News, Notes and Queries

LEGISLATION AND ACCIDENT PREVENTION: A HISTORICAL REVIEW*

by

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SINCE 1844 there has been legislation in Great Britain to prevent accidents in premises subject to the Factories Act. This legislation was the first of its kind, was continously adapted in the light of experience and has been a pattern for legislation to prevent accidents in many countries.

The first factory legislation such as Sir Robert Peel's 'Health and Morals of Apprentices Act' was concerned with hours of work, cleanliness and education. Enforcement depended on visitors who were magistrates or church ministers and these Acts applied only to apprentices in the cotton trade.

The Factory Act of 1833, though equally limited to the cotton trade (about 3,000 factories), dealing only with age of employment, hours of work, education and cleanliness, was vitally different in that Inspectors were appointed with the power to enforce the Act. The Commissioners, on whose report the provisions of this Act was based, had considered the problem of accidents and by 1840 the Inspectors were paying special heed to this great problem. They were asked to report to the Secretary of State and one Inspector wrote, 'Within the last few months, I have had eleven accidents reported to me. Among them are four cases of death, a man, a boy of seventeen years, a boy of fifteen years and a child of eight years. The first and third case were caused by carelessness in respect to straps, the second case by a lad's arm being caught by the workers of a tenter willey which might have been protected and the last case, bringing his father's breakfast, by being caught on an unguarded upright shaft'.

Dr. Robert Baker, a Factory Inspector in Leeds, attempted to survey the incidence of accidents. He found that in one hospital, from mill accidents alone, there were thirty-three in-patients of whom nineteen were below the age of fifteen and 228 out-patients of whom seventy-six were below the age of fifteen. He commented 'how much greater the actual amount is cannot be ascertained for it must be remembered that this is a return from only one public institution, where there are several open for the reception of like accidents, independently of the private houses to which many apply.'

As a result of these enquiries an Act was passed in 1844 with specific provisions against accidents. The Act prohibited women and young persons cleaning transmission

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machinery whilst in motion and required the fencing of such dangerous parts of machinery as flywheels. The Inspector could require the Occupier to fence other dangerous machinery which instruction, if resisted, could be taken to arbitration before the justices.

The 1844 Act also required that medical practitioners, who certified that the young persons entering the factory were at least nine years old, should be appointed by the Factory Inspector. Previously any local practitioner had done this work, a system that had led to much abuse. The Certifying Surgeons appointed under the new Act were required to investigate without delay any accident in a factory that prevented the worker returning by 9 a.m. on the following day. An interesting section of the Act provided that the fines imposed by the Justices might be used for the benefit of young persons' education.

This Act was a major step forward but applied only to textile mills and was successfully opposed by factory occupiers both locally and by their obtaining amendments to it in Parliament in a further Act of 1856. However, the trend to increasing the legislation for safety in factories soon continued and Acts between 1861 and 1867 placed virtually all factories employing fifty persons or more under the Act and in 1871 workshops which had been under the supervision of local authorities were also included. The confused factory legislation of that date was codified in the Act of 1878.

In 1880 the passing of the Employers' Liability Act was found to have a great effect in providing an added incentive to employers to enforce safety measures. In 1895 courts of summary jurisdiction were given power on the complaint of an Inspector to make orders prohibiting the use of dangerous machines or factory until they were made safe, and this Act applied to docks, wharfs, quays and warehouses. Since that time legislation to prevent factory accidents has consisted in extension of the scope and application of the Act, and the making of special rules and regulations for special dangers.

SPECIAL REGULATIONS

In 1833 the Factory Inspectors held the unusual position of enforcing the Act, acting as magistrates in regard to the Act and being also required to make such rules, regulations and orders as might be necessary, which regulations had the force of law. In 1844 this latter power was transferred to the Secretary of State.

