicians are the natural attorneys of the poor". Not given to intemperate language, his harshest judgement of physicians he deemed guilty of wilful intellectual dishonesty, whether for financial gain or otherwise, was to condemn them for *"la trahison des clercs"*. In the context of the awful history of asbestos, the term *"clercs"* came to embrace lay, scientific, and medical members of the intelligentsia. For many years, industry's creatures employed the facile ploy of accusing critics of merely exercising hindsight, until towards the end of the 20th Century, when vast confidential archives were opened by discovery in the American Courts, and finally put an end to this spurious defence. The revelation of ignorant and wicked conduct on the part of acknowledged mercenaries came as no surprise, but what was profoundly shocking was discovering the tangible rewards by industry of certain honoured and distinguished scientists who over time had developed a more sanguine attitude to the hazards of asbestos than the evidence allowed. The widely varying attitudes of a selection of *clercs* involved with asbestos in the first half of the 20th Century is reviewed in the context of the prevailing economic cum political climate. Eur. J. Oncol., 13 (3), 149-159, 2008

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Riassunto

Irving J. Selikoff visse secondo l'assioma di Virchow che "i Medici sono i naturali avvocati dei poveri". Non incline ad un linguaggio intemperante, il suo giudizio più severo sui medici che riteneva colpevoli di premeditata disonestà intellettuale, per guadagni economici od altro, fu di condannarli per *"la trahison des clercs"* (il tradimento degli intellettuali). Nel contesto della terribile storia dell'amianto, il termine *"clerc"* finì per comprendere intellettuali sia scienziati e medici, sia laici. Per molti anni le creature dell'industria impiegavano il facile stratagemma di accusare i critici di avvalersi semplicemente del senno di poi, fin quando, verso la fine del 20° secolo, enormi archivi riservati furono scoperti nei tribunali americani e, finalmente, posero fine a questa difesa insostenibile. La rivelazione di un comportamento ignorante e perverso da parte di mercenari conosciuti non fu sorprendente, ma quello che ha profondamente scandalizzato è stato scoprire le cospicue ricompense dell'industria a stimati e distinti scienziati che, col tempo, avevano sviluppato un approccio ai problemi dell'amianto più ottimistico di quanto l'evidenza consentisse. L'atteggiamento di diversi intellettuali coinvolti con l'amianto nella prima metà del 20° secolo – molto differente tra caso e caso – viene passato in rassegna nel contesto del dominante clima sia economico che politico dell'epoca. Eur. J. Oncol., 13 (3), 149-159, 2008

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Introduction

The French philosopher/journalist Julien Benda (1867-1956) applied the term *"la trahison des clercs"* to the conduct of the class of intellectuals who allied themselves too closely with the interests of government, states, or political parties, and in the process betrayed the independence essential for honest contribution to public discussion[1]. The characteristic of such *'clercs'* he deemed was that they made short shrift of justice, truth, and other *'metaphysical fogs'*: the truth being determined by what was useful, and the just by circumstances.

Professor Irving J. Selikoff was not given to intemperate language: he applied Benda's term of opprobrium to those scientists, who, by denying or playing down the danger of asbestos, supported the interests of industry. He held them responsible for the promotion of the world-wide epidemic of associated cancers. Selikoff was particularly censorious of physicians who engaged in this process, frequently citing Rudolph Virchow's (1821-1902) aphorism: "Physicians are the natural attorneys of the poor".

The widely contrasting rôles played by different lay, scientific and medical intellectuals involved in the history of asbestos from 1898 to 1950, and the economic cum political context of their activity will be considered.

Some early non-medical *clercs*

Miss Lucy Deane and HM Factory Inspectorate

The world was first put on notice about the disabling effects of working with asbestos, in the Women Inspectors' contributions to Her Majesty's (HM) Chief Inspector of Factories Annual Reports for 1898[2] and subsequent years[3,4]. By including these statements in his annual reports, Sir Arthur Whitelegge, HM Chief Inspector of Factories, a physician in the Virchovian mould who strongly supported measures to protect workers, implicitly supported the validity of their opinions.

