FROM FEVER TO DIGESTIVE DISEASE: APPROACHES TO THE PROBLEM OF FACTORY ILL-HEALTH IN BRITAIN, 1784-1833

by

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ABSTRACT

In the early decades of British industrialization, the ill-health of textile factory workers attracted considerable public interest and provoked discussion and debate among a growing number of medical men, operatives, manufacturers, and social and political commentators. Guided by previous studies of the "framing" of disease, this dissertation examines how such ill-health was conceived, designated and responded to in the period from 1784 to 1833.

The dissertation reveals that workers themselves held a relatively constant view of their condition. In the early part of the nineteenth century, they drew attention to a variety of ailments and throughout the period they saw a clear link between their maladies and the conditions of their labour. By contrast, medical understanding shifted significantly, and as it traced a course more or less at odds with that of popular comprehension, the nature and causes of worker suffering were substantially redefined.

In the 1780s and 1790s, doctors identified the illness of factory labourers as "low, nervous fever," an acute contagious disorder generated by the crowding and confinement of human bodies. A generation later, in the period from 1815 to 1819, the ill-health of mill workers was conceptualized, by a portion of the medical community, as "debility," a poorly-understood state of constitutional feebleness attributed to aspects of machine work. In the early 1830s, medical authorities regarded factory workers' sickness primarily as "digestive disease" and located its source in habits and diet.

The reconceptualization of worker ill-health yielded an ultimately optimistic

assessment of the consequences of industrial growth, failing to offer strong support to demands for legislative restriction of factory operation. It also served to sanction changing social relations through providing evidence of the physical and moral distinctness of the manufacturing population.

As medical theory altered, so, too, did practices of relief and assistance. While mill owners, and doctors, became increasingly unwilling to assume responsibility for the well-being of the industrial workforce, operatives engaged ever more extensively in practices of self-help. The expansion of the textile industry, however, ensured the continuation of their affliction and incapacity.

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INTRODUCTION

As textile mills assumed greater visibility in the landscape of early industrial Britain, so, too, the health of those who laboured inside the mills came to occupy a growing space in public awareness. In the late eighteenth and early nineteenth centuries, the condition of mill workers was a matter which provoked increasingly widespread concern and controversy. Medical men, as well as manufacturers and operatives themselves, became preoccupied with the possible links between machine production and human affliction and reacted in various ways to evidences of suffering and distress. Their shifting understanding of and responses to the ill-health of the manufacturing population form the subject of my dissertation.

The issue of worker ill-health has attracted historical attention since the 1930s, when it was taken up by the early American historians of medicine, Henry Sigerist and George Rosen. In 1936 Sigerist wrote an article on the "Historical Background of Industrial and Occupational Diseases" and corresponded with Rosen, urging him to undertake a full-length study of occupational health.[1] The following year Rosen published a short historiographical essay and in 1943 completed a monograph on The

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[1]Henry E. Sigerist, "Historical Background of Industrial and Occupational Diseases," Bulletin of the New York Academy of Medicine, 2nd series, 12 (1936), pp. 597-609; Elizabeth Fee, "Henry E. Sigerist: His Interpretations of the History of Disease and the Future of Medicine," in Charles E. Rosenberg and Janet Golden (eds), Framing Disease: Studies in Cultural History (New Brunswick, N.J.: Rutgers University Press, 1992), p. 303.

History of Miners' Diseases, to which Sigerist contributed an introduction.[2] After their pioneering efforts, several decades passed with little appearing on the topic.[3] The early 1980s, however, saw a resurgence of interest in occupational health on both sides of the Atlantic which has continued to the present, and which has expressed itself in conference gatherings, research projects, and a spate of books and articles.[4]

In their writings, Sigerist and Rosen argued for the need to take a broad social approach to the historical investigation of work-related sickness. According to Rosen, the "frame of reference" for such investigation should be "the social structure in its economic, technologic, political, religious and cultural aspects."[5] Later scholars have

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[2]George Rosen, "On the Historical Investigation of Occupational Diseases. An Aperçu," Bulletin of the History of Medicine 5 (1937), pp. 941-946; The History of Miners' Diseases: A Medical and Social Interpretation (New York: Schuman's, 1943).

[3]Exceptions include Ludwig Teleky, History of Factory and Mine Hygiene (New York: Columbia Press, 1948) and Donald Hunter, The Diseases of Occupations (London: The English Universities Press Ltd., 1955). A textbook on occupational medicine, Hunter's work contained a lengthy historical introduction and was reprinted several times in the 1950s and 1960s.

[4]In 1983 the British Society for the Social History of Medicine held a conference on "The History of Occupational Medicine," some of whose papers appear in Paul Weindling (ed), The Social History of Occupational Health (London: Croom Helm, 1985). In the same year the Hastings Centre in New York conducted a study of occupational health entitled "Moral Responsibilities and Moral Decisions in Science and Engineering." The results of the study are contained in Ronald Bayer (ed), The Health and Safety of Workers: Case Studies in the Politics of Professional Responsibility (New York: Oxford University Press, 1988). In 1994, at the annual meeting of the American Association for the History of Medicine, the Sigerist Circle met to discuss "Occupational Health and the Politics of Knowledge." In "Accidents and Ill-Health: The Hidden Wages of the Workplace," Social History of Medicine 3 (1990), p. 292, P.W.J. Bartrip links the swell of interest in worker health in the U.S.A. to the passing of the first federal Occupational Health and Safety Act in 1970.

[5]Rosen, "Historical Investigation," p. 945.

heeded their concern and have continued to be attentive to the role of economic, technological, political and cultural factors in shaping the experience of occupational illness and the introduction of measures aimed at alleviating or preventing it.

Some historians, such as Gill Burke and Alan Derickson, have shown how the technical innovations and economic expansion associated with industrialization increased the risks of disease, disability and death among workers.[6] Examination of the incidence of worker sickness has often preceded a study of the responses it has evoked among different and often-times conflicting social groups: workers and labour representatives; managers and industrialists; professionals, including doctors, public health authorities, and even insurance executives; and state officials. Historians have traced a variety of responses, ranging from fear, uncertainty, and apathy, to concern, conviction, and activism and have sought to elucidate the context of specific initiatives in the areas of health care, worker compensation, and preventive policy. They have revealed how "a complex and ever-changing configuration of cultural, economic and technical factors" is responsible not only for alterations in the labour process, but also for the introduction of safety devices, workplace inspectors, and compensatory schemes.[7]

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[6]Gill Burke, "Disease, Labour Migration and Technological Change: The Case of the Cornish Miners," in Weindling, pp. 78-88; Alan Derickson, Workers' Health, Workers' Democracy: The Western Miners' Struggle, 1891-1925 (Ithaca: Cornell University Press, 1988).

[7]Rosenberg and Golden, p. 186. In addition to works already cited, recent studies that investigate responses to occupational ill-health include: Anthony Wohl, Endangered Lives (London: J.M. Dent & Sons Ltd., 1983), chapter 10; David Rosner and Gerald Markowitz (eds), Dying for Work: Workers' Safety and Health in

Central to the issue of how the ill-health of workers has been dealt with in particular historical circumstances is the problem of how it has been conceptualized. The problem has been explored in various ways. A number of historians have drawn attention to the ideological content of putatively value-free, scientifically-based ideas concerning the relationship between work and health. Arlette Farge, for instance, has shown how the medical discourse of the late eighteenth-century French deputy inspector of workshops, Pajot des Charmes, expressed an ambiguous attitude towards the poor, as well as concerns for discipline and order.[8] In her study of tuberculosis in twentieth-century Wales, Lynda Bryder has revealed how medical discussion of high mortality rates supported economic interests and reflected the dominant ethos of self-help.[9] Studies such as these have added to the work of social historians of medicine who have questioned traditional assumptions regarding the privileged status of medical knowledge—and by extension, the legitimacy of the authority of medical practitioners—and who have promoted an alternative social-constructionist view of

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Twentieth-Century America (Bloomington: Indiana University Press, 1987); Helen Jones, "Women Health Workers: The Case of the First Women Factory Inspectors in Britain," Social History of Medicine 1 (1988), pp. 165-181; Barbara Harrison, "'Some of Them Gets Lead Poisoned': Occupational Lead Exposure in Women, 1880-1914," Social History of Medicine 2 (1989), pp. 171-195; Jacqueline Karnell Corn, Responses to Occupational Health Hazards: A Historical Perspective (New York: Van Nostrand Reinhold, 1992).

[8]Arlette Farge, "Work-Related Diseases of Artisans in Eighteenth-Century France," in R. Foster and O. Ranum (eds), Medicine and Society in France (Baltimore: Johns Hopkins University Press, 1980), pp. 89-103.

[9]Lynda Bryder, "Tuberculosis, Silicosis and the Slate Industry in North Wales, 1927-1939," in Weindling, pp. 108-126.

medicine.[10]

For such historians, it is not only the status of medical knowledge that is at issue, but the status of disease itself. While not denying the reality of pain and affliction in human lives, they have been concerned to show that the forms such distress assumes are socially constituted. As Peter Wright and Andrew Treacher have commented: "Illnesses really do exist, but as sufferings which have no necessary, transhistorical, universal shape....[M]edicine is a form of social practice which observes, codifies and understands these sufferings."[11] One scholar who has taken such an approach to the study of occupational disease is Karl Figlio. In an article in Wright and Treacher's essay collection, he argues that miners' nystagmus, a syndrome that affected British miners at the end of the nineteenth century and that was scheduled under the Workmen's Compensation Act in 1907, only acquired its existence through the medico-legal practices associated with the Act.[12] Another historian, Mel Bartley, has similarly maintained that heart disease assumed its modern guise as a disease of affluence rather than industry through practices of death certification and statistics

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[10]Peter Wright and Andrew Treacher (eds), The Problem of Medical Knowledge: Examining the Social Construction of Medicine (Edinburgh: Edinburgh University Press, 1982).

[11]Ibid., pp. 14-15.

[12]Karl Figlio, "How does Illness Mediate Social Relations? Workmen's Compensation and Medico-Legal Practices, 1890-1940," in ibid., pp. 174-224. See also his earlier "Chlorosis and Chronic Disease in Nineteenth-Century Britain: The Social Constitution of Somatic Illness in a Capitalist Society," Social History 3 (1978), pp. 167-197, and "What is an Accident?" in Weindling, pp. 180-206, in which he takes a social constructionist view of occupational accidents.

production.[13]

While the social-constructionist view of medicine has fulfilled an important task in revealing the degree to which medicine is socially and culturally constrained, it has, as Charles Rosenberg has observed, "lost something of its novelty during the past decade."[14] Associated with a brand of criticism that stressed the legitimizing function of theoretical knowledge and the dominating and oppressive features of modern society, it has seemed to some to be excessively programmatic and arbitrary.[15] In recent years historians of medicine have begun to express new concerns and to develop new orientations to the study of health and disease. They have, for example, directed greater attention to the lay experience of suffering and to the patient's contribution to the discourse on illness.[16] They have also taken a somewhat different approach to the problem of disease conceptualization, considering it in terms of "framing," rather than "constructing." As discussed by Rosenberg, "framing" describes the process of "perceiving, naming, and responding to" manifest symptoms of suffering and

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[13]Mel Bartley, "Coronary Heart Disease. A Disease of Affluence or a Disease of Industry?" in Weindling, pp. 137-153.

[14]Charles E. Rosenberg, "Introduction. Framing Disease: Illness, Society, and History," in Rosenberg and Golden, p. xiv.

[15]Ibid., pp. xiv-xv.

