

HEALTH AND SAFETY IN THE COTTON INDUSTRY: A LITERATURE SURVEY

Arthur McIvor

*The cotton operatives, men and women, work hard and work long in hot stuffy air, midst eyedazzling machinery and earsmiting thunder, liable to all sorts of accidents in the mills, liable, because of their occupation, to catch chest complaints when they leave the mill; getting few holidays and unable often to afford a holiday when the factory engine is stopped for this purpose; weakening and debilitating themselves physically, mentally and even morally, and transmitting to their children their ruined constitutions and feeble frames. (Allen Clarke, *The Effects of the Factory System*, 1899)*

Recently, in Britain and elsewhere, labour historians have increasingly diverted their attention from the institutions of the labour movement, notably trade unions, towards more systematic investigation of the labour process and the workplace (Joyce, 1980, 1987; Price, 1986). Similarly, a strand of medical historians have broadened their interests to incorporate the health experience of ordinary working folk (Smith, 1979; Wohl, 1983). This pincer movement has facilitated something of a re-discovery of occupational health and safety resulting in a cluster of studies investigating the interactions between employment and health, discussing such issues as industrial fatigue,

traumatic injuries and the prevalence of industrial disease. Some of this work challenges the prevailing "Whiggish" orthodoxy, deeply embedded within labour historiography, that the period from the 1830s to World War Two witnessed a unilinear trend of progressive amelioration in factory work conditions and a commensurate incremental decline in work injury, mortality and disease incidence. (Hunt, 1981)

This rekindled interest in work as a site of morbidity and mortality has inevitably led to growing attention to the politics of occupational health and exploration of the attitudes and strategies of the key players: capital, labour, the medical profession and the state. In 1983, Anthony Wohl, in his text on public health in Victorian Britain, evocatively titled *Endangered Lives*, included a chapter on industrial disease where it is persuasively argued that the factory provided "the perfect nexus" for aggravating ill-health. The same year saw the publication of Bartrip and Burman's detailed, largely socio-legal, analysis of workers' compensation policy in the nineteenth century, followed by a sequel taking the analysis through the twentieth-century (Bartrip, 1987). Against the prevailing "optimistic" interpretation of the 1896 Workmen's Compensation Act, Bartrip and Burman convincingly argue that this legislation failed either to adequately compensate injured or diseased workers, nor to significantly raise safety standards. A more



Cotton operatives, Rochdale, c.1900.

sceptical interpretation of workmen's compensation has also been developed by a number of American scholars (Rosner and Markowitz, 1986). Some of this new work – including revealing material on other countries – was pulled together by Paul Weindling in an edited collection of essays, published in 1985. This text remains a key starting point for all those history students interested in work-health interrelationships.

How prominently has the British cotton industry featured in this revival of interest in the history of occupational health and safety? There have been a series of thoughtful and insightful studies, which will be considered in more detail below. However, the overall impression is that this remains a woefully neglected theme, with research proceeding only around the fringes of this topic. This is in marked contrast to the USA. Certainly we have nothing of the quality of Beardsley's pioneering, context-sensitive study of textile workers' health within the southern mill communities in the USA (Beardsley, 1987) or Gersuny's painstaking investigation of work injuries and the legal process in the Massachusetts cotton industry (Gersuny, 1981).

In the British context, the work of Patrick Joyce (1980) has been of pivotal importance. Joyce revived interest in the textile workplace by focusing attention upon the notion of work as a cultural as well as an economic activity and gave textile history a large shove away from the oversimplistic concept of "dark, satanic mills" run by draconian millowners. Students of cotton textiles were alerted to the existence of a range of factory regimes, the marked divergence in work conditions within the industry and the prevalence of paternalist labour strategies amongst the Lancashire millocracy in the mid-Victorian period. Joyce counterposed the large "progressive" and paternalist millowner who accepted and worked within the Factory Acts with the smaller manufacturers who more frequently evaded legal requirements and who attempted to compete invariably by depressing labour costs and jeopardising health standards. Whilst alluding to such matters, however, Joyce (1987, 1990) does not set out to systematically investigate work-health interactions, occupational health trends, nor to analyse workers' attitudes, nor the strategies of trade unions, the state or the employers on health and safety issues. In 1990 Joyce lamented:

... what may be termed the interior life of the workplace is still largely opaque to us, the everyday arrangements of production and the customs and attitudes shaped in work... What was the level of noise, dirt and disease, and how were workers affected outside work by, say, deafness or hereditary and perhaps caste-like occupational ailments...? (pp.172-3)

Where research has attained something approaching a critical mass has been on the political economy of occupational health. The evolution and efficacy of state intervention in factory work conditions and the role of professionals – notably the civil service and doctors (on the latter, see Gray, 1991) have been subject to quite intensive debate. Some contextual background can be found in Hutchins and Harrison's account of factory legislation (1926) and in J. T. Ward's standard account (1962) though the latter now appears rather dated and somewhat anecdotal. Quite recently a vigorous debate has developed on the effectiveness of the early factory legislation, c.1833-1870, and the efficiency of the policing mechanisms linked with the factory Inspectorate (Bartrip, 1985; Peacock, 1984;

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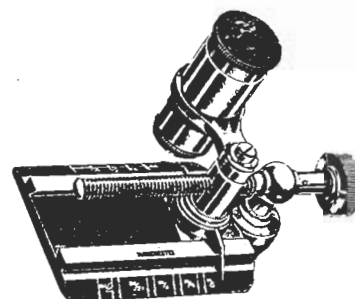
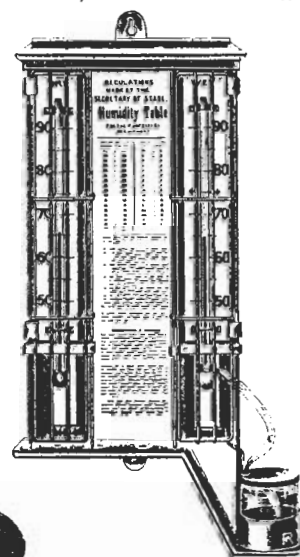
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Gray, 1991; McFeely, 1988; Fowler, 1987; Bolin-Hort, 1989). Interpretations range from Bartrip's gloomy prognosis – largely accepting Marx's critique – of an inept and corrupt factory inspectorate, to Peacock's revisionist thesis stressing the relative success of early attempts to regulate the factory environment. McFeely's rather superficial investigation of the work of the first female factory inspectors, 1893-1921, provides a refreshingly different dimension (on this theme see also H. Jones, 1988) and, again, a pessimistic assessment of the Factory Acts which, she argues, were only "sporadically effective... non-compliance was evident everywhere". More explicitly feminist perspectives on factory legislation have also been developed recently (L. Fowler, 1987; Walby, 1986; Harrison & Mockett, 1990). In a provocative commentary on original documents, Lesley Fowler persuasively argues that the pattern of factory legislation in the nineteenth century reflects the state's concern to protect motherhood, rather than protect workers per se. To corroborate this interpretation Fowler contrasts the relatively successful campaigns to shorten the work hours of women and children against the relatively unsuccessful campaigns to ban shuttle-kissing, steaming and fining. This timely emphasis upon the anxiety and stress caused by the traditional mill disciplinary mechanism of fining reminds us of the need to adopt a much broader approach to the work-health interaction.

State intervention in factory conditions intensified in the late nineteenth century, with the passage of no-fault compensation legislation and the further extension of