The observations made by the Women Inspectors on the hazards of exposure to asbestos dust and their recommendations for worker surveillance and protection seem never to have been cited by their colleagues. While the ladies of HM Inspectorate would classify as suffragists, even this moderated feminism might have been disapproved of by their male colleagues[5]. They took tea with Lady Dilke, wife of a Member of Parliament who supported legalizing labour unions, improving working conditions and limiting working hours. This could not be openly resented by their socially "mere" male colleagues, though their connection with a radical politician could be held against them.

While members of HM Factory Inspectorate were responsible for enforcing the Factories Acts, policy was decided by Government. At that time Britain was in the grip of an economic depression following the Second Boer War, compounded by a naval race with Germany.

The *bona fides* of the *clercs* Lucy Deane and Millicent Fawcett were confirmed when they were appointed to the Commission to inspect the Boer War concentration camps. They would have seemed a "safe pair of hands" for such a Commission. Millicent Fawcett was known to be loyal to the government, and Miss Deane was from a military family. However, far from making short shrift of justice and truth, their report was uncompromising. They were critical of the nation's favourite General's policy of promoting insanitary and starvation conditions for the wives and children of rebels. It took courage in the prevailing anti-Boer climate to admit of wrong, but they did not mince their words and ordered changes to improve the health and welfare of Kitchener's hostages.

Denis Auribault and the French Factory Inspectorate

In 1906, Denis Auribault of the French Factory Inspectorate confirmed Miss Deane's observations, reporting severe respiratory disease and deaths among a group of women employed at an asbestos textile factory that had converted from cotton only 5 years previously[6]. He expressed a familarity with the lung disease and recommended dust containment, efficient local exhaust ventilation, and personal respiratory protection.

France was no more prepared than Britain to respond effectively to this 'early' warning. Still smarting under the humiliating outcome of the Franco-Prussian War some 35 years previously, it

was busily rearming in preparation for *La Revanche*.

The victim as the cause of the disease has a long history in occupational dust disease. The conscription of fit men of military age in preparation for revenge, was deemed by some apologists to have left weak and degenerate workers for industry, who, what with their tuberculosis and alcoholism, were prone to developing pneumoconiosis.

It has been held against Auribault that he was sanguine about the situation. However, in his defence, he did produce plans for containing dust, and he could no more be held responsible for the failure of government to intervene effectively than his British counterpart.

Dr Jones

Professor W.R. Jones advocated the use in asbestos factories of full face masks fed with clean air. On his recommendation, Cape Asbestos arranged for Siebe Gorman to install such a system experimentally at its Barking factory[7].

At that time, HM Factory Inspectorate policy with respect to the control of airborne dusts, was to rely entirely on containment and local exhaust ventilation: they were unable to recommend any of the available dust masks on the grounds of their unproven efficiency. Jones differed from HM Factory Inspectorate, maintaining that containment and ventilation were incapable of providing adequate protection.

As an employee of the Royal School of Mines, a governmental institution, and with the financial constraints of the prevailing economic Depression, it would not have been in his interest to differ with a governmental body, but Jones the *clerc* was unfailingly loyal to these asbestos workers (this was not his only clash with Government and Industry. He publicly opposed and bested none other than the establishment figure J. S. Haldane[a] on the attributability of pneumoconiosis in South Wales coal miners).

Some physicians early involved with asbestos

Dr Murray

Dr Montague Murray described the diagnosis, clinical course, and post mortem findings of a case of "fibroid phthisis" in an asbestos worker that he had diagnosed in 1899 to the Governmental Committee of 1906 reviewing compensation for industrial diseases[8].