[16]See, for example, Roy Porter, "The Patient's View. Doing Medical History from Below," Theory and Society 14 (1985), pp. 175-198; Roy Porter (ed), Patients and Practitioners: Lay Perceptions of Medicine in Pre-Industrial Society (Cambridge: Cambridge University Press, 1985); Roy Porter and Dorothy Porter, In Sickness and in Health: The British Experience 1650-1850 (London: Fourth Estate, 1988); Dorothy Porter and Roy Porter, Patient's Progress: Doctors and Doctoring in Eighteenth-Century England (Stanford: Stanford University Press, 1989).

incapacity.[17] It encompasses both the defining of disease and the effects of such definition "in the lives of individuals, in the making and discussion of public policy and in the structuring of medical care."[18] According to Rosenberg, historians have neglected the "connection between biological event, its perception by patient and practitioner, and the collective effort to make cognitive and policy sense out of this perception."[19] His studies, and those contained in the volume edited by Rosenberg and Golden, seek to remedy the neglect.[20]

One essay, by Gerald Markowitz and David Rosner, examines an episode in the framing of occupational disease. It focusses on the controversy surrounding silicosis in mid-twentieth-century America and reveals how a flood of lawsuits from unemployed miners and quarrymen in the 1930s led to complex negotiations concerning the existence, nature, and etiology of the disease.[21] Markowitz and Rosner show how

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[17]Rosenberg, p. xiii. See also Charles E. Rosenberg, "Disease in History: Frames and Framers," Milbank Quarterly 67 (suppl. 1, 1989), pp. 1-15; and Charles E. Rosenberg, "Disease and Social Order in America: Perceptions and Expectations," Milbank Quarterly 64 (suppl. 1, 1986), pp. 34-55.

[18]Rosenberg, "Introduction," p. xvi.

[19]Ibid.

[20]See also Roy Porter, "Gout: Framing and Fantasizing Disease," Bulletin of the History of Medicine 68 (1994), pp. 1-28; Robert A. Aronowitz, "Lyme Disease: The Social Construction of a New Disease and its Social Consequences," Milbank Quarterly 69 (1991), pp. 79-111.

[21]Gerald Markowitz and David Rosner, "The Illusion of Medical Certainty: Silicosis and the Politics of Industrial Disability, 1930-1960," in Rosenberg and Golden, pp. 186-205. See also David Rosner and Gerald Markowitz, Deadly Dust: Silicosis and the Politics of Occupational Disease in Twentieth-Century America (Princeton: Princeton University Press, 1991).

silicosis attracted intense interest and then disappeared from view, as new groups pressed for recognition of other work-related disorders.

In its emphasis on the contested and contingent quality of disease definitions, Markowitz and Rosner's paper is similar to an earlier study by Daniel Fox and Judith Stone that also concerns itself with twentieth-century perceptions of lung disease.[22] Fox and Stone's article investigates the dispute over coal miners' illness that took place in the United States in the 1960s and discloses how, in a situation of political turbulence and medical uncertainty, miners succeeded in wrenching the definition of their condition away from medical experts and in having "Black Lung," rather than "Coal Workers' Pneumoconiosis," established as a compensable disease.

My dissertation also investigates the framing of occupational disease. It does so in the context of a period little discussed by historians of occupational health and yet one whose rapidly changing conditions offered fertile ground for framing: the late eighteenth and early nineteenth centuries. This was the era of the industrial revolution and the establishment of the factory system of production.[23] Both the number of

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[22]Daniel M. Fox and Judith M. Stone, "Black Lung: Miners' Militancy and Medical Uncertainty, 1968-1972," Bulletin of the History of Medicine 54 (1980), pp. 43-63.

[23]Phyllis Deane, The First Industrial Revolution (Cambridge: Cambridge University Press, 1967); Julian Hoppit, "Understanding the Industrial Revolution," The Historical Journal 30 (1987), pp. 211-225; Arthur Young, "State of the Cotton Manufactory of Great Britain," Annals of Agriculture 12 (1789), pp. 513-520; Edward Baines, History of the Cotton Manufacture in Great Britain (London: H. Fisher, R. Fisher, & P. Jackson, 1835); Jennifer Tann, The Development of the Factory (London: Cornmarket Press, 1970); S.D. Chapman, The Early Factory Masters: The Transition to the Factory System in the Midlands Textile Industry (Newton Abbot: David & Charles, 1967); S.D. Chapman, The Cotton Industry in the Industrial

factories and the number of children, men, and women employed in them increased at an astonishing rate in Britain as advances were made in the technology of preparing, spinning, and weaving textile fibres. While there were only two mills in Manchester and its environs in 1782, there were ninety-nine in 1830. By 1833, the country as a whole contained over eleven hundred cotton factories, employing some 208,000 individuals.[24] My study considers how the manifest malaise of a new and rapidly increasing group of workers, the first to bear the brunt of large-scale machine production, was apprehended and dealt with. Its examination extends from 1784, when a group of Manchester doctors was called upon to investigate an outbreak of "factory fever" at the small cotton manufacturing town of Radcliffe, to 1833, when a landmark factory act, the "Act to Regulate the Labour of Children and Young Persons in the Mills and Factories of the United Kingdom," came into effect.

Although historians have directed attention to isolated incidents and to certain key figures in the early discourse on factory health, previous investigation of the period has been partial and limited. It has also been misleading, in that it has singled out Charles Turner Thackrah, a Leeds surgeon whose study of The Effects of Arts, Trades, and Professions appeared in 1832, as the first to inquire into occupational health

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Revolution (London: The Macmillan Press, 1972).

[24]J.T. Ward, The Factory Movement 1830-1855 (London: Macmillan & Co. Ltd., 1962), p. 4; Chapman, Cotton Industry, p. 70; B.R. Mitchell and Phyllis Deane, Abstract of British Historical Statistics (Cambridge: Cambridge University Press, 1962), p. 187.

matters in Britain and as the original proponent of the concept of industrial health.[25] My study shows that Thackrah was only one of a large number of professional and lay observers who concerned themselves with problems of work-related ill-health. It offers a revised account of the development of interest in occupational health through examining theoretical and practical approaches to worker sickness in the fifty years prior to and including the appearance of Thackrah's work.

My dissertation is primarily concerned with explicating medical understanding of factory ill-health. It reveals that medical ideas were not fixed and that the prevailing illness of textile mill workers (which was characterized in the twentieth century as "byssinosis") was defined in the late eighteenth and early nineteenth centuries first as "fever," then as "debility," and then, primarily, as "digestive disease."[26] My study examines the origins and repercussions of these early notions of industrial ill-health. It locates the concepts in an ongoing discourse on factories and affliction, identifying the issues that aroused successive generations of inquirers, as well as the spokesmen who addressed themselves to the matter. While the condition of the manufacturing

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[25]A. Meiklejohn, "The Life, Work, and Times of Charles Turner Thackrah, Surgeon and Apothecary of Leeds," biographical introduction to C. Turner Thackrah, The Effects of Arts, Trades, and Professions, 2nd ed. (1832; rpt. Edinburgh: E. & S. Livingstone Ltd., 1957), p. 39; Hunter, p. 119; George Rosen, "Charles Turner Thackrah in the Agitation for Factory Reform," British Journal of Industrial Medicine 10 (1953), p. 287.

[26]For contemporary understanding of byssinosis, regarded as a dust disease of cotton, flax, and hemp workers, see F.G. Ward, "Prescribed Respiratory Diseases 1.—Byssinosis," Health Trends 1 (1981), pp. 5-7; Jacqueline Karnell Corn, "Byssinosis—An Historical Perspective," American Journal of Industrial Medicine 2 (1981), pp. 331-352; Corn, Response, chapter 8.

population was discussed most fully by doctors, it was never an exclusively medical concern. From the beginning, workers, manufacturers, social commentators, and political authorities also expressed interest in the well-being of the industrial poor.

My study directs particular attention to the content and meaning of the concepts of fever, debility, and digestive disease. It shows that while the boundaries of these ideas were fluid, with one running into another, the concepts nevertheless incorporated different explanations of worker illness and conveyed varying messages concerning the conditions and relations of industrial production. Although, initially, attention centred on the socio-physical atmosphere of the mill, in later years, the temperature of factory air, and then the diet and domestic habits of factory workers became a source of concern. As one conceptual scheme gave way to the next, accounts of ill-health and perceptions of the factory and factory population altered significantly.

While the dissertation deals mainly with the beliefs and theories of medical observers, it also examines the views of those most intimately affected by the changing circumstances of labour. I have found that while factory workers employed no distinct terminology to define their maladies (in contrast to other occupational groups, such as miners, who spoke of "black spit," or grinders, who complained of "asthma"), the ways in which they described their experiences of sickness and disability sometimes differed significantly from the manner in which medical men characterized them. My study recovers something of the language of suffering mill workers, gauging its distance

and divergence from the parlance of professional spokesmen.[27] It reveals how the gap between popular and professional perception fluctuated as medical understanding shifted.

In its concern with the consequences, as well as the process, of disease designation, my work also explores the correspondence and connection between prevailing ideas of ill-health and contemporary practices of relief and assistance. It traces the growing disinclination of mill owners to attend to the health needs of their employees, as well as the increasing capacity of workers to help themselves, and finds evidence both in theory and in practice of class distinction and separation.

My study of disease framing is principally based on medical writings. In the early industrial era, medical men, especially those resident in textile manufacturing communities, gave extensive consideration to the problem of worker sickness and advanced their views in pamphlets, treatises, and articles. These are particularly abundant for the periods from 1784 to 1802 and from 1830 to 1833, though less plentiful for the years from 1815 to 1819, a time when discussion of factory health was directed by non-medical spokesmen and when medical opinion was marked by confusion and dissension.

I have supplemented the evidence derived from published works with that contained in the British parliamentary papers. The well-being of the factory work-force

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[27]On the study of language and the particular languages employed by various social groups, see Peter Burke and Roy Porter (eds), The Social History of Language (Cambridge: Cambridge University Press, 1987); Robert Gray, "The Languages of Factory Reform in Britain, *c.* 1830-1860," in Patrick Joyce (ed), The Historical Meanings of Work (Cambridge: Cambridge University Press, 1987), pp. 143-179.

attracted considerable legislative attention in the half-century from 1784 to 1833 and was the subject of five parliamentary investigations. Although the "blue books" emanating from the last two of these investigations, the 1832 Select Committee on Factory Labour [P.P. 1831-2 (706) XV] and the 1833 Factories Inquiry Commission [P.P. 1833 (450) XX, P.P. 1833 (519) XXI, P.P. 1834 (167) XIX], have been used extensively by historians, earlier reports have received less attention. I have drawn particularly on two less accessible and largely neglected House of Lords papers: the 1818 Report on Amendment of the Health and Morals of Apprentices Act [P.P. 1818 (90) XCVI] and the 1819 Report on the State and Condition of Children Employed in Cotton Manufactories [P.P. 1819 (24) CX].

As with published writings, the oral evidence contained in the reports of various investigative committees must be used cautiously, with an eye to the circumstances that led to its production and governed its appearance. Elicited to provide information and aid in decision making, the testimony of witnesses who appeared before Commons or Lords committees was shaped by the questions and suppositions of committee members. The awareness of the members and the degree of constraint imposed on individuals' testimony could vary considerably. At the Select Committee hearings of 1832, the full and leading questions put to London medical witnesses tended to limit their responses to mere affirmations, while the more open-ended queries addressed to provincial practitioners allowed for detailed expression of opinion derived from personal experience. The evidence of the provincial doctors seems, in this case, to have enabled the committee to arrive at a state of knowledge which it then sought to have confirmed

by the London authorities. Examined critically, the testimony of medical witnesses, some of whom left no other trace of their views, constitutes useful material for the historian interested in perceptions and theories of illness.[28]

If the parliamentary papers provide another means of approach to medical thought, they also offer valuable insight into the experiences and ideas of working people themselves. Together, the 1819 Lords report and the 1832 Commons report contain evidence from approximately one hundred factory workers, most of whom had suffered extensively from their time in the mills and many of whom had witnessed such suffering in their children, as well. While worker testimony was also structured by the interrogations of committee members, its immediacy, specificity, and passion make it a rich source of information and convey a degree of authenticity unmatched by any descriptions from outside observers. Workers who appeared before parliamentary committees, and who often risked losing their jobs by doing so, willingly spoke on behalf of themselves, their families, and their communities. Especially in 1832, it is apparent that operatives were chosen by local constituencies to represent and convey "the opinion of the people" to the legislature.[29] Though this opinion tended to have a male bias, the female voice was not completely excluded. Male witnesses not infrequently referred to the views of their wives and among those testifying in 1832

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[28]My findings support those suggested by Robert Gray, "Medical Men, Industrial Labour and the State in Britain, 1830-50," Social History 16 (1991), p. 26.