WORK INJURIES AND FATALITIES, UNITED KINGDOM, 1910-14

	I.	II.	III.	IV.	V.
	Employed	Injuries	%	Deaths	%
MINES	1,075,780	177,684	16.52	1,477	.137
DOCKS	138,273	15,463	11.18	200	.144
QUARRIES	87,466	5,751	6.58	77	.088
RAILWAYS	457,560	24,026	5.25	416	.091
SHIPPING	252,980	7,904	3.12	497	.196
COTTON	598,300	11,818	1.98	44	.007
WOOL/WORSTED	279,300	3,233	1.16	21	.008
OTHER TEXTILES	227,100	3,152	1.39	15	.006
TOTAL TEXTILES	1,104,700	18,202	1.65	80	.007
WOOD	137,600	5,424	3.94	39	.028
METAL SMELTING	414,480	34,320	8.28	168	.041
METAL WORKING	801,460	39,865	4.97	155	.019
SHIPBUILDING	306,720	29,687	9.68	199	.065
PAPER & PRINTING	313,880	4,470	1.43	23	.007
POTTERY	68,330	1,296	1.90	8	.012
MISC.	2,005,940	49,838	2.48	342	.017

Source: Derived from data in the 18th Abstract of Labour Statistics, 1926, Cmd. 2740 (compiled from statistics gathered under the Workmen's Compensation Acts).

Notes: I. Annual average numbers employed 1910-14. II. Annual average of injuries for five years, 1910-14. III. Percentage II. to I. IV. Annual average of fatalities for five years, 1910-14. V. Percentage IV to I.

policing mechanisms. The number of inspectors rose faster than production units and Helen Jones (1988) has demonstrated how the functions of the inspectorate changed markedly over time, with the traditional policing role performed by the factory inspectors giving way progressively to an advisory and educative function. Progressively, the inspectorate became increasingly functionalised, with pivotal developments in the 1890s with the appointment of female inspectors and the creation of medical inspectors designated to monitor industrial disease. The first factory inspectors drawn from the working class were appointed, including one prominent cotton trade unionist, Thomas Birtwistle. However, whether this extension of the functions of the state constituted a vital ameliorative mechanism, contributing significantly to improving safety standards, as the Webbs (1906) argued (with specific reference to cotton), is disputable. On the one hand, the cotton industry had a relatively low injury and death rate by the First World War, both in comparison to other regulated "dangerous trades" and other factory-based industries, such as wood and metal manufacture. Certainly injury rates were declining markedly over the long term, a trend replicated in coal mining. The injury rates in cotton, of around 2 per cent over 1910-14, compared very favourably with other industries (see Table) and with the rate of around 9 per cent discovered in a detailed survey by the factory inspector Horner in 1844.

However, Bartrip and Fenn (1988) have recently argued a case for the relative ineffectiveness of the factory inspectorate over 1880-1914, using quite sophisticated regression analysis. If safety standards improved over 1880-1914, it may well have been in spite of, rather than because of, increased activity on the part of the state.

Bartrip and Fenn focus on the general picture, examining the factory sector as an entirety. The situation in cotton

factories remains to be investigated. However, I would be less sceptical about the operation of the factory code in cotton mills by World War One. This was undoubtedly an ameliorative force, though blunted by a tendency towards intensification of work, ignorance and evasion. Evidence suggests that at least some components of the regulatory system were operating ineffectively in the early decades of the twentieth century, including the Certifying Surgeons child fitness examinations and the procedure of secret mill visits by the inspectors. How many factories duplicated the example of the Rochdale mill which utilised a bell warning system linking the gatehouse to the mill to warn of the imminent arrival of the inspector! Provision remained limited and patchy and a gap continued to exist between the legislation on paper and in practice. Furthermore, economic and political circumstances could seriously undermine policing mechanisms, as, for example, during the 1920s and 1930s. Significantly, there remained marked age and gender differentials in injury rates, with young workers being far more injury prone than adults (half-timers were more than twice as injury prone as adult cotton workers in the 1900s), and male workers being significantly more injury prone (about three times more in the 1900s) than female workers. There could well be some underreporting here, as with other official sources relating to female and child labour. However, one suspects that the gender differential was largely the product of the sexual division of labour in the industry. The persistent high rate of work-related injuries amongst younger workers highlights a further limitation of factory legislation. Cleaning machinery whilst in motion was a major cause of injury to young cotton workers. Though it was banned by factory legislation this particular hazardous practice proved tenaciously difficult to eradicate.