When questioned as to whether he had heard that the disease was prevalent among those employed in the work, Murray said that he could find no statistical data but claimed that, generally speaking, considerable trouble was now taken to prevent the inhalation of dust, so that the disease was not so likely to occur. He was optimistic about industry having the health hazard of asbestos in hand and, while he did not pursue the subject assiduously, this does not convict Murray of favouring the interests of industry over that of workers. He was a busy hospital physician, a rôle he combined with being a pioneer radiologist, a clinical teacher, a medical school administrator, and an editor.

Dr Legge

Dr Legge as the first specialist HM Medical Inspector of Factories, was on the Secretariat of the Committee at which Murray presented his case report and described how the patient had informed him that he was the last survivor of a group of workers who had been employed in one asbestos process some 10 years earlier. In a posthumous publication, Legge regretted that he had made no clinical examinations of the work people at Murrray's patient's factory some 30 years earlier[9]. In mitigatiion of his self criticism, it must be borne in mind that Legge was the sole medical inspector for England, Scotland, Wales and Ireland from 1898 until 1908 and that, even when he was joined by 5 more physicians between 1908 and 1924, they were still hard pressed with the investigation and control of such major hazards as silicosis, coal workers' pneumoconiosis, lead poisoning, white

[a] Professor JS Haldane, MD FRS (1860-1936) was described as a genius and one of the most outstanding personalities of his time. He had a productive and distinguished research career in physiology at Oxford University, and in occupational health and safety as Director of Doncaster coal owners' research laboratory.

phosphorous, anthrax, and mercury. Notwithstanding that they were working at a time of economic constraint resulting from a disastrous colonial war exacerbated by an arms race, they contributed to a significant reduction of disability and death from the agents mentioned above, whose burdens heavily outweighed those of the infant asbestos industry.

Evidence for Legge to qualify as one of Virchow's advocates is provided by his prodigious activity as an Inspector in ameliorating worker health. Further evidence in support is provided by his resignation on a matter of principle when Britain declined to ratify the Geneva White Lead Convention which he had helped draft. It was not a propitious time for a middle-aged inspector to fall out publicly with government, but his excellence as a workers'advocate was recognized by the Trades Union Congress who appointed him as their first medical advisor.

Dr Collis

In 1910, the Registrar General for England and Wales was reported as having informed HM Factory Inspectorate that 5 deaths from persons suffering from phthisis had occurred in 5 years in a staff of under 40 workers employed at an asbestos textile factory[10]. Dr Edgar Collis had promptly inspected that factory and two others for good measure, and identified the most dangerous process to be mattress making. His recommendations included: modifying the process to generate less dust, the application of local exhaust ventilation, and the annual medical examination of workers by a Certified Surgeon in the hope of preventing disease by its early detection and removal from further exposure.

These observations and recommendations were considered sufficiently authoritative to be included in HM Chief Inspector of Factories Annual Report, and in his Milroy Lectures of 1915[11, b], in which he surveyed the occupational dust diseases, he made no further mention of his experience of asbestos or that of earlier Inspectors[2-4]. or of other reports[6, 8, 12].

[b] The remainder is included in a privately bound volume to be found in the library of the Royal College of Physicians, London. This makes no mention of asbestos as a cause of pneumoconiosis.

Collis's failure to include asbestos as a serious health hazard in his Milroy lecture of 1915 is a mystery but is not evidence of conspiracy. The major problem at the time in terms of the numbers of workers at risk was perceived to be silicosis, the recognition, cause and amelioration of which exercised him considerably, and his determination that the crystalline silica fraction of the dust was the critical agent prompted regulations under the Factories Act to deal with the problem.

Far from traitorous to workers, Collis as an Inspector and in his academic career subsequently, did not subscribe to the policy of leaving workers to their fate. The Eugenicists' dogma that held sway at the time, was to the effect that education, good laws, and sanitary surroundings were wasted on degenerate and feeble stock, and that left to themselves they might breed heavily but would die out or destroy each other. He held, to the contrary, that it was the duty of physicians to intervene on the behalf of workers, as in the following quotation.