[29]P.P. 1831-2 (706) XV; West Riding Central Committee, Memorandum [Leeds: 1832]; Gray, "Languages," pp. 154-155.

were three young women from the West Riding.[30]

In its examination of the endeavours, both lay and professional, to grasp and remedy the problem of ill-health in the factory population, my dissertation aims to enrich our understanding of the socio-cultural milieu of late eighteenth and early nineteenth-century Britain. From the outset, the sickness of factory workers was a social and political concern, as much as a medical challenge; peak interest in the issue coincided with times of politicization and confrontation between the lower orders and the higher ranks. For those who viewed it from above, the malaise and afflictions of factory workers increasingly represented their "otherness" and called for strategies of intervention. For those who experienced it as a burden of daily life, sickness and suffering offered a means to articulate a new voice and to develop a new consciousness through collective action. My investigation of the varied and changing approaches to factory workers' ill-health seeks to shed new light on the emergence of an industrial society.

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[30]P.P. 1831-2 (706) XV, 148-153, 195-199, 229-231. For further evidence of female views, see a letter from "The Female Operatives of Todmorden," in Examiner (26 February, 1832); quoted in Ivy Pinchbeck, Women Workers in the Industrial Revolution 1750-1850 (London: George Routledge & Sons Ltd., 1930), pp. 199-200.

CHAPTER ONE

FEVER AND FACTORIES

> As these mills, or factories, are now becoming numerous in the country, and individually employ great numbers of persons; any circumstances which may materially affect the health of those, who are engaged in them, are certainly, matters of public concern.[1]

In the late eighteenth century, interest in the health of factory workers was sparked by the appearance of an acute contagious disease, known generally as "fever," in Britain's northern manufacturing communities. Erupting in approximately a dozen Lancashire cotton towns in the period from 1782 until 1796 and afflicting substantial numbers of people, especially those among "the poor and labouring classes," the disease provoked fear and concern among local residents and prompted investigation into the conditions responsible for its generation and spread.[2]

Although in at least one instance inquiries were conducted by a lay observer, for the most part the investigations were undertaken by a small, Manchester-based network of reforming physicians. These men, who formed part of a larger circle of Dissenting medical men, scientists, and intellectuals, were especially interested in problems of institutional hygiene and management of the poor and were actively involved in the establishment and reform of institutions which housed the poor. Their practice and

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[1]D. Campbell, Observations on the Typhus, or Low Contagious Fever (Lancaster: H. Walmsley, 1785), pp. 21-22.

[2]Ibid., p. 53.

preoccupations, together with existing theories of the affliction, shaped their understanding of the outbreaks and instilled confidence in their ability to control and prevent such occurrences.

One particularly controversial issue which attracted medical attention was the relationship between the disease and the growing number of spinning mills in the area. Although the persons most immediately threatened, the labouring poor, seem to have perceived a simple and direct link between fever and factories, medical opinion was less decided. While the physicians agreed that the conditions that prevailed in local mills were likely to intensify and exacerbate the spread of the disorder, they rejected contemporary prejudice against the new works and stopped short of naming the mills as the primary source of fever. They also moved beyond a consideration of factories to an examination of the conditions pertaining in the wider arena of the manufacturing towns. In their view, fever was as likely to arise in the homes of workers as it was in the mills. Through their investigation, the problem of factory-related fever was transformed into a larger problem of public health, one which encompassed the entire body of the urban poor.

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In the 1780s and 1790s, the cotton trade experienced a period of unprecedented growth and the number of factories in Britain increased spectacularly.[3] The first large,

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[3]Phyllis Deane and W.A. Cole, British Economic Growth 1688-1859 (Cambridge: Cambridge University Press, 1967), pp. 183-186.

purpose-built cotton factory was erected at Nottingham in 1769.[4] A four-storey building, some 117 feet long and 27 feet wide, it was constructed by Richard Arkwright to house his newly-patented water frame. In partnership with various individuals, Arkwright quickly went on to establish other cotton works, and by 1780 there were twenty water-frame mills, principally in Lancashire and the Midlands.[5] The success of Arkwright's enterprise provoked hostility and rivalry among his contemporaries, and with a court decision against Arkwright in 1781 and the annulment of his patents in 1785, a phase of rapid construction ensued.[6] According to one estimate, there were one hundred and fifty Arkwright-type mills by 1790.[7]

During this period, factories were also established to spin cotton by means of the spinning jenny, invented by James Hargreaves and the mule, developed by Samuel Crompton. Although these machines were originally operated by hand and used in the home, they were also employed in factories.[8] Jenny factories ranged in size and complexity: while many were small concerns, containing several small jennies and perhaps one or two carding machines, others, which housed jennies with up to eighty

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[4]Jennifer Tann, The Development of the Factory (London: Cornmarket Press, 1970), p. 7.

[5]Ibid.; Richard Guest, A Compendious History of the Cotton Manufacture (1823; rpt. London: Frank Cass & Co. Ltd., 1968), p. 31.

[6]Tann, p. 9.

[7]Guest, p. 31.

[8]M.M. Edwards and R. Lloyd-Jones, "N.J. Smelser and the Cotton Factory Family: A Reassessment," in N.B. Harte and K.G. Ponting (eds), Textile History and Economic History (Manchester: Manchester University Press, 1973), pp. 306-308.

spindles, were much larger. In 1779 one of these larger establishments was said to contain "three hundred windows and upwards."[9] Mule factories also varied in size. Although small at first and often occupying converted space, from the 1790s on, they began to be purpose-built and constructed on a larger scale.[10] S.D. Chapman has estimated that by 1797 there were nine hundred mule and water-frame mills in Britain.[11]

The water-frame mills and the larger jenny and mule factories brought significant numbers of people together under one roof. In the 1780s and 1790s the Arkwright mills typically employed three to four hundred workers each.[12] Most of the workforce of the early mills was composed of children, assisted by a small number of unskilled women and men (though as jennies and mules grew in size and complexity, they were increasingly operated by skilled men.)[13] Given the sparsity of the population in many of the areas in which the first factories were established and the general antipathy of local populations towards the new works, much of the early factory

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[9][Ralph Mather], An Impartial Representation of the Case of the Poor Cotton Spinners in Lancashire (London: 1780), p. 2.

[10]S.D. Chapman, The Cotton Industry in the Industrial Revolution (London: The Macmillan Press, 1972), p. 29; Tann, p. 9.

[11]Chapman, pp. 28-30. According to Thomas Percival, "Biographical Memoirs of Thomas Butterworth Bayley, Esq.," in The Works, Literary, Moral, and Medical (Bath and London, 1807), vol. 2, p. 295, by 1802 such mills employed "several thousand" persons.

[12]R.S. Fitton and A.P. Wadsworth, The Strutts and the Arkwrights 1758-1830 (Manchester: Manchester University Press, 1958), p. 192.

[13]J.L. and Barbara Hammond, The Skilled Labourer 1760-1832, 2nd ed. (London: Longmans, Green, and Co., 1920), p. 53.

workforce was also comprised of migrant labourers.[14] The unskilled adult portion of the workforce was generally drawn from tramp labour, while up to a third of the youthful portion consisted of parish apprentices, brought into the mills from various parts of the country.[15] The number of parish apprentices in a given locale could sometimes be substantial; the Peel factories around Bury, for instance, employed almost a thousand apprentice children.[16]

II

Towards the end of 1782, "fever" broke out in the town of Radcliffe Bridge, two miles from Bury, where a mill had been established by Robert Peel and his partners the previous year.[17] The disorder prevailed for approximately two years and affected a significant number of people: a contemporary estimate put the number of deaths at almost fifty in the final year, although more recent studies suggest that there were perhaps 350 cases, resulting in thirteen deaths.[18] In the minds of many of the local inhabitants, the progress of the disease was linked to the operation of the mill. A resident of the neighbouring town of Stand, Peter Walker, spoke with almost two

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[14]Arthur Redford, Labour Migration in England 1800-1850, 3rd ed. (Manchester: Manchester University Press, 1976), pp. 21-27.

[15]Ibid.

[16]P.P. 1816 (397) III, 132.

[17][A.G.E Jones], "The Putrid Fever at Robert Peel's Radcliffe Mill," Notes and Queries 103 (1958), pp. 26-27.

[18]Manchester Mercury, 2 November 1784; Charles Webster, "Two-Hundredth Anniversary of the 1784 Report on Fever at Radcliffe Mill," Bulletin of the Society for the Social History of Medicine 36 (June, 1985), p. 65.

hundred people on the subject and found general agreement as to the "origin" of the contagious malady.[19] As an anonymous observer reported:

> Most of the patients that were ill, having been asked where they caught the fever, either replied that they caught it themselves at the cotton mill, or were infected by others that had. Several were asked what kind of labour they followed, who were first seized with the disorder. They all replied, they were the people that worked in the cotton mill...[20]

On the basis of his investigations, Walker launched an application to the mill owners to discontinue the practice of night work.[21] Peel and his partners refused—according to Peel, "no Man in his Senses would have complied" with such a request—and the matter was then carried before the local magistrates.[22]

The magistrates, whose number included the prominent Unitarian, Thomas Butterworth Bayley, and his close associates, Samuel Clowes and Dorning Rasbotham, were a reform-minded group, well-disposed to act on the matter.[23] Only the year before they had been alerted to the problems of epidemic disease by an outbreak of

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[19]Manchester Mercury, ibid. Unfortunately little is known about Walker. [Jones], pp. 32-33, suggests that he may have been a handloom weaver, a carpenter, or an innkeeper. From the remarks of the local physician, Ellis Cunliffe, in the Manchester Mercury, 23 November 1784, it would seem that Walker was a person of some social standing. Cunliffe refers to Walker as a "gentleman" with whom he had had some contact and indicates that he was a subscriber to the Manchester Infirmary.

[20] A Short Essay written for the Service of the Proprietors of Cotton-Mills, and the Persons Employed in Them (Manchester: C. Wheeler, 1784), pp. 10-11.

[21]Manchester Mercury, 2 November 1784.

[22]Ibid., 9 November 1784.

[23]Margaret DeLacy, Prison Reform in Industrial Lancashire, 1700-1850: A Study in Local Administration (Stanford: Stanford University Press, 1986), pp. 70-82; Percival, pp. 287-305.

"gaol fever," a well-known disorder associated with the crowded situation of prisons, and in the autumn of 1784, following "a representation...by Lord Grey de Wilton and a great number of the most respectable inhabitants" of the area, they requested that the leading Manchester physician, Thomas Percival, and his colleagues at the Manchester Infirmary, investigate the Radcliffe epidemic.[24]

Percival was Bayley's closest friend and, like Bayley, was a leading member of Manchester's Unitarian "establishment."[25] Educated at the Warrington Academy and in Edinburgh, London, and Leyden, Percival came to be at the centre of a network of Dissenting physicians and was linked by ties of friendship and intellectual affiliation to such reformers as John Aikin of Warrington, John Haygarth of Chester, James Currie of Liverpool, and John Lettsom and John Fothergill of London.[26] From the time of

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[24]DeLacy, p. 80. A. Meiklejohn, "Outbreak of Fever in Radcliffe Cotton Mills, 1784," British Journal of Industrial Medicine 16 (1959), pp. 68-69.

[25]DeLacy, p. 72.

[26]My account of Percival draws on Charles Webster and Jonathan Barry, "The Manchester Medical Revolution," in Barbara Smith (ed), Truth, Liberty, Religion: Essays celebrating Two Hundred Years of Manchester College (Oxford: Manchester College, 1986), pp. 167-171. See also Edward Percival, "Memoirs of the Life and Writings of Thomas Percival," in Percival, Works, vol. 1, pp. i-ccxxxix; E.M. Brockbank, Sketches of the Lives and Work of the Honorary Medical Staff of the Manchester Infirmary (Manchester: University Press, 1904), pp. 83-107; R.B. Hope, "Dr. Thomas Percival: A Medical Pioneer and Social Reformer, 1740-1804," (M.A. thesis, University of Manchester, 1947); John F. Fulton, "The Warrington Academy (1757-1786) and its influence upon Medicine and Science," Bulletin of the Institute of the History of Medicine 1 (1933), pp. 50-80; C. Booth, "Doctors from the Yorkshire Dales," Proceedings of the XXIII Congress of the History of Medicine (London: 1974), pp. 998-1001; Francis M. Lobo, "John Haygarth, Smallpox and Religious Dissent in Eighteenth-Century England," in Andrew Cunningham and Roger French (eds), The Medical Enlightenment of the Eighteenth Century (Cambridge: Cambridge University Press, 1990), pp. 217-253.

his arrival in Manchester in 1767 until his death in 1802, Percival undertook a wide range of studies and contributed significantly to the intellectual and cultural life of the region. He spent much of the early part of his career engaged in "pursuits of experimental philosophy," often in association with his friend and mentor, Joseph Priestley, and, in 1781, as an outgrowth of weekly "conversation" meetings held at his home, he established the Manchester Literary and Philosophical Society.[27]

Percival's scientific and philosophical concerns were not divorced from the social realities of his day.[28] During his lifetime, Manchester evolved from a small trading town into a manufacturing metropolis, the "heart of [the] vast system" of cotton manufacture.[29] Towards the end of the century, its population doubled every fifteen to twenty years and, by 1784, approached 50,000.[30] Like his associates, Percival was concerned with the industrial and urban transformations occurring around him and was anxious to use his investigations to improve the conditions of life, especially of the community's poorest citizens.