Child labour in textile factories remains a controversial

area, and one that has recently come under closer scrutiny. At one extreme there lies the classic interpretation of E. P. Thompson (1963), recently reaffirmed by John Rule (1986), that the early factory system involved an intensification of child exploitation. Against this, Nardinelli (1990) has argued that child factory workers were more than adequately compensated for their abuse by the wages they earned which enabled themselves and their families to be drawn over the poverty line. Few, I suspect, will be convinced by Nardinelli's sanitised and overly quantitative assessment of the quality of life, which, though stimulating, includes some serious errors of judgement. Much more persuasive and balanced is Per Bolin-Hort's detailed and stimulating assessment of the decline of child labour in the cotton industry over the period 1780-1920 (1989). Adopting a comparative approach (England; Scotland; USA) Bolin-Hort outlines the variety of patterns in child utilisation in the industry and persuasively argues against the technological determinist view which pervades the literature, suggesting instead that state regulation was, indeed, critical in causing the decline and eventual abolition (with the Education Act of 1917, which abolished half-time working) of child labour in cotton manufacturing.

Bolin-Hort also provides another dimension to the debate on the effectiveness of the early Factory Acts. His research shows that the 1833 Act was most effective in Scotland and that by 1845 the child labour clauses of the Factory Acts were thoroughly enforced in England. However, he does allude to the fact that other components of the factory code were much more difficult to enforce, including hours regulation and safety.

Child labour and factory legislation aside, systematic historical research on patterns of occupational health and safety and the politics of cotton workers' health is hard to find. There is nothing of substance on cotton workers in Smith, Bartrip and Burman (1983), Weindling (1985) nor in Walton's recent social history of Lancashire (1987). Wohl (1983) devotes only one paragraph to industrial health in cotton textile manufacturing in the Victorian period, focusing on respiratory problems, and suggesting that such workers were "among the worst affected by industrial diseases". H. A. Turner's preoccupation with the structure of cotton trade unionism leads to a marked neglect of the labour process and minimal treatment of work-health interactions (1962). However recent historians of the cardroom workers, spinners and weavers (Bullen, 1984; Bullen & Fowler, 1986; Fowler & Wyke, 1987) have discussed the stressful and fatiguing nature of the work, analysed factory reform campaigns and identified some specific hazards such as the potential entanglement of workers in shafting, gearing and drive bands, and the inhalation of cotton fibres, particularly in the cardroom (see also Stearns, 1975). Elsewhere, I have drawn attention, very briefly, to the health hazards associated with employment in the cotton finishing sector (Jowitt and McIvor, 1988). By far the most significant contribution in this respect, however, has been Terry Wyke's detailed investigation of the killer disease which affected muleroom workers. Wyke charts the long thirty-year struggle between identification of spinners' cancer in 1922 and effective regulation, discussing the role played by employers, the state and the trade unions in getting the carcinogenic mineral oil controlled and eventually banned. Such work has drawn upon voluminous trade union and employers' records, government enquiries and much contemporary commentary, such as Allen Clarke's damning socialist critique of the factory system (1899) and Thomas Oliver's

more sanitised investigations of occupational health and safety across British industry in the Edwardian period (1902, 1908).

Occupational health and safety is clearly an industrial relations issue over which conflict between capital and labour ensued. But to what extent did millowners, workers and their collective organisations in cotton prioritise such matters? The prevailing view of British trade union policy in relation to occupational health is largely a negative one. Paul Weindling and Helen Jones have argued that unions prioritised wage issues and regarded financial compensation as more important than preventative measures designed to protect their members health. Commentators on cotton unions in the USA have argued a similar case (Levenstein, Mass and Plantamura, 1986). Trade unions according to this interpretation were part of the problem – they could and should have done more. However, does the evidence for the British cotton industry support such a damning indictment? I think not. The picture that emerges from closer investigation of the cotton unions is much more complex and less negative. In the early stages of union development organisational survival was undoubtedly prioritised, and health policies undermined by a fatalistic acceptance of high risks on the job. Smaller, weaker unions in the industry – for example in the bleachcrot – continued to virtually ignore hazards to health before World War One. However, this was by no means typical. By the last quarter of the nineteenth century the labour movement in cotton textiles had a relatively high profile on occupational health and safety issues. Coordination of the shorter hours