> *"Accidents, the cause of much mortality and greater incapacity and suffering, are more manifestly preventable than disease. A duty to take part in their prevention lies with the profession as a whole, and with the factory medical officers in particular"*[13].

Some Canadian physicians: 1912-1955

From early on, Canadian physicians, with some exceptions, may be characterized either as denying that chrysotile presented a health hazard, or minimizing the impact of asbestosis as a disability.

Department of Labour physicians, 1912

In 1912, the UK Factory Department asked the Canadian authorities about the health experience of its miners and millers. The reply was that on inspection of a large asbestos mine and mill, all the women looked strong and healthy, and that death from lung diseases in Thetford (Canada), was no higher than elsewhere[14].

A standard defence advanced against latter day critics is that they have the benefit of hindsight. However, by 1912, reports from England[2, 8, 10],

France[6] and Italy[12] left no doubt about the dangers of working with asbestos. There is reason to conjecture that, had the Canadian physicians conducted clinical and statistical investigations on a par with what was the state-of-the-art some 60 years previously[15], they would have confirmed that they had a health problem.

Local general practitioners were aware that some of their patients who worked in asbestos mines had respiratory disease. It would not have required an acquaintance with the story of Ibsen's Dr Stockmann, to have primed local *clercs* about the consequences of placing worker health before the commercial interests of a community. Nevertheless, while some denied a causal association, there was one physician who was prepared to attribute the disease of his patients to their having been exposed to a valuable local export.

Dr Pedley

The Metropolitan Life Assurance Company established a Department of Industrial Hygiene at McGill University, with Dr Pedley as its Clinical Director, to investigate industrial health problems. In 1931 he was asked to investigate the health of Canadian asbestos miners and millers. Earlier, North American Insurance Companies had recognized there to be health problems in asbestos workers[16].

Pedley published a statement that to his knowledge no case of pneumoconiosis had been reported among them, and added that:

> *"From the public health standpoint, however, it seems hardly likely that asbestosis will become of importance either from the view of morbidity or mortality"*[17].

For good measure he compared tuberculosis deaths in Thetford with those of Quebec Province and concluded that there was no indication of an undue mortality from tuberculosis in the Thetford Mines. In another publication he declared:

> *"...no cases of specific disease* [asbestosis] *have been reported among asbestos workers in the Province of Quebec. This does not mean, however, that a hazard does not exist; it merely means that no hazard has been recognized"*[18].

He did however report to his sponsors the results of a study of workers at several mines by company doctors in which a total of 42 workers had abnormalities noted[19].

Pedley would seem to have failed in his duty to his sponsors Metropolitan Life and to Quebec's asbestos miners and millers. The actuaries found it necessary to re-calculate premiums after being beset by compensation claims for Thetford mine workers, the preponderance for lung disorders[20].

Dr Stevenson

In introducing the results of a radiological and clinical survey that he had conducted in Asbestos independently of McGill University, the Johns-Manville medical officer dismissed the literature that had collected over the past 40 years that reported asbestos to constitute a serious human health hazard[21]. Although his study of the chest radiographs of 507 current workers employed for more than 10 years found 17 to have *"Early Asbestosis"*, 5 *"Moderate Asbestosis"* and no *"Advanced Asbestosis"* he concluded that there had been no cases of asbestosis, and strained credulity by asserting that no employee had died of respiratory disease.

Dismissal of the validity of the literature may be put down to mere hubris, but to base an opinion on an idiosyncratic health study, strikes as intentional, reckless and negligent, and designed to assure members of the Quebec Asbestos Mines Association that asbestos posed no health risk to its miners and millers.

Dr Johnstone

In a textbook on Occupational Medicine and Industrial Hygiene, the author stated that although Thetford millworkers were heavily exposed to fine asbestos they were reported not to suffer from asbestosis[22]. Despite the caveat implicit in *"...they were reported not to suffer from asbestosis..."*, this might have still have been misunderstood to be an authoritative statement that heavy exposure to asbestos did not present a health problem.