In the early days of the Factories Act as now, the reports of the Inspectors on special risks often formed the basis of subsequent legislation, but in 1867 an Act authorized employers themselves to make special regulations for dangerous trades subject to the approval of the Secretary of State. Under the same Act for the first time certain classes of workers could be excluded from particular work. In 1891, the Secretary of State was given power to make special rules applying to processes certified by him to be dangerous to life or limb. The special rules, however, only applied to individual works in which they were formally adopted. The first codes were made for chemical works, explosive works and for the bottling of aerated water. This rather unsatisfactory system was replaced in the Consolidating Act of 1901 by empowering the Secretary of State to make regulations for any manufacture, machinery, plant, process or

description of manual labour used in factories he certified as dangerous. This method has been widely used and there are now over forty such safety regulations.

These Regulations are made after a need for them has been proved from information from Inspectors, other official departments, trade unions and other bodies, and are drawn up following detailed discussion with all interested parties and sometimes the formulation of many drafts. They may be thought of as requiring the standard of safety that the good and enlightened employer using the particular process has already adopted. They range from the simple Felt Hat Regulations of 1902 against fire to the detailed Ionising Radiations (Sealed Sources) Regulations of today.

NOTIFICATION OF ACCIDENTS

The 1844 Act required the notification of any accident that prevented the injured person working next day to be reported to the Certifying Surgeon. This system was found to be unsatisfactory and in 1867 48-hour absence was adopted as a standard in iron mills and blast furnaces and in 1871 generally. The Act of 1891 required an accident that prevented the worker doing five hours' work on any day during the ensuing three days to be reported and the Notices of Accidents Act 1906, required notification for absence of one day for machinery accidents and more than seven days for non-machinery accidents. The Workmen's Compensation Act, 1925, laid down the present standard, that an accident is reportable if it is fatal or if it disables anyone employed in a factory from earning full wages at his ordinary work for more than three days. Notification of certain accidents to the Certifying Surgeon was required from 1844 to 1916: they now only investigate accidents such as gassing which are referred to them by the District Inspector.

An enquiry into the efficiency of notification was made during April 1964 in co-operation with the Ministry of Pensions and National Insurance by comparing successful claims to Industrial Injuries Benefit arising out of accidents in factories, construction sites, docks, etc., with particulars of accidents received by the Factory Inspectorate. It was found that approximately 38% of accidents which appeared to be reportable had not been notified to the Factory Inspectorate.

YOUNG PERSONS

Since the first reports of the Factory Inspectors in 1833 to the present time the high incidence of accidents in young persons has been noted and has been reflected in legislation by barring them from certain employments where inexperience and high spirits are an especial risk, and in certain cases requiring a medical examination.

FIRST AID

First aid in factories was originally mentioned in the Act of 1901, but long before this a first aid service had been available in some factories. First aid boxes were required under certain regulations made after 1901 and the 1937 Factories Act required that certain first aid boxes must be in charge of a responsible person trained in first aid. At the present time a first aid box is required in every factory and if over fifty are employed it must be in the charge of someone trained in first aid and holding an up-to-date certificate in first aid or similar qualification. Every effort must now be

shown to have been made to provide someone trained in first aid. The contents of first aid boxes are laid down by statute but exemption from the provision of first aid boxes may be given where there is an adequate works surgery.

ADMINISTRATION

The first four Factory Inspectors, among whom Leonard Horner, F.R.S., is generally considered *primus inter pares*, were independent of each other, making their own regulations and concentrating mainly on hours of work, age of young persons and education and reporting separately to the Secretary of State. In 1858 the four principals were reduced to two, Dr. Robert Baker and Alexander Redgrave, the latter becoming Chief Inspector in 1878 on Dr. Robert Baker's retirement. He was succeeded in 1896 as Chief Inspector by Sir Arthur Whitelegge, previously Medical Officer of Health of the West Riding of Yorkshire, in whose time many of the foundations of the present law were laid. The original staff of four Factory Inspectors of 1833 has now grown to 460, including specialists, chemical, engineering, electrical and medical.