In the early 1770s, Percival became interested in the study of population,

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[27]Edward Percival, pp. lxvii, lxxvi. On the Literary and Philosophical Society see Arnold Thackray, "Natural Knowledge in Cultural Context: The Manchester Model," American Historical Review 79 (1974), pp. 672-709.

[28]Webster and Barry, pp. 167-171.

[29]John Aikin, A Description of the Country from Thirty to Forty Miles round Manchester (1795; rpt. New York: Augustus M. Kelley, 1968), p. 3; W.H. Chaloner, "Manchester in the latter half of the Eighteenth Century," Bulletin of the John Rylands Library 42 (1959-1962), pp. 40-60.

[30]S.E. Maltby, Manchester and the Movement for National Elementary Education, 1800-1870 (Manchester: Manchester University Press, 1918), p. 12.

corresponding with Benjamin Franklin and the London statistician, Richard Price, on the subject.[31] He set out proposals for increasing the exactness and comprehensiveness of Bills of Mortality and, in 1773, contributed to a survey of the population of Manchester and Salford.[32]

Allied to his interest in population statistics was a concern with public institutions, which were often the scene of extensive mortality. In 1771 Percival wrote an essay "on the internal regulation of hospitals," in which he set out a plan for making hospitals "more salutary to the sick, and consequently more useful to the public."[33] In 1779 he gained the opportunity to put his ideas on hospital management into practice when he was elected Honorary Physician to the Manchester Infirmary. Although he resigned the position in 1780, due to poor health, he maintained a close tie to the institution and was appointed Physician Extraordinary in 1782. During his period of tenure and association, he pushed for the extension of hospital services and was instrumental in establishing the Infirmary's home-patient service in 1781.[34]

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[31]Edward Percival, p. xxix; B. Keith-Lucas, "Some Influences affecting the Development of Sanitary Legislation in England," Economic History Review 6 (1953), p. 291.

[32]Thomas Percival, "Proposals for Establishing more Accurate, and Comprehensive Bills of Mortality, in Manchester," in Works, vol. 3, pp. 428-437. See also his "Observations on the State of Population in Manchester, and other adjacent Places," and "Further Observations on the State of Population in Manchester, and other adjacent Places," in Works, vol. 4, pp. 1-37.

[33]Thomas Percival, "Essay on the Internal Regulation of Hospitals," in Works, vol. 4, pp. 170-179.

[34]J.V. Pickstone and S.V.F. Butler, "The Politics of Medicine in Manchester, 1788-1792: Hospital Reform and Public Health Services in the Early Industrial City," Medical History 28 (1984), pp. 230-231; Webster and Barry, p. 170.

Percival was interested not only in the regulation of hospitals, but also in the construction and management of prisons. He undoubtedly conversed with Thomas Butterworth Bayley, when Bayley and Samuel Clowes undertook a study of the Manchester House of Correction in 1782, and later was involved with Bayley in the establishment of penitentiaries at Salford and Preston, built according to the plan of another well-known Dissenting reformer, John Howard.[35] Percival evidently saw prisons and hospitals as very similar kinds of institutions, for when approached in 1790 about the structure of a proposed county-hospital, he recommended the design of Manchester's New Bailey prison.[36]

His concern with issues of public health and his commitment to policies of social reform made Percival a willing candidate for the task of heading the inquiry into the Radcliffe epidemic. According to the ensuing public report, he and his colleagues, John Cowling, Alexander Eason, and Edward Chorley, "undertook the task with the greatest alacrity".[37] They visited the Radcliffe works and then reported back to the magistrates on October 8, 1784.

In their report the physicians acknowledged that "a low, putrid FEVER, of a

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[35]DeLacy, pp. 76-77; Michael Ignatieff, A Just Measure of Pain: the Penitentiary in the Industrial Revolution, 1750-1850 (London: The Macmillan Press, 1978), p. 62. G.B. Hindle, Provision for the Relief of the Poor in Manchester 1754-1826 (Manchester: Manchester University Press, 1975), p. 29, notes that Percival and Bayley were also involved in obtaining an act of Parliament to establish a new workhouse in Manchester.

[36]Thomas Percival, Medical Ethics, ed. Chauncey Leake (Baltimore: The Williams and Wilkins Company, 1927), pp. 172-173; cited in DeLacy, p. 90.

[37]Meiklejohn, p. 68.

contagious nature" had existed for some time at Radcliffe, but they were unable to determine whether the disorder had arisen in the town's cotton mill, or whether it had been carried into the locale from some other place.[38] They were convinced, however, that it had been "supported, diffused, and aggravated" by conditions within the factory: in particular, by the crowding, the "putrid effluvia," and the excessive hours of labour.[39] They felt that the situation in the Radcliffe works was remediable and they made a number of recommendations which they hoped the proprietors would follow. They proposed that the mill be better ventilated, that attention be given to cleanliness, and that the hours of work, especially of children under the age of fourteen, be restricted. The report was gratefully received by the magistrates, who ordered that it "be printed and distributed, so that every part of the community may receive the benefit of [the physicians'] salutary admonitions."[40]

Although Peter Walker and his allies were no doubt pleased with the outcome of the medical investigation, Robert Peel was less happy with the handling of the affair. In a letter to the magistrates, printed in the Manchester Mercury on October 26, he protested that:

> ...in a Matter of so much Importance, were [sic] not only the property of Individuals is at stake, but a valuable of [sic] Source of Wealth to the Nation, and a Manufacture that supplies the Looms of most of the Cotton Weavers in Great-Britain, are threatened with Annihilation—it might have

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[38]Ibid.

[39]Ibid.

[40]Rev. Sir Wm. Clerke, Bart., Thoughts upon the Means of Preserving the Health of the Poor, by Prevention and Suppression of Epidemic Fevers (London: J. Johnson, 1790), p. 7.

> been expected that a cool and dispassionate Investigation into the Affair...would have been made previous to a Solicitation of magisterial Interference.[41]

Though he had the highest opinion of Percival and his colleagues, Peel expressed surprise at their findings and insisted that his mill was in no way responsible for the fever epidemic. "It is well known," he argued, that the disorder "was first brought from near Preston, (and has been very fatal in that part of the County without a Cotton Mill to occasion it) and was at least three Months in the Neighbourhood before any Person belonging to the Factory was seized with it."[42] Peel's analysis was contested by Peter Walker in the following edition of the Mercury and over the next few weeks the two sides engaged in a verbal battle.[43] Although the dispute, and the epidemic itself, seem to have died down by the end of November 1784, the memory of the fever at Radcliffe lingered longer and the epidemic was frequently referred to in the literature on factories and health that developed over the next two decades.

One of the earliest references appeared in the anonymous Short Essay written for the Service of Proprietors of Cotton-Mills and the Persons employed in Them, published in Manchester in 1784.[44] At several points the essay reiterated the views

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[41]Manchester Mercury, 26 October 1784.

[42]Ibid.

[43]Manchester Mercury, 2 November 1784; 9 November 1784; 16 November 1784; 23 November 1784; 30 November 1784.

[44]A Short Essay. It is unclear to whom this essay should be attributed. Though, traditionally, it has been considered the work of Thomas Percival—see, for example, Maltby, p. 13—more recently Webster, p. 66, has suggested that it was written by a lay person, sympathetic with Percival's views and familiar with current medical investigation.

expressed by Percival and his colleagues in the Radcliffe report. It made similar recommendations concerning ventilation and cleanliness, and also pointed out the particular vulnerability experienced by children in having to breathe foul air and work during the night.[45] The essay differed from the report, however, in that it took a more definite position on the cause of the Radcliffe fever. Appealing to the results of scientific experiment and medical experience, the essay endorsed the popular view of the disease, namely, that it originated in the Peel factory.[46] "Nothing less could be expected" from the conditions which prevail in cotton mills, declared its author, "nor is there any other method of accounting for it, that is founded on the smallest degree of comparative probability."[47]

At the same time as the epidemic prevailed in Radcliffe, a disorder "evidently of the same nature" afflicted the residents of Lancaster and the neighbouring cotton town of Ulverstone, as well as the employees at a six-storey cotton mill at Backbarrow.[48] According to a local physician, David Campbell:

> Those who were attacked perceived pains in the back, about the loins; and in the limbs; a giddiness in the head, as if under the effects of intoxication; a listlessness and aversion to motion; want of appetite; disagreeable taste in the mouth, accompanied with thirst; sometimes coldness and rigours, with alternate flushings of heat.[49]

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[45]A Short Essay, pp. 12-19.

[46]Ibid., pp. 5-11.

[47]Ibid., p. 11.

[48]Campbell, pp. 19, 53-54; [Jones], p. 27.

[49]Campbell, p. 57.

As the disease progressed, the patients became increasingly restless and uneasy. They experienced delirium, confusion, and headache. Their cheeks became flushed; their eyes, dull and muddy; and their tongue, dry, hard, and sometimes furred. If the disease ended fatally, "a tremulous intermitting pulse; deafness; and inability to articulate, generally closed the scene."[50] Campbell termed the disease, "typhus, or low contagious fever" and reported that in this region, too, it exacted a harsh toll. He observed five hundred cases in Lancaster, of which thirty-four proved fatal and noted that at Backbarrow, 180 of the 250 workers contracted the disease and seven died.[51] He pointed out that most of those affected at Backbarrow were children and that the disease "handled them with great severity," confining them to their beds for long periods, producing violent symptoms, and resulting in considerable emaciation and weakness.[52]

In 1785 Campbell published a treatise "on the Typhus," which drew on his experience of the disease at Lancaster and Backbarrow and also contained the recommendations of the Radcliffe report. Though little is known of Campbell's life, he seems to have shared something of Percival's concern with matters of public health. He was the "original promoter" and Physician to the Lancaster Dispensary, established in 1781, as well as the initial Physician to the Lancashire Lunatic Asylum, and in the

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[50]Ibid., pp. 58-61.

[51]Ibid., pp. 54-55.

[52]Ibid., p. 56.

1790s he corresponded with Percival on methods of controlling disease in large towns.[53] His practice among the poor at the Dispensary evidently stimulated his interest in fever and led to the writing of the work. Though intended primarily to publicize the use of opium as a treatment for the disease, it also addressed wider issues such as the causes and means of prevention of the disorder.

Campbell's view of the relationship of fever to the newly-established cotton factories in the region was less indicting than that contained in the anonymous Essay. In discussing the epidemic at Backbarrow, Campbell argued that there was no reason to believe that the disease had originated in the town's cotton works, and that it was necessary to make this point, "because there seems to be a prejudice in the country, against these novel manufactures, which would attribute inconveniences to them and to the working amongst cotton, which in the present instances, do not appear to have any foundation."[54] While he acknowledged that it was possible for the cotton used in factories to house contagion, and thus transmit fever, Campbell maintained that this was the case for textile materials and porous substances in general. He claimed that no disease had arisen from "working this valuable commodity," which, by creating employment and producing luxury articles, was "so great a source of national advantage."[55]

In 1789 "an epidemic fever" again erupted in the cotton manufacturing region

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[53]Biographical notes on Campbell, District Central Library, Lancaster; Board of Health of Manchester, Proceedings and Observations (Manchester: 1806), pp. 67-71.

[54]Campbell, pp. 19-20.