Johnstone must be acquitted of callous disregard, as it is plausible that he had not been made fully party to the information on disability and death building up in the Thetford files[23]. It does however

stress the responsibility that an author bears when writing a textbook, as the information cited will be treated as authoritative by its readers.

Dr LeDoux

A dissenting Canadian physician, LeDoux reported on the health of the villagers of East Broughton, Quebec, home of some 3,000 French Canadians and the site of an asbestos mine and plant[24]. He claimed that all the facts essential to the welfare of people exposed to the hazards of asbestos dust had been well known in North American mining and medical circles for at least the last 15 years. He compared tuberculosis rates for three years at Thetford Mines with those for Sorel and Granby whose residents were not exposed to asbestos. Unlike Pedley[17], he concluded:

"Confronted with the abnormally high tuberculosis mortality rates at Thetford Mines, neither the medical profession nor the provincial government can evade the issue, and both are under obligation to make a choice between two alternatives: either inhalation of asbestos dust predisposes to and aggravates pulmonary tuberculosis, or many deaths certified at Thetford Mines as having been due to pulmonary tuberculosis were inaccurately diagnosed, and in reality were due to asbestosis ....".

Ledoux's credentials as an advocate for Quebec's asbestos miners could not be faulted, and he distanced himself from Benda's despised intelligentsia.

Dr Cartier

The first public admission by a Quebec asbestos industry official of a serious health risk in its workforce had to wait some 80 years after the industry's start up, and was made by Thetford mine's medical officer. He reported clinical, radiological, and pathological data that had accumulated between 1945 and 1953 among some 4,000 Thetford asbestos workers: this showed 128 to have had asbestosis of various degrees of severity, 121 diagnosed radiographically, and 33 confirmed at autopsy[23].

That he reported disease, where most of his predecessors had found none, might seem to qualify him for utter approval by Virchow and by Benda, however his *bona fides* was questionable on several counts. Noticeably he failed to offer an explanation of how it came about that an "epidemic" of asbestosis emerged in a population previously claimed to be healthy.

Further he stated:

"…more frequently it [asbestosis] *remains a disease which can be tolerated quite well for many years... this disease may look more serious and cause important medicolegal problems if a too scientific medical concept* [sic] *or a too liberal social interpretation is accepted by medicolegal professions, labor and compensation bodies"*.

That a disease might sometimes be tolerated by a worker for a number of years before a protracted and increasingly distressing *exitus* is cold comfort. If by his assertion that the disease looks more serious than it is he was referring to its radiological features, to the contrary it had been recognized for some time that compared with silicosis, although there might be less profuse small opacities in the chest radiograph of the asbestos worker, clinical disease could still be more severe[25, 26, c] (his claims that medicolegal problems result from "too scientific" an attitude being taken to asbestosis, and from "too liberal social interpretation" might be deemed a perverse defence of his employers).

Cartier was not persuaded that asbestos workers experienced an excess lung cancer mortality, evidence that had been accruing since 1935 culminating in Doll's paper in 1955 notwithstanding. Yet he informed the Turner Brothers' physician, that he knew of 29 cases of lung cancer[27].

His insouciance towards asbestosis, and his criticism of those he considered oversympathetic towards asbestos workers would have attracted the opprobrium of Selikoff and Benda.

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[c] Merewether ERA, in his report to Dr JC Bridge, HM Senior Medical Inspector of Factories dated 25th August 1934 [typescript] commented: *"... I have been profoundly impressed by the fact that there is <u>always</u> present a greater degree of asbestosis than there appears to be, judged by accepted standards of silicosis. The difficulties of the Board in administration of this fact with all its implications… it would have been forced to suspend a very large number of workers as the result of the periodical examinations, which would have raised a panic in the industry..."*.