VALUE OF LEGISLATION

The difficulties in judging the value of legislation were recognized by a departmental committee on accidents in 1911, which found that any numerical proof or even indication that lessened accident risk followed improvements, unfortunately could not be given on account of the unknown influence of the many variables operating on accident frequency.

Sir Duncan Wilson, Chief Inspector in 1939, in a paper to the Royal Statistical Society, stressed the same point. Figures cannot be provided because methods of manufacture are continually changing, the numbers at risk vary, the standards of definition of an accident have changed, the percentage of notification may vary as may degrees of employment, insurance benefits, pay during sickness and the amount of voluntary schemes for safety. The complexity in regard to the efficiency of Regulations is shown in the Chief Inspector's report for 1953. In that year, of the accidents caused by particles and splashes in the eyes, only a small proportion occurred in the processes where eye protection was legally required, for which there are two possible reasons—that legislation is succeeding, or that it is too limited in scope. That legislation is limited in scope is well known, but when the large variety of causes of eye accidents is studied, it is realized how complex is the problem of usefully extending legislation.

No one, however, can read the early reports and have any doubts of a great decline in the incidence of serious accidents in factories. Evidence is available in figures such as Dr. Robert Baker's in 1840 already quoted and Sir Wilfred Garrett's reminiscences in 1941 of a large steel works which he had known all his career from a junior to chief inspector in which the number employed had remained stable. In 1911 the works had an average of two fatal accidents a month and a ward in the local hospital was known by the name of the factory because it was always full of factory accidents. In 1941 the ward was no longer exclusively filled with factory accidents and the works were much disturbed at more than two fatal accidents a year. In 1965 it is certain that this accident rate has been equally reduced.

The value of legislation and the speed with which it may be introduced depends to a large extent upon public opinion. In a special supplement on the Factory Act of 1937 an earlier statement of the *Times* on public health legislation is quoted 'Mr. Chadwick and Dr. Southwood Smith have been deposed. The people of England prefer to take their chance with cholera and the rest rather than be bullied into health'. Parliament continued to pass legislation to prevent epidemic disease and factory accidents but as the *Times* says 'legislation has never been allowed to advance too far in front of public opinion.'

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ELMSLIE AND FIBROCYSTIC DISEASE OF BONE

by

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IN the early years of this century, orthopaedics began to emerge as a special branch of surgery. Its practice had until that time been largely empirical and its problems were considered to be anatomical and mechanical. Little clinical thought had been given to the basic sciences of physiology and pathology and their application to orthopaedics. One of the few exceptions to this was the work of Sir James Paget and Bowlby in their original observations on osteitis deformans. They combined clinical and pathological observations on this condition so that an easily recognized disease emerged.

Reginald Cheyne Elmslie was born in 1878, two years after Paget read his paper to the Medico-Chirugical Society, but when he arrived as a student at Paget's hospital in 1895, no further significant advances had been made in the basic pathology of bone disease. The detailed and exhaustive pathological observations of the German pathologists had created a maze of confusion because they were not correlated with clinical findings. It remained for Elmslie to explore this field, and apply his genius to relating his own clinical experience with his profound knowledge of pathology.

Soon after qualifying in 1901 he took an appointment in the Pathology Department at St. Bartholomew's Hospital where he remained for five years. During this time he developed his pathological approach to clinical problems. The fruits of this work are seen in his Essay, *The Pathology and Treatment of Deformities of the Long Bones Due to Disease Occurring During and After Adolescence*, for which he was awarded the Jacksonian Prize in 1905. In this he reviewed a remarkably wide field of bone pathology including his own original observations on the aetiology of coxa vara which remain one of his most enduring contributions to orthopaedics. There was no direct mention of fibrous osteitis (fibrous dysplasia). He did however comment that Von Recklinghausen described cysts in osteitis deformans but Elmslie had some doubt