[55]Ibid., pp. 20-21.

around Manchester. Once again the symptoms were "pain in the head, back, and limbs," delirium, restlessness, a quick, "soft," sometimes intermittent pulse, inflammation of the eyes, and dryness and harshness of the tongue.[56] Though the disease was not particularly fatal in Manchester and Salford, there were "dreadful accounts of its ravages in some of the neighbouring towns."[57] Rochdale, Oldham, Bacup, and Bury, the centre of Robert Peel's manufacturing interests, were especially hard hit.[58] The severity of the outbreak among the lower orders in Bury induced its more prosperous residents to take steps "to alleviate, and, if possible, subdue the disorder."[59] A charitable subscription was set up and the local rector, Sir William Clerke, turned to Thomas Percival for professional advice on handling the epidemic.

Influenced by John Haygarth's experience in dealing with smallpox in Chester, Percival provided Clerke with a series of recommendations, which were printed in an abridged form in handbills and distributed to the poor in the townships of Bury and Elton.[60] Percival's advice was aimed at the control and prevention of fevers not only in cotton mills, but in large manufacturing towns. Although he gave specific attention to factories, arguing that they "should be inspected and sedulously purified; and care

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[56]John Ferriar, "Epidemic Fever of 1789, and 1790," in Medical Histories and Reflections (Warrington: 1792, 1795, 1798), vol. 1, pp. 117-118.

[57]Ibid., p. 120.

[58]Clerke, pp. 7-10; F.E. Manning, "Sir Robert Peel the elder, and early Factory Legislation," (M.A. diss., University of Bristol, 1932), p. 4.

[59]Clerke, p. 6.

[60]"Dr. Haygarth's Rules to Prevent Infectious Fevers," Reports of the Society for Bettering the Condition of the Poor (1800), Appendix II, pp. 9-11; Lobo, passim.

should be taken, not only of their privies, but that no dunghills or slaughter houses, be permitted in their neighbourhood," he also stressed the importance of prompt and public notification of fever cases, of restricting association between fevered persons and their family and friends, and of "regard to the general state of the whole body of the poor."[61]

In a pamphlet outlining the manner in which the outbreak had been dealt with in Bury, Clerke elaborated on the medical opinions he had received. Cognizant that "strong imputations have been thrown upon the pernicious system of working cotton factories, as particularly injurious to the health of persons employed in them, deriving the increase of epidemic fevers from their establishment," he insisted that "for want of a just discrimination, the cause and consequences are confounded."[62] Clerke maintained that the supposition that disease originated in cotton mills was unfounded and argued that fever was as likely to arise in the homes of the poor. He viewed the presence of fever in factories as part of a larger problem of fever in towns and saw the key to both in the institution of regulations and in the creation of "a sort of public register of fevers."[63]

The 1789 epidemic, which was most prevalent in Manchester and Salford towards the close of the year and then reappeared in the spring of 1790, captured the attention not only of Clerke and Percival, but also of one of Percival's younger and

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[61]Ibid., pp. 16-20.

[62]Ibid., pp. 21-22.

[63]Ibid., p. 13.

closest associates, John Ferriar.[64] Graduating as Doctor of Medicine from Edinburgh in 1781 and arriving in Manchester in 1785, Ferriar quickly became part of the intellectual circle centred on Percival and the Manchester Literary and Philosophical Society. He also joined forces with a group of radical reformers, active in national campaigns to abolish slavery and repeal the Test and Corporation Acts, as well as in a local attempt to challenge the traditional Tory-Anglican leadership of Manchester.[65] In 1788 this group launched an attack on the ruling clique by proposing that the medical and surgical staff of the Manchester Infirmary be enlarged. Though the move was blocked by a conservative faction led by the Infirmary surgeons, one of the results of the contest was the appointment of Ferriar as a Home-Physician in October 1789. In 1790 the reformers made another bid for expansion and, this time, after extensive public debate, succeeded in their efforts, with Ferriar now appointed as an Honorary Physician to the Infirmary.

During the 1790s, Ferriar figured largely in Manchester's medical life and, for a time, was more outspoken than Percival on matters of public health.[66] His experience with the home and out-patient work of the Infirmary brought him into close contact

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[64]"John Ferriar, M.D., of Manchester," Palatine Notebook (April 1882), pp. 65-71, (May 1882), pp. 100-108; Brockbank, pp. 126-156; Jane Walker, "John Ferriar of Manchester, M.D.: His Life and Work," (M.Sc. diss., University of Manchester Institute of Science and Technology, 1973).

[65]Pickstone and Butler, pp. 232-242; Pauline Handforth, "Manchester Radical Politics 1789-1794," Transactions of the Lancashire and Cheshire Antiquarian Society 66 (1956), pp. 87-106.

[66]John V. Pickstone, "Ferriar's Fever to Kay's Cholera: Disease and Social Structure in Cottonopolis," History of Science 22 (1984), p. 403.

with Manchester's poor and he developed a particular interest in fever. The primary focus of his concern was the residences of the poor: the cellar dwellings and the lodging houses, which were scattered on the outskirts of Manchester and which accommodated many of the rural immigrants to the town. Lodging houses were generally old homes, comprised of tiny rooms, in each of which several people ate, slept, and often worked, on hand looms or on hand-operated spinning mules.[67] Ferriar was appalled by the filth and crowding of such establishments and by the facility they gave to the spread of contagion. He declared that "the horror of those houses cannot easily be described; a lodger fresh from the country often lies down in a bed, filled with infection by its last tenant, or from which the corpse of a victim to fever has only been removed a few hours before."[68]

Ferriar's concern with fever also extended to cotton mills. In an article on the 1789-90 epidemic, he observed that while much had been done to ventilate mills, fever remained a problem, noting that he had recently attended several cases "in the worst state of typhus, who had all worked in one cotton-mill, and all of whom became ill about the same time."[69] In a subsequent article on "the Prevention of Fevers in Great Towns," he left the question of whether fever originated in factories unanswered, but argued that under the current system of management, cotton factories acted "powerfully

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[67]Ferriar, p. 136; "John Ferriar, M.D.," p. 70; Guest, p. 32; P.P. 1819 (24) CX, 331.

[68]John Ferriar, "To the Committee for the Regulation of the Police, in the Towns of *Manchester* and *Salford*," Bodleian Library: Gough Lancs. 30 (11), p. 2.

[69]Ferriar, "Epidemic," pp. 138-139.

to preserve and extend contagion."[70] Ferriar recommended that mill overseers attend to the ventilation and cleanliness of their works, adding that "the parents of the children so employed, should be enjoined to wash them every morning and evening, to keep their shoes and stockings in good condition, and above all never to send them to work early in the morning without giving them food."[71] He proposed that public baths be established for the use of the poor and desired, as well, an end to the practice of night work. He was confident that by such means much might be done to alleviate the threat of fever in factories and that workers would "perhaps be less exposed to disease, than in their own habitations."[72]

Not content merely to observe the progress of fever and treat its victims, Ferriar campaigned energetically for the establishment of measures to bring the disease under control. Through the volumes of his Medical Histories and Reflections he attempted to enlighten the public on the nature of the disorder, and in 1792 he addressed the newly-appointed Committee of Police for Manchester and Salford on the appropriate means of combatting it.[73] Though the Committee was interested in Ferriar's views, "private interests... prevailed over those of the public, and nothing effectual was done" at that time.[74]

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[70]John Ferriar, "Of the Prevention of Fevers in Great Towns," in Medical Histories, vol. 2, p. 197.

[71]Ferriar, "To the Committee," p. 3.

[72]Ferriar, "Prevention," p. 199.

[73]Ferriar, "To the Committee."

[74]Ferriar, "Prevention," p. 191.

In 1793 war broke out between England and France and in the summer of 1794, "the usual epidemic fever," with symptoms "nearly similar" to those observed the previous year, again reared its head in the poor quarters of Manchester.[75] To the normal causes of the disease, noted Ferriar:

> ...were now added, the influence of a burning summer, succeeded by very wet, but yet warm weather, and the want of clothing, and failure even of necessary food, in many families, occasioned by the decay of trade, and the great numbers of workmen enlisted in the army, who left their children to the slender support which could be earned by the labour of the mother.[76]

The epidemic persisted until January 1795, and at one point resulted in as many as 156 home-patients a week applying to the Infirmary for relief.[77] Ferriar's experience in dealing with these individuals convinced him of the necessity of establishing "a committee of health" in Manchester, as well as in other manufacturing towns.[78] In 1795 he proposed that such a committee assist the sick poor through erecting public lodging-houses (where both the health and morals of recent arrivals to the town could be supervised), instituting clothing clubs, superintending sick clubs, aiding women at the time of their lying-in, and providing rooms to receive the sick, with separate accommodation for those suffering from fever.[79]

Ferriar's campaign was conducted at a time of growing tension and

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[75]Ibid., pp. 192, 194.

[76]Ibid., p. 192.

[77]Ibid., p. 193.

[78]Ibid., p. 201.

[79]Ibid., pp. 202-210.

apprehension. Political agitation, commercial distress, grain shortages and high food prices combined to sharpen public awareness of the condition of the poor and instill fear of popular disorder.[80] In the summer of 1795 such fear was realized when food riots broke out in Manchester's marketplace. Troops were called in and the poor were urged to be "PEACEABLE."[81] Several months later, public anxiety intensified when an "infectious fever" struck the town of Ashton-under-Lyne. Close to three hundred people were afflicted in less than three months, and although the disease, which was commonly believed to have arisen in the local cotton works, did not cause extensive mortality, "a degree of terror was excited almost equal to that which the appearance of the plague would have inspired."[82]

The fever outbreak at Ashton-under-Lyne provided the final boost to Ferriar's drive to institute a committee of public health and on January 7, 1796, with Thomas Butterworth Bayley in the chair, the first meeting of the Manchester Board of Health was called to order.[83] The initial goals of the Board were wide-ranging and comprehensive. Along the lines previously suggested by Ferriar, the Board aimed to prevent the generation of disease by attending to the dwellings of the poor, inspecting

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[80]John V. Pickstone, Medicine and Industrial Society (Manchester: Manchester University Press, 1985), p. 24.

[81]Manchester Mercury, 4 August 1795; Hindle, pp. 116-117.

[82]John Ferriar, "Account of the Establishment of Fever-Wards in Manchester," in Medical Histories, vol. 3, pp. 43-44.

[83]Ibid., pp. 45-46; Board of Health, pp. 1-4. On the establishment of the Board of Health and its major achievement, the House of Recovery, see Pickstone, "Ferriar's Fever," pp. 402-405; Pickstone, Medicine, pp. 25-27.

cotton mills, establishing baths, cleansing the streets, and superintending the markets; to prevent the transmission of contagious disease by establishing fever-wards; and to reduce the impact of disease through the provision of nursing care, wine, food, clothing and fuel.[84] Of these, it was the plan to establish fever-wards which proved to be the most contentious. Because it attracted so much opposition, principally from the same conservative faction that had opposed the expansion of the Infirmary several years earlier, it became the prime focus of the Board's reforming efforts.[85] Though the plan was successfully realized in the House of Recovery, founded in May 1796, much of the rest of the Board's preventive program did not come to fruition.[86]

One object, in particular, which was set aside, concerned the inspection and regulation of cotton mills. In the now famous "Heads of Resolutions" submitted to the Board of Health on January 25, 1796, Thomas Percival stated that the Board's attention had been particularly drawn to the state of the large factories in Manchester and its vicinity and that inquiries had shown the degree to which such establishments injured the physical and moral well-being of employees through long hours of confinement, impure air, and lack of exercise.[87] On the basis of the "excellent regulations, which subsist in several cotton-factories," Percival was confident that the evils existing in

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[84]Thomas Percival, "Remarks," in Board of Health, pp. 5-7.

[85]Pickstone, "Ferriar's Fever," p. 405; "Report of the Committee of the Board of Health," in Board of Health, p. 49.

[86]"Fifth Annual Report," in Board of Health, p. 218; Ferriar, "Account," p. 80.

[87]Thomas Percival, "Heads of Resolutions," in Board of Health, pp. 33-35.

others could be removed; he therefore felt justified "in proposing an application for parliamentary aid, (if other methods appear not likely to effect the purpose) to establish a general system of laws, for the wise, humane, and *equal* government of all such works."[88] Although the Board maintained an interest in factory conditions and solicited information from well-known manufacturers such as David Dale, of Lanark, it took no further steps to implement Percival's call for legislative reform. In its first annual report, it merely reiterated Percival's views and repeated his proposal, while also announcing, with satisfaction, that factory owners throughout the country were working to improve their establishments.[89]

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[88]Ibid., pp. 34-35.