A provincial pathologist and two provincial general practitioners in England

Dr Cooke

When Nelly Kershaw, an asbestos textile employee of Turner & Newall in Rochdale, died aged 33, Dr Josse, her family doctor, gave the cause of death as "Asbestos poisoning". As required by law he notified to HM Coroners. His pathologist conducted an autopsy and stated that death was due to pulmonary fibrosis as a consequence of the inhalation of asbestos fibres.

In his published account of the findings in this case Cooke further reported:

> *"Medical men in areas where asbestos is manufactured have long suspected the dust to be the cause of chronic bronchitis and fibrosis, and Professor J. M. Beattie has shown that the dust causes fibrosis in guinea pigs"*[28].

In those pre-National Health Service days, local doctors would have been advised to keep in well with the local worthies, as they were the source of more lucrative private practice and would be expected to have political and social influence. The hospital pathologist and the Coroner (a local solicitor) would have been under similar constraints, nevertheless they gave an unqualified opinion that Nellie Kershaw's disease and death were causally associated with her employment. Cooke's assertion that it was commonly suspected by doctors in towns with asbestos factories was hardly ingratiating.

When other local pathologists began to make the diagnosis in other cases referred to HM Coroner, this was embarrassing for Turner's management, who responded by retaining Professor Matthew Stewart to represent their interests.

Dr Josse

By certifying the cause of the death of Nelly Kershaw, an ex-worker at Turner's as "asbestos poisoning", her family doctor put the cat among the pigeons drawing attention to the hazards of asbestos that had been identified a quarter of a century earlier by the Women Inspectors of Factories. At the inquest, he testified that he saw 10 to 12 cases a year in his Rochdale practice[29].

The Turners of Turner Brothers Asbestos were wealthy and influential in Rochdale politics and society; so it would have been unwise to get on the wrong side of them. Yet the account of his statement to HM Coroner as reported in local newspapers did not mince words.

Dr Grieve

Josse's observations were to be confirmed by a general practitioner in Leeds, where the notorious JW Roberts asbestos factory was situated. Without conducting a factory survey Grieve was able to produce enough clinical and post-mortem data from his practice patients to produce an MD thesis on asbestosis[30]. In introducing his thesis Grieve stated that management and workers were aware of the risks of exposure to dust containing asbestos.

He was a better courtier than Josse, having nothing but praise for the proprietors of his local factory, and reserving criticism for the worker victims. When describing the most dusty process, that of mattress beating, he stated that the man involved:

> *"invariably wears a mask, rapidly performs his task and immediately leaves the room to allow the volumes of dust to settle. No one is supposed to enter the room until half an hour has elapsed.* ***We shall see that this rule is not strictly obeyed****"* [author's stress]

Writing on "Precautions taken against the dust", he asserted that every suggestion put forward from time to time for the elimination of dust has been adopted, with large extractor fans operating in every room, and every possible machine enclosed and rendered dust proof.

This encomium of Roberts' industrial hygiene was not shared by HM Factory Inspectorate, Roberts' Insurance Company or by officers of the holding company in Rochdale.

The limitations of Grieve's expertise in environmental hygiene is further shown in his statement:

> *"Every worker is now provided with a respirator of an up-to-date type, and the workers are encouraged to wear them."* He followed this with the assertion: *"Unfortunately, the temptation to enter the room too soon is very great and is often too strong to resist, for these women are piece-workers*

and admit they frequently enter such a room full of dust, rather than their work be held up".

Piecework is out of place in risky processes; it offers an incentive for work to be speeded up, and it is reasonably foreseeable that without supervision there is a temptation to work unsafely if the necessary precautions are thought to put a brake on the pace of work.

Grieve held that: "*The complacency of the workers is perhaps largely responsible for the indifference of Medicine to the insidious morbid processes set up by asbestos dust in the lungs*". His examiners presumably agreed that workers by their folly were responsible for their disease and for their physicians neglect of the condition.