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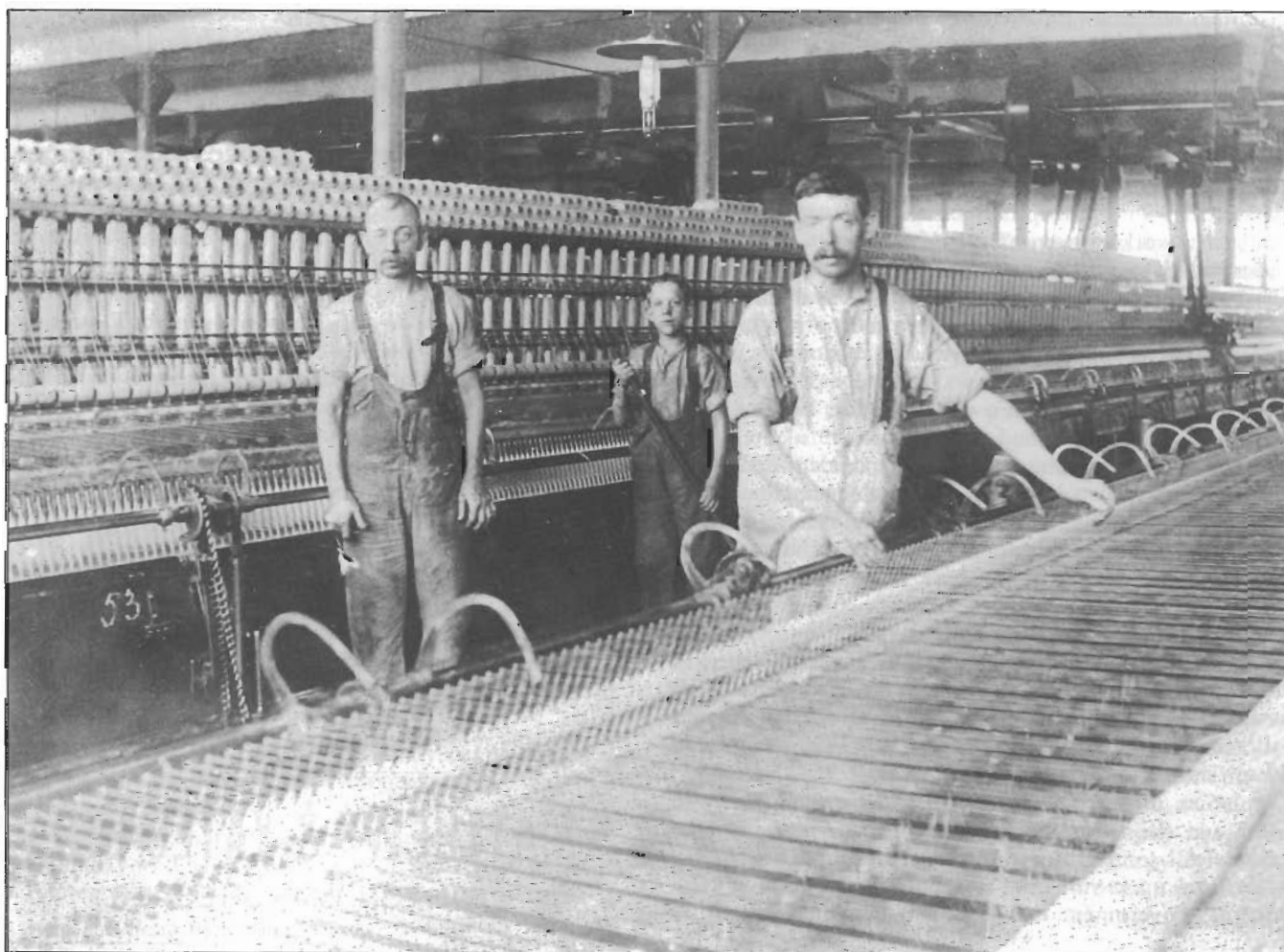
movements by the Factory Act Reform Association and, later, by the United Textile Factory Workers' Association would be prime examples, because, as Gray (1991) and Bullen (1984) have demonstrated, such campaigns were articulated in health terms – reducing hours would stem fatigue and this, in turn, could have an ameliorative impact on industrial injury rates. Turner (1962) has commented that the cotton unions were “quite outstanding” among all British unions in defence of the legal work day and opposition to overtime, being even more successful in this respect than the craft amalgamations.