[89]"First Annual Report," in Board of Health, pp. 144-145.

CHAPTER TWO

CONTAGION IN THE HOUSE

> It must be observed, that the disadvantages of [cotton-mills], result from inattention to cleanliness and ventilation, for there can be no reason why a cotton-mill should be particularly unhealthy; on the contrary, I am satisfied, from the experience of a friend, who has directed a large one for several years, that by frequently washing the floors and frames, and by admitting fresh air, a cotton-mill may be rendered as healthy as a private house.[1]

> ...it is not owing to the nature of the business, that cotton mills are unfavourable either to the health or morals of those who are employed in them, but to other causes.[2]

Perhaps surprisingly, medical inquiry into the disease and death that prevailed in factories and factory towns in the late eighteenth century proceeded with little reference to the effects of large-scale machine production on human health. Although medical men had long been interested in the influence of occupation on health, and although workers themselves seem to have seen a direct connection between the operations they performed and the contagious disorder that threatened their existence, the physicians who investigated the ill-health of the manufacturing population in the 1780s and 1790s gave little consideration to the processes of factory work.

Recognizing the sickness that afflicted factory workers as "fever," or more

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[1]John Ferriar, "Of the Prevention of Fevers in Great Towns," in Medical Histories and Reflections (Warrington: 1792, 1795, 1798), vol. 2, pp. 198-199.

[2]David Dale, "Correspondence," in Board of Health of Manchester, Proceedings and Observations (Manchester: 1806), p. 56.

specifically as "typhus," or the "nervous" type fever that arose and spread in conditions of crowding and confinement, medical investigators focussed attention on the socio-physical atmosphere of the factory. In their accounts, cotton mills were portrayed as houses of the poor, places in which large numbers of impoverished individuals were congregated and which bore a close resemblance to other houses, both private and public, in which the poor resided. If medical observers did not regard factories as places of machine-dominated work, neither did they perceive factory workers as machine hands. Such persons were discussed as the "industrious poor," persons who shared the moral capabilities of those in higher orders, though they sometimes lacked their understanding.

Factory workers were also viewed in another, less positive, light as "strangers," individuals whose background was unknown and whose intentions were suspect. Such a view is especially perceptible in the measures that were proposed to halt the spread of disease. Not content merely to examine the nature and causes of worker sickness, physicians and their associates also proposed methods of preventing and controlling ill-health. Although the proposals were diverse, some looking to the past and others directed at the present, they were linked through common concern for regulation and inspection, not only of factories and factory workers' dwellings, but of the workers themselves.

I

The disorder that made repeated incursions in the manufacturing population in the closing decades of the eighteenth century was discussed in a variety of ways:

simply as "fever," or more particularly as "epidemic fever," "malignant fever," "infectious fever," "low putrid fever," "low contagious fever," "low nervous fever," etc. Yet it was regarded by contemporary observers as a single disorder, whose symptoms varied little, if at all, at each appearance.[3] It was also perceived as the same malady that had long been seen in hospitals, prisons, ships, and army camps. In 1785 David Campbell remarked that the disease:

> has sometimes been called the *gaol*, and sometimes the *hospital* fever, from its having originated, or raged with unusual violence in these places. At other times, from a tendency to putrefaction, which has been observed to accompany it, in some situations, it has been denominated a *putrid* fever; and from spots, which in certain degrees of malignity, are apt to make their appearance, it has been called by the name of *petechial* (or *spotted*) fever.[4]

He argued however, that as the disease was "not peculiar, either to hospitals or gaols" and "as neither *petechiae* or putrefaction" were essential to its existence, "the addition of such epithets have a tendency to furnish improper ideas, as well as create confusion, by an unnecessary multiplication of names for the same disorder."[5] Campbell preferred to characterize the disease using "the technical term *Typhus*," an appellation provided some years earlier by the Edinburgh clinician and theorist, William Cullen.[6]

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[3]D. Campbell, Observations on the Typhus, or Low Contagious Fever (Lancaster: H. Walmsley, 1785), pp. 19, 53, 54; Rev. Sir Wm. Clerke, Bart., Thoughts upon the Means of Preserving the Health of the Poor, by Prevention and Suppression of Epidemic Fevers (London: J. Johnson, 1790), p. 3; Ferriar, p. 194; John Ferriar, "Remarks," in Board of Health, p. 11.

[4]Campbell, pp. 5-6.

[5]Ibid., p. 6.

[6]Ibid., pp. 6-7.

In a nosology, or "systematic arrangement of diseases," outlined in 1769 and expounded from 1776 to 1784, Cullen classified fevers according to their clinical appearances.[7] Designating them as an order in the class, Pyrexiae, he separated them into two groups, periodic and continued, and separated the continued fevers into three genera: *Synocha*, *Typhus*, and *Synochus*. A critical distinction, in Cullen's mind, was between those fevers that displayed "an inflammatory irritation" and those that showed a "weaker reaction."[8] He named inflammatory fevers *Synocha* and termed weaker fevers *Typhus* (from the Greek word for smoke or mist) to underscore one of their predominant characteristics, mental confusion and delirium.[9] (He reserved the label *Synochus* for fevers of a mixed type, those neither completely inflammatory nor weak.) In 1776 Cullen commented that his division was the "same with that of fevers into Inflammatory and Nervous, the distinction at present most generally received in Britain."[10]

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[7]William Cullen, Synopsis Nosologiae Methodicae (Edinburgh: 1769); William Cullen, First Lines of the Practice of Physic, 4 vol. (1776-1784). An English translation of the Synopsis appeared as William Cullen, Nosology, or, a Systematic Arrangement of Diseases, by Classes, Orders, Genera, and Species (Edinburgh: W. Creech, 1800). On Cullen and eighteenth-century fever theory and practice see: Dale C. Smith, "Medical Science, Medical Practice, and the Emerging Concept of Typhus in Mid-Eighteenth-Century Britain," Medical History, Supplement No. 1 (1981), pp. 121-134; W.F. Bynum, "Cullen and the Study of Fevers in Britain, 1760-1820," Medical History, Supplement No. 1 (1981), pp. 135-147; Guenter B. Risse, "'Typhus' Fever in Eighteenth-Century Hospitals: New Approaches to Medical Treatment," Bulletin of the History of Medicine 59 (1985), pp. 176-195.

[8]Cullen, Nosology, p. 37, quoted in Risse, p. 177.

[9]Risse, ibid.

[10]Cullen, First Lines, vol. 1, p. 517, quoted in Smith, p. 122.

The distinction between inflammatory and nervous fevers was a key feature of eighteenth-century medical understanding. Prior to the eighteenth century, fever had been regarded as a unitary disorder that expressed itself in the malfunctioning of the circulatory system. Seen to result from stagnation of the blood, which then produced a quickened pulse, the disease was believed to be best treated through bleeding and other antiphlogistic remedies. In the 1720s, however, physicians began to observe what they perceived as a new kind of fever: one that was especially fatal among the poor; that manifested itself in nervous system symptoms, such as twitches, tremors, and delirium; that was slower to develop and left patients much more debilitated than usual; and that did not respond well to bleeding. By the 1730s, the concept of fever had expanded to include two main types: the traditional "inflammatory" fevers which were aided by bleeding, and the "slow" or "nervous" forms that could not bear it. The distinction was strengthened in the 1740s following a widespread epidemic that was particularly prevalent among the urban poor and that was related by several commentators to economic hardship and to the conditions prevailing in prisons and workhouses. Though the identity of the epidemic was initially in some dispute, an extensive inquiry by John Barker in 1741 determined that it was of the nervous variety.[11]

In the ensuing decades, medical men continued to differentiate nervous from inflammatory fevers and to associate the former with debility.[12] Struck by the

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[11]John Barker, An Inquiry into the Nature, Cause, and Cure of the Present Epidemick Fever (London: T. Astley, 1742), discussed in Smith, pp. 130-131.

[12]According to some theorists, debility served not only as the dominating feature of nervous fever, but also as its source. As Smith, p. 132, reveals, John Huxham,

feebleness and prostration that nervous fever brought in its wake, they increasingly emphasized the need for supportive and stimulating therapies, such as wine, tonics, wholesome food, opium, and cinchona bark.[13] They also continued to relate the disorder to institutions that housed the poor, both at home and abroad. Much of the leading investigation of fever in the latter half of the century was undertaken by medical men with military and naval experience.[14] Physicians such as Sir John Pringle, James Lind, Gilbert Blane, Robert Robertson, and Thomas Trotter described the illness they encountered in army camps, ships, and military hospitals and remarked on its similarity to the malady that prevailed in civilian hospitals, prisons, and workhouses. In his Observations on ...Hospital and Jayl-fevers, John Pringle, for instance, maintained that the disorder that arose in foreign hospitals, "in crowded barracks, and in transport ships," was identical to that known in England as "jayl-distemper," an ailment that often afflicted the inhabitants of "large and crowded cities."[15] In Medicina Nautica, Thomas Trotter similarly commented on the

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author of Essay on Fevers and their Various Kinds (London: S. Austen, 1750), maintained that nervous fever originated in "lax fibres and debility." William Cullen expressed a similar view. According to Bynum, p. 138, he regarded "debility of the nervous power" as the initial, and in some sense determining, stage of the fever paroxysm.

[13]Bynum, pp. 144-147.

[14]Peter Mathias, "Swords and Ploughshares: the Armed Forces, Medicine, and Public Health in the late Eighteenth Century," in J.M. Winter (ed), War and Economic Development (Cambridge: Cambridge University Press, 1975), pp. 73-90; Bynum, pp. 140-143.

[15]John Pringle, Observations on the Nature and Cure of Hospital and Jayl-Fevers (London: A. Millar and D. Wilson, 1750), pp. 2-5.

connection between the typhus that occurred on board ships and that found in great towns.[16]

By the end of the century, the division between inflammatory and nervous fevers was complete. As medical observers concentrated attention on the health needs of the poor, and on the nervous type of fever that seemed to arise wherever the poor were gathered, the category of inflammatory fever began to be excluded from the fever concept.[17] Though some theorists, such as Cullen, still spoke of "inflammatory fever," others found the term to be meaningless, and preferred to regard inflammation as a distinct local disorder and nervous fever (or simply fever itself) as a disease affecting the entire bodily system.[18]

II

If local physicians readily identified the disorder that swept through manufacturing communities in the 1780s and 1790s, they also expressed familiarity with its causes, especially its "remote" causes. As the Carlisle physician, John Heysham, commented in 1782, "under what circumstances [the disease] is first generated and produced, we are well acquainted. It is the offspring of filth, nastiness, and confined

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[16]Thomas Trotter, Medicina Nautica (1797), discussed in Mathias, p. 80.

[17]On eighteenth-century awareness of the condition of the poor, see Risse, p. 179.

[18]Bynum, p. 145.

air, in rooms crowded with many inhabitants."[19] A similar view was expressed three years later by David Campbell, who maintained:

> That a particular species of fever, is apt to be produced, in consequence of persons residing in apartments, where there is not a sufficiently free circulation of air; especially if crowded together, and accompanied with neglect of cleanliness, and a deficiency of proper food; repeated experience has so frequently, and so fatally demonstrated, that it would be superfluous to take up time, in adducing instances, where it has so occurred.[20]

By the late eighteenth century, medical men were convinced that the crowding and confinement of human bodies, especially those that were dirty and ill-nourished, gave rise to the form of fever known as typhus and they frequently referred to cases, such as the Assizes at Oxford in 1577 and at London's Old Bailey in 1750, in which such conditions were believed to have spawned the disease.[21] They were less cognizant, however, of the specific means by which the conditions operated and by which the disorder was perpetuated.

In accounting for the generation and spread of typhus, theorists focused on the quality of the air in particular enclosed spaces and on the interplay between human bodies and the atmosphere in such spaces. The influence of climatic and geographic factors on human well-being had long been an accepted feature of medical thought, and

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[19]John Heysham, An Account of the Jail Fever, or Typhus Carcerum: as it appeared at Carlisle in the Year 1781 (London: T. Cadell, 1782), pp. 23-24. Although Heysham referred to the disorder that afflicted the residents of Carlisle as "jail fever," he maintained that it spread through the town by means of a large weaving workshop.

[20]Campbell, p. 5.

[21]Ibid., p. 9; A Short Essay written for the Service of Proprietors of Cotton-Mills, and the Persons Employed in Them (Manchester: C. Wheeler, 1784), pp. 6-7.

since Thomas Sydenham's elaboration in the seventeenth century of the concept of the epidemic constitution of the atmosphere had had particular relevance to the understanding of fevers.[22] While remaining sensitive to the large-scale effects of climate and geography, however, late eighteenth-century fever investigators became preoccupied with the relationships pertaining between the environment and human beings on a more intimate scale.[23] As Alain Corbin has argued, "the main considerations were no longer altitude, exposure, the quality of space, and the nature of the winds, but the qualities of the confined, enclosed area of everyday life, the aerial envelope and the atmosphere of bodies."[24] Though they continued to direct some attention to the seasons and climatic conditions in which typhus was most likely to prevail—Campbell, for instance, noted that it was the product of "cold and temperate climates" and that its malignancy was increased by "moist and raw air"—investigators expressed greatest concern with the interior milieu of establishments which contained large numbers of people.[25] They maintained that in situations of inadequate

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[22]Bynum, pp. 140-143; Smith, p. 124.

[23]On late eighteenth-century interest in the relationship between climate and disease see L.J. Jordanova, "Earth Science and Environmental Medicine: The Synthesis of the Late Enlightenment," in L.J. Jordanova and Roy Porter (eds), Images of the Earth: Essays in the History of the Environmental Sciences, British Society for the History of Science Monographs #1 (1979), pp. 119-146; J.-P. Peter, "Disease and Sick at the End of the Eighteenth Century," in R. Forster and O. Ranum (eds), Biology of Man in History (Baltimore: Johns Hopkins University Press, 1975), pp. 81-124.

[24]Alain Corbin, The Foul and the Fragrant: Odour and the French Social Imagination (Cambridge, Mass.: Harvard University Press, 1986), pp. 20-21; see also John V. Pickstone, "Ferriar's Fever to Kay's Cholera: Disease and Social Structure in Cottonopolis," History of Science 22 (1984), pp. 405-406.

[25]Campbell, p. 39. See also Ferriar, "Prevention," p. 192.

ventilation, the presence of massed bodies, especially those that were dirty, diseased, or hungry, poisoned the air around them.

Explanations of the corrupting power of human bodies varied. In mid-century John Pringle had spoken of the air in places such as jails and ships being "pent up and deprived of its elastic parts by the respiration of a multitude; or more particularly vitiated with the perspirable matter, which, as it is the most volatile part of the humours, is also the most putrescent."[26] Researchers later in the century continued to refer to Pringle's descriptions, but following investigations into the chemical composition of air, most notably by Joseph Priestley, they also began to employ a new terminology.[27] In 1796 Thomas Henry, the distinguished apothecary, manufacturer, and friend of Priestley and Thomas Percival, explained to the Manchester Board of Health that when a number of people were confined in a room, they injured its atmosphere by removing the "vital" part, leaving the impure "azote," along with "a small quantity of gas equally deleterious, formed by the union of the pure air with the coaly part of the blood, which is thrown off as extrimentitious."[28] Underlying the differences of language was a view that through the workings of their bodies, human beings generated noxious effluvia or exhalations, which, if not sufficiently dispersed by

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[26]Pringle, p. 4.

[27]Corbin, pp. 11-21; Joseph Priestley, Observations on Air (London: 1774).

[28]W.V. Farrar, Kathleen R. Farrar, and E.L. Scott, "The Henrys of Manchester Part I: Thomas Henry (1734-1816), Ambix 20 (1973), pp. 183-208; E. M. Brockbank, Sketches of the Lives and Work of the Honorary Medical Staff of the Manchester Infirmary (Manchester: Manchester University Press, 1904), pp. 71-82; Thomas Henry, "Remarks," in Board of Health, pp. 28-29. See also A Short Essay, pp. 8-9.

free-flowing air, were capable of tainting the environment and generating disease.

Though the action of corrupted air was not completely understood, it was believed to be capable of inducing typhus within human bodies, particularly those that were sickly or "delicate."[29] According to Thomas Percival, "like certain poisons, [foul air] effects an instantaneous change in the nervous system, by which the organs of secretion are disturbed, and the secretions themselves corrupted."[30] David Campbell provided a slightly different explanation. He maintained that "when inhaled for too great length of time, or in too concentrated a state," vitiated air "induced a state of debility in the system," evidenced by the familiar symptoms of prostration, reduced appetite, and weakened pulse.[31] He argued, too, that while the "debilitating power" affected the whole bodily system, it exerted a particular influence on the "vessels of the brain," which became "distended with an unusual quantity of fluids, [and] from their encreased bulk, and subsequent effusions, and suppurations, occasion head ach [sic], irritation, delirium, and death."[32]

The interaction between bodies and the atmosphere did not end with the appearance of disease. Once afflicted, a fevered individual was seen to be capable of infecting other people (especially those who were debilitated by poverty, disease, or

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[29]Thomas Percival, "A Narrative of the Sufferings of a Collier...with Observations of the Effects of Famine...and on the Action of Foul Air on the Human Body," in The Works, Literary, Moral, and Medical (Bath and London: 1804), vol. 4, p. 293.

[30]Ibid., p. 294.

[31]Campbell, pp. 30, 114.

[32]Ibid., pp. 114-115.

depression) through the production of contagion, "a subtile, active, and virulent substance" that escaped the sick body and entered and gave rise to similar symptoms in others.[33] Contagion was also believed to impregnate the clothing of fever sufferers, as well as "wool, cotton, silk, fur, feathers, and all articles of the like nature, either in their raw or manufactured state," and furniture, walls, and floors, and in this state, too, was believed to convey its malignancy to other persons, often in a more forceful manner than when it arose directly from the sick individual.[34]

While acknowledging the existence of contagion, fever theorists expressed considerable uncertainty regarding its nature and operation. In 1785 Campbell noted that "the volatile something" was "rather traced by its effects, than known by any particular appearances," adding that it could sometimes be detected by an "earthy disagreeable" smell, like that of rotten straw.[35] Some investigators spoke of contagion as a type of vapour or gas. In 1792 John Ferriar noted Mr. St. John's view that "the poison of fevers is a peculiar *gas* exhaled from the surface" of the body, while in 1796, one of Percival's correspondents, Dr. Garnett, argued that it likely consisted of

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[33]Heysham, p. 23. Though late eighteenth-century theorists employed the concept of contagion, they should not be regarded as strong "contagionists." In terms of the analytic categories discussed by Charles Rosenberg in "Explaining Epidemics," in Explaining Epidemics and Other Studies in the History of Medicine (Cambridge: Cambridge University Press, 1992), pp. 293-304, their understanding of fever was more "configurational" than "contaminationist."

[34]Campbell, pp. 7-8.

[35]Ibid., pp. 127, 31-32; on the significance of and growing interest in smells see Corbin, passim.

"hydrogen gas, charged with animal substances."[36] While agreeing that it could be transmitted only by contact, or over a very short distance, medical observers were in some dispute over the exact manner by which contagion entered other bodies. In a submission to the Manchester Board of Health in 1796, "A.B." stated that the "avenues" by which it gained access was "at present a controversial point"; he maintained that contagion was "first received into the stomach."[37] John Ferriar, on the other hand, argued that it acted initially on the nervous system, and was "propagated by an impression on the olfactory nerves."[38] David Campbell maintained that "as the infectious vapours are first received into the mouth, the *saliva* will of course be impregnated, with the seeds of contagion, and if taken into the stomach, may be thus the means of giving rise to the disease."[39] Medical uncertainty and disagreement extended to the manner in which contagion acted on the body of a sound individual, and particularly on the degree to which it caused putrefaction of the bodily fluids. Considering the matter, Campbell concluded that it was probable that contagion was "absorbed into the system," where it acted upon "the irritable and muscular fibres" and possibly circulated with the fluids.[40]

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[36]John Ferriar, "Origin of Contagious, and New Diseases," in Medical Histories, vol. 1, p. 240; Dr. Garnett, "On Purifying the Air of infected Apartments," in Board of Health, p. 43.

[37]A.B., "Remarks and Observations," in Board of Health, pp. 35-36.

[38]Ferriar, "Origin," p. 236.

[39]Campbell, p. 34.

[40]Ibid., pp. 127-128.

II

In considering the outbreaks of disease which occurred in manufacturing towns, and especially in trying to establish the nature of the relationship between typhus and the new spinning mills, medical men directed their attention to the social and physical environment of the mills. To their minds, the most threatening aspect of the factory lay in the number of people crowded within its walls. Whether they viewed the factory as a producer or a propagator of fever, they were alarmed by the capacity and design of the new establishments. As the author of the Short Essay written for...the Proprietors of Cotton Mills, and the Persons Employed in them described them:

> Cotton Mills are large buildings, but so constructed as to employ the greatest possible number of persons. That no room may be lost, the several stories are built as low as possible....The number of people who work in the mill must certainly be proportioned to the size of it. In a large one I am informed there are several hundreds: from whence it is evident, a very considerable division must be allotted to each apartment.[41]

Medical spokesmen maintained that the closeness and confinement of such a multitude of persons, especially those whose bodies or clothes were dirty or diseased, corrupted the air inside the mills and facilitated the spread of typhus in the factory workforce.

Some commentators went further. Alert to "the prodigious dangers of both putrid and licentious promiscuity," they argued that the poisonous influences of congregated individuals permeated not only the physical, but the moral atmosphere of the mills.[42] Thomas Gisborne, a Staffordshire clergyman and friend of Thomas

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[41]A Short Essay, p. 9.

[42]Corbin, p. 101.

Percival, stated that when all manner of workers were gathered together in one room, "the contagion of vice [was] unrestrained, and shame itself extinguished by the universality of guilt."[43] In his mind, depravity served as the moral counterpart of fever and was as virulent in its action. Gisborne was not alone in perceiving an analogous relationship between physical illness and vicious behaviour. Prison and poor law reformers of the day also recognized the connected possibilities of disease and immorality in situations of crowding.[44]

Medical authorities were apprehensive not only of the corrupt exhalations and influences emanating from the bodies of factory workers, but also the filth of factory floors and machinery, and the offensive smells and effluvia arising from privies, candles and lamps, and machine oil. Such factors, they believed, contributed to the fouling of the air and to the generation of fever.[45] They were critical, as well, of the long hours and night work that were common in the early cotton mills, and were especially worried about the effects of these on young workers. In their investigation of the Radcliffe epidemic, Thomas Percival and his colleagues maintained that "the active recreations of childhood and youth" were essential to the "growth, vigour, and

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[43]Thomas Gisborne, An Enquiry into the Duties of Men in the Higher and Middle Classes..., 4th ed. (London: B.&.J. White, 1797), vol. 2, pp. 399-400; Irvine Loudon, "The Concept of the Family Doctor," Bulletin of the History of Medicine 58 (1984), p. 354, note 26.

[44]Margaret DeLacy, Prison Reform in Lancashire, 1700-1850: A Study in Local Administration (Stanford: Stanford University Press, 1986), pp. 81-82; Sir Frederick Morton Eden, The State of the Poor... (London: J. Davis, 1797), vol. 1, p. 422.

[45]A. Meiklejohn, "Outbreak of Fever in Radcliffe Cotton Mills, 1784," British Journal of Industrial Medicine 16 (1959), pp. 68-69; A Short Essay, p. 9; Ferriar, "Prevention" p. 197; Campbell, pp. 25-27; Henry, p. 30.

the right conformation of the human body," and that long factory hours obstructed the physical and moral needs of young persons.[46] In a similar vein, the author of the Short Essay asserted that:

> Youth is the time in which, if ever, the foundation of health must be laid, and strength of constitution acquired; and nothing can more powerfully tend to prevent either, than the want of pure air, and loss of proper sleep, at proper hours. With respect to the latter circumstance, every one knows that sleep in the day is not so refreshing or strengthening, as sleep in the night.[47]

Though the practice of night work seems to have abated towards the end of the century, it was still sufficiently prevalent for John Ferriar to refer to it as a "cause of fever" in 1795.[48] Ferriar argued that when factories operated at night, their atmosphere was impaired through the use of candles and lack of opportunities for ventilation. He maintained, too, that "watching is particularly severe, and prejudicial to children, at the early age when they begin to be employed in these works."[49] Like other spokesmen he was alarmed by the consequences of night children occupying beds that day children had just climbed out of, adding that "such is the natural appetite for fresh air, that many of these creatures prefer rambling the fields, during part of the time allotted to

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[46]Meiklejohn, p. 69.

[47]A Short Essay, p. 18. In a submission to the Manchester Board of Health in 1796, Dr. Bardsley, "Remarks," in Board of Health, p. 27, similarly declared that "it has been universally the opinion of the highest medical authorities, that (in the northern climates at least), sleep is more advantageous during the night than in the day."

[48]Ferriar, "Prevention," pp. 197-199.

[49]Ibid., p. 197.

them for sleep."[50]

These features—the crowding of workers, the contaminating influences of physical and moral decay, and the length of time and portion of the day in which individuals were confined in the factory milieu—pertained more to the domiciliary capacity of the mill than to its productive purpose. With their extensive experience of the domestic conditions of the poor and wide-ranging interest in the structure and hygienic management of institutions which accommodated the poor, investigators of factory ill-health in the late eighteenth century concentrated their attention on the space within the factory and had little to say about the productive activity that occurred there, or about the effects of such activity on human well-being.

They had little to say, for instance, about the raw materials utilized in the mills. In his writings on the manufacturing system, Thomas Gisborne denied that such materials had any relevance to the problems at hand, stating that the cotton manufacture was injurious "not by any noxious quality in the article operated upon, but by external circumstances usually attending the operation."[51] Other observers acknowledged the presence of raw cotton, but accorded it only a minimal role in the production or transmission of disease. The author of the Short Essay, for instance, pointed to cotton dust, vitiated by the operation of the machinery, as only one of a number of secondary agents capable of corrupting factory air.[52]

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[50]Ibid., p. 198.

[51]Gisborne, vol. 2, p. 392.

[52]A Short Essay, p. 9.

According to prevailing medical theory, porous materials such as cotton were capable of attracting and holding contagious particles and thus could serve as powerful transmitters of disease. As "A.B." stated to the Manchester Board of Health, "all porous substances retain infection; and especially such as are of a light texture, as cotton, whether manufactured or otherwise; the fibres of which, having a disposition to repel one another, do leave spaces for the lodgment of infectious particles."[53] Although factory workers seem to have feared the infection-carrying capability of the cotton they handled—at Ashton-under-Lyne such anxiety was heightened by the fever that broke out in the pickers' room of the local mill—medical investigators were at pains to downplay the possibility. "On the subject of the propagation of infection in cotton-mills," advised John Ferriar, "it may be necessary to observe, that although it has been supposed that fever may be imported in the cotton, and though this opinion does not seem improbable in itself, yet no direct proof of fevers originating from this source has ever been obtained."[54] The chief threat to factory workers' health, as far as Ferriar and his colleagues were concerned, arose from the assemblage of workers themselves and not from exposure to the raw cotton. Even the Ashton-under-Lyne epidemic was traced on the basis on "very respectable authority" to the human factor of a "girl who went to be employed as a picker at Ashton."[55]

The lack of attention directed to the potentially harmful qualities of raw cotton is

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[53]A.B., p. 38.

[54]Ferriar, "Remarks," p. 17. See also Campbell, p. 20.

[55]Ferriar, "Remarks," p. 18.

at odds with contemporary discussion of the dangers inherent in more traditional forms of work. In his remarks on manufacturing, Gisborne contrasted the production of cotton with work involving mercury and lead, arguing that the latter was dangerous owing to the substances used.[56] Medical men had long been interested in the effects of metallic substances on health.[57] At the beginning of the eighteenth century, Bernardino Ramazzini devoted the opening section of his authoritative treatise, De Morbis Artificum, to the diseases that beset miners and craftsmen, such as gilders, potters, and painters, who handled metals.[58] At the end of the century, physicians and surgeons continued to discuss the problems associated with mining and mineral work. In 1790 a Birmingham surgeon, William Richardson, produced a work for "metallic artists," which included a survey of the manner in which various metals impaired the health of those who came into contact with them.[59] He introduced the subject by stating:

> In the application of metals to the different arts, the persons employed, are often injured to a great degree, by some of the particles entering their bodies; either in consequence of being swallowed with the spittle, drawn

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[56]Gisborne, vol. 2, p. 391.

[57]George Rosen, The History of Miners' Diseases (New York: Schuman's, 1943).

[58]Bernardino Ramazzini, Diseases of Workers , trans. Wilmer Cave Wright, intro. George Rosen (1713; rpt. New York: Hafner Publishing Company, 1964), p. 15.

[59]William Richardson, The Chemical Principles of the Metallic Arts; with an Account of the Principal Diseases incident to the Different Artificers... (Birmingham: R. Pearson, 1790). Thomas Percival was also interested in the occupational effects of metals, particularly lead. See his "Observations and Experiments on the Poison of Lead," in Works, vol. 3, pp. 447-507.

in along with the breath, or absorbed by the pores of the skin.[60]

Unlike the situation in the factory, where it was the contagion from other workers which was believed to be taken in with the spittle, in the mines and metal workshops, it was the dust (and vapours) from the raw metals which were believed to enter and harm workers' bodies.

In the late eighteenth century metallic particles were seen to exercise harm in two ways, either through chemical poisoning, as in the case of work with lead, mercury, or arsenic, or physical injury, as with the grinding of iron.[61] Though raw cotton could be viewed as a carrier of poison, it was not seen to poison in and of itself. Nor was it seen to injure in a physical or mechanical fashion. This is evident from an essay on pulmonary consumption written by the Bristol physician, Thomas Beddoes.[62] In the essay Beddoes singled out occupational groups whom he believed were particularly likely to contract consumption, and although he included both metal and textile workers in his list, he attributed their liability to very different circumstances. He maintained that the disease arose in needle-grinders, stone-cutters, and brass casters because of "external injury" done to the lungs by the "hard" particles of metal.[63]

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[60]Richardson, p. 180.

[61]Ibid., pp. 180-182; James Johnstone, "Some Account of a Species of Phthisis Pulmonalis, peculiar to Persons employed in pointing Needles in the Needle Manufacture," Memoirs of the Medical Society of London 5 (1799), p. 91.

[62]Thomas Beddoes, Essay on the Causes, Early Signs, and Prevention of Pulmonary Consumption (Bristol: T.N. Longman and O. Rees, 1799). See also his Hygeia; or, Essays Moral and Medical on the Causes affecting the personal Health of our Middling and Affluent Classes (Bristol: R. Phillips, 1802-1803), vol. 2, pp. 24-34.

[63]Beddoes, Essay, p. 62.

With weavers, spinners, and carpet-manufacturers, however, he negated the influence of "small, floating particles" and pointed to sedentariness and confinement as the chief causal factors.[64]

Medical investigation of the degree to which factories endangered the health of their occupants was virtually silent not only about the materials used in the mills, but about the machines that dominated their interiors. The sight, noise and smell of the huge, power-driven machinery no doubt overwhelmed the people forced to work alongside it. One witness, Robert Blincoe, recalled that when he was sent as an apprentice to the Lowdham Mill, near Nottingham, in 1799, he "heard the burring sound before he reached the portal and smelt the fumes of the oil with which the axles of twenty thousand wheels and spindles were bathed. The moment he entered the doors, the noise appalled him, and the stench seemed intolerable."[65] Once introduced to the work, he reportedly "set to with diligence, although much terrified by the whirling motion and noise of the machinery, and not a little affected by the dust and flue with which he was half suffocated."[66] The experience of workers like Blincoe found little expression in learned accounts. Medical men said nothing about the noise of factory machinery and although Thomas Henry and the author of the Short Essay

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[64]Ibid., p. 64.

[65]John Brown, A Memoir of Robert Blincoe, an Orphan Boy; sent from the Workhouse of St. Pancras, London, at Seven Years of Age, to endure the Horrors of a Cotton-Mill... (Manchester: J. Doherty, 1832), p. 20. Although published in 1832, the account was based on notes taken from Blincoe in 1822 and 1824.

[66]Ibid.

mentioned the presence of rancid machine oil, they referred to it as a substance which contributed to the contamination of factory air and not something which directly sickened the workers.[67] In their writings, medical observers were also silent about the interaction between whirling machine parts and human frames and limbs. They said nothing about the pace of machine-dominated work and nothing about the movements and postures demanded by machine work, although "violent and irregular motions and unnatural postures of the body" were considered by Ramazzini and his followers to be a prolific source of disease.[68] As well, they made no reference to the accidents that resulted from such work, though they often encountered the victims of machine accidents in the infirmaries and dispensaries to which they were attached.[69]

III

In the socio-medical discussion of the disease and death that prevailed in manufacturing towns, the factory was represented not as a new type of workplace, but

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[67]Henry, p. 30; A Short Essay, pp. 9-10.

[68]Ramazzini, p. 15. Writers on hygiene, such as Francis J.P. de Valangin, A Treatise on diet, or the Management of Human Life... (London: J.& W. Oliver, 1768), pp. 211-266, who regarded motion and rest as one of the non-naturals, also believed that immoderate and violent motions and strained postures injured health. Although Ferriar, "Prevention," p. 205, described factory work as a "sedentary" employment, "attended with little bodily labour within doors," this was a traditional way of referring to occupations involving textiles and was not an accurate portrayal of machine spinning or minding.

[69]Brown, p. 26; Sir John Sinclair, The Statistical Account of Scotland (Edinburgh: W. Creach, 1791-1799), vol. 15, p. 35, vol. 20, p. 184; Marjorie Cruikshank, Children and Industry: Child Health and Welfare in North-West Textile Towns during the Nineteenth Century (Manchester: Manchester University Press, 1981), p. 42.

as a house of the poor. As such, it was seen to have much in common with other types of houses in which the poor resided. John Ferriar's assertion that ventilation and cleanliness could render a cotton factory "as healthy as a private house," suggests that in the 1780s and 1790s spinning mills were regarded in much the same way as the lodging houses and cellar dwellings in which the manufacturing poor dwelt.[70] In each of these types of establishment, individuals were seen to be crowded together for lengthy periods of time, cut off from supplies of fresh air and natural light, and exposed to the pernicious influences of filth and putrid exhalations.[71] For investigators such as Ferriar, factories and lodging houses served as equally potent breeding grounds of fever.

The ease with which the discussion of fever shifted from a consideration of factories to a scrutiny of the housing conditions of the poor is partly explicable by the multiple roles that both factories and workers' dwellings served in the late eighteenth century. Cellars and lodging houses were not only places where people ate and slept, they were also scenes of domestic production. Similarly, cotton factories were not only centres of production, but also places of residence. Because of their reliance on water power, eighteenth-century mills were frequently established in rural settings, where the population was scattered.[72] In attempts to secure and mold a suitable labour force,

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[70]Ferriar, "Prevention," p. 199.

[71]Ibid., pp. 178-189, 196-199.

[72]Arthur Redford, Labour Migration in England 1800-1850, 3rd ed., (Manchester: Manchester University Press, 1976), p. 21.

many factory masters built cottages or established villages for their workers.[73] Many also employed parish apprentices and necessarily became involved in the business of feeding, clothing, and lodging. At New Lanark, for instance, David Dale accommodated several hundred apprentice children in a boarding-house near the mills.[74] For at least two of the children, who had been sent to the factory in poor health and who had no relatives to care for them, the Lanark works served solely as a place of residence. According to Dale, the two were maintained in the boarding-house for several years, though they were never employed in the mills.[75]

Factories were not only likened to private dwellings, they were also regarded as having much in common with public institutions in which large numbers of the poor were confined. Indeed, in his remarks on the efficacy of ventilating and cleaning, Ferriar compared a cotton factory first to a private house and then to a hospital.[76] Other medical men also conceived of cotton mills in much the same manner as hospitals, army camps, workhouses and prisons. For instance, in a discussion of the pernicious stench of privies, David Campbell stressed the importance of the matter for

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[73]S. Pollard