In his chapter entitled "Treatment", he expressed the opinion that workers *"...should be compelled to wear respirators all the time"*, yet contemporary text books were dismissive of masks, as was Middleton whom he quotes. An officially approved mask was not to be specified in the Asbestos Regulations 1931, and the Home Office commissioned the War Office Chemical Defence Experimental Establishment (CDEE, "Porton") to develop a practical and efficient dust mask[31].

Grieve's blaming of the victim included the following:

"... the human element is apt to defeat the ends of legislation and forethought, and usually on one of the following scores:

1. The old hands who were there before the days of respirators, forced draughts, and Factory Acts and whose lungs are consequently impaired, complain that the respirators "choke" them. They say they cannot wear the things and they won't.

2. Many of the piece-workers find that they can work more productively without masks, and so discard them.

3. The empty-headed type of girl often will not wear a respirator because 'it makes her look silly.'

4. The force of example to beginners is almost entirely absent; only the few men employed are really keen on wearing the masks".

Grieve did not consider the possibility that the human element in management might defeat legislation.

Under the heading of "Precautions taken against the dust", the examiners were informed:

"Welfare work is carried out on a more than generous scale by the management whose policy is to ensure an ample dietary at all times. A heavy three course meal is provided daily for a few coppers; when an employee is ill, money, eggs, milk, chicken and wine are supplied freely and even Consultant's fees may on occasion, be paid".

If Grieve's shifting the responsibility for their disability and death to the victims, was approved by his MD examiners, they too would come under the censure of Selikoff and Benda.

Professor Matthew Stewart

On behalf of the Medical Research Council, Professor Matthew Stewart recruited a group of clinicians and physiologists at his University, and designed a research programme for the study of local workers diagnosed by Merewether in 1931 as having asbestosis, with a view to advancing knowledge about the disease[32]. Merewether declined to assist on the grounds of medical confidentiality, and access to the factory to conduct examinations of workers was denied by Management for fear of causing panic.

Stewart's initial response was an aggressive one: he made plans to conduct the examinations of affected workers outwith the factory. The sabre rattling was muted after convivial meetings with management, as described in detail in his diary. A *modus vivendi* was reached with the management of the local factory: the MRC study was abandoned, and Roberts Asbestos housed batches of Stewart's guinea pigs in their factory, out of whose study very little emerged. Stewart was retained as a consultant by the Leeds asbestos factory and in due course by the Company's Rochdale factory. He was required to oversee the verdicts of Coroners, and to evaluate the opinions of their pathologists. The involvement by the defence of a professor of pathology was a valuable incentive for a settlement by which compensation payments could be cut. The identification of an asymptomatic bronchial malignancy, in a histological section in a case of asbestosis, would be adduced in support of death having been due to natural causes.

1930 would have been an impropitious time for Academics to be perceived to be antagonistic to Industry. Workers representatives would not have

been pleased to have a advocate espousing health and safety initiatives as they were persuaded that they would constitute an unwarranted threat to jobs. Leeds University Medical Faculty received a substantial donation from an industrialist, by which it was enabled to enhance its academic status by building a State of the Art Pathology Department. There is no suggestion that this was a *quid pro quo*, but it is reasonable to conjecture that it was in the interest of Leeds University not to be at odds with industry.

Dr Wyers: Cape Asbestos, Barking

The medical officer to Cape Asbestos, Barking, submitted an MD thesis based on 98 known deaths at Cape, Barking, from asbestosis alone or complicated by other diseases such as tuberculosis and carcinoma[33]. With a mean age at death of 34.9 years and the average exposure to asbestos of 7.6 years (range 24.0 - 0.75 years), this was not significantly different from observations made in 1932 (three years later the total number of known fatal cases at Cape was reported as 115).

Wyers was not of the school that made light of the condition, but on the contrary observed that the diagnosis was: *"... in most cases a warning of dissolution in the not very distant future"*.