The cotton unions also spearheaded campaigns against fining, steaming, cancer, byssinosis, shuttlekissing, bad material, work allocation and the infamous “more looms system”, obtaining, in all cases, some regulation of abuses, albeit frequently after long and bitterly fought out struggles with millowners. The details of many of these campaigns remain to be fleshed out. However, Alan Fowler (Jowitt & McIvor, 1988) has outlined the key role of the UTFWA, adding weight to the hypothesis of Helen Jones (1983) that the further up the union hierarchy one goes the greater the emphasis on occupational health issues. From the 1880s, the cotton workers newspaper, the *Cotton Factory Times*, also played an important role in educating millworkers to the hazards to health in their workplaces. This also merits more attention. The *Cotton Factory Times* certainly featured occupational health and safety issues prominently in its pages, in marked contrast to its equivalent in the United States, *Textile Worker*.

Much more systematic research is necessary to disentangle cotton union strategies on occupational health and safety

issues and identify changing attitudes and policies over time. Undoubtedly, with the benefit of hindsight, the unions could have done more. Perhaps Williams (1960) suggestion that the unions were reactive on this issue rather than innovative is a fair judgement. Nevertheless, there is enough evidence here to posit a reappraisal of the negative interpretation that pervades the literature. To regard the labour movement in the cotton industry as part of the problem would appear to be an injustice. At least from the last quarter of the nineteenth century, occupational health and safety was an integral part of the cotton unions' policy agenda, and, the evidence suggests, was being increasingly prioritised. Cotton unions played an active rather than a passive role in occupational health and safety and succeeded, through asserting collective pressure, in regulating dangerous processes and hence diminishing adverse work-health interactions. Perhaps this particular variable deserves more emphasis in explaining why cotton factory workers had one of the lowest rates of work injuries and mortality amongst all factory workers (see Table).

Employers' strategies on occupational health and safety issues have also been neglected by historians and merit much more attention. Joyce's identification of a range of factory regimes and the persistence of paternalist policies in the mid-Victorian period has been fruitful. Subsequent work by Steve Jones (1988) has charted the existence and explored the parameters of institutionalised welfarism in the cotton industry between the wars. Other commentators have argued that employers' attitudes were changing significantly over time, becoming more progressive (Walton,



Oldham Mule spinning team, c.1910.

actions of the medical profession on occupational health could usefully be scrutinised. Certainly there is much insightful material embedded within the medical literature on work-health interactions in cotton textiles which merits exploitation (see the Industrial Health Research Board Reports, e.g. Bradford-Hill (1930); Dearden (1927); Gill (1987); Middleton (1926)). The debate upon the efficacy of the Factory Acts could be informed by disaggregation to particular factory-based industries like cotton textile production and there is a place for an in-depth analysis of the impact of technological and organisational change – such as electrification – upon occupational health and safety standards. Finally, single issues such as steaming and, especially, byssinosis, merit in-depth investigation.

Such work could be justified on the grounds that it would illuminate other important and hitherto neglected aspects of the experience of ordinary people engaged in earning their livelihood by manipulating cotton fibres. Beyond this, however, there is a need for such research to be consciously dovetailed into existing debates within social and labour history, engaging, for example, in ongoing controversies over the standard of living, work intensification and degradation, union and employer strategies and the role of professionals. The upshot of such an expansive research programme would be to move the history of occupational health and safety out from the margins and place it where it rightly belongs, within the mainstream of British social history.

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