Further on in his thesis, in relation to lung cancer, an association that the industry was to deny to be causal for a number of years, he advocated caution.

> *"...evidence already accumulated seems to favour a causal connection between asbestosis and pulmonary cancer and humanitarian motives may decide the public conscience not to wait for scientific proof before insisting on more stringent safeguards agains dust inhalation"*.

He held that, much as it has been held that the treatment of tuberculosis was determined by finances, in a similar manner this was true for the treatment of pulmonary fibrosis. The mainstay of the management of tuberculosis at that period was rest in an equable and clean environment, and a nutritious diet, but in the case of asbestosis the grim reaper was not to be bought off by food and leisure.

Prevention of asbestos-associated disease was perceived by the drafters of the Asbestos Regulations 1931 to require the total containment of dust containing asbestos, a feat that was never to be achieved. Implementation of this policy was neither technologically nor economically practicable. Wyers recognized that this implied a total ban, but considered that it was not an option, arguing:

> "1 *No one would suggest the abolition of coal mining or deep sea fishing on account of their dangers, because they are vital to the welfare of the nation*.
>
> 2 *Indeed, there is scarcely any industry which does not depend to a more or less degree upon asbestos. To take this valuable mineral away from a nation, therefore, would put back that nation's capacity by half a century, a blow which this country, at any rate, could not survive"*[33].

Wyers was writing after the Second World War, before complete demobilisation when food, clothes and furniture were still rationed and there were shortages of fuel and raw materials in Britain and starvation in Europe. The prevailing exhortation, "Export more or die", was an apocalyptic one, and was employed to justify the continued use of asbestos, asbestosis and lung cancer notwithstanding. His examiners, being children of their time, found for his thesis: "*that legislative measures have proved generally effective in the control of asbestosis*", although the statistics presented in support were not convincing.

His successors were to acquire a wealth of experience of asbestos-related diseases from following up Cape workers at East Ham Chest Clinic, at Victoria Park Hospital and in the mortuary of the local Coroner's pathologist, but remained loyal to the company, steadfastly defending its interests long after Cape Asbestos, Barking ceased operations.

The *clercs* and asbestos in the latter part of the 20th Century

There was an exponential rise during the latter part of the 20th Century in the volume of published and unpublished human and experimental evidence for the hazardous nature, mechanisms and extent of the malignant and non-malignant diseases associated with exposure to dusts containing asbestos. The number of *clercs* involved increased in parallel and

the pattern of their behaviour essentially followed that of their predecessors.

Experience teaches that those who investigate and report the nature and orders of occupationally determined diseases, commonly find themselves at odds with industry. In the case of asbestos, those who persisted in proclaiming it to be a major 20th Century international public health hazard, had to endure the odium of industry, and the reward for those who continued to function as an 'attorney to the poor', was to be baited by industry and its creatures.

There were scientists who contributed to knowledge about the adverse effects of asbestos and, after initially rousing the ire of industry, came to an accommodation with it. Identifying with the proponents of the asbestos-associated disease epidemic, proved to be no bar to achieving glittering academic prizes, and was rewarded, either directly or indirectly. In a recent review of how the industry succeeded in defending the indefensible for so long, the authors have provided chapter and verse on how much respected scientists gave assistance to lawyers defending companies against claims for industrial injury, and to industry's public relations experts[34].

Envoi

Selikoff's talent for producing effective "sound bites" for the media made him a thorn in the flesh of the public relations agents employed by industry to promote asbestos and neutralize opposition. To arrive at its simplicity, the bite required the exercise of shrewdness. Irving Selikoff's shrewdness was not in question and equipped him to take the long view. From his damp cloud Selikoff will be witnessing the progress of the public health war that he initiated against asbestos, and how, with the support of international bodies including ILO, WHO, IARC, IPCS, EC, WTO and the World Bank, it is slowly but surely progressing towards a Global ban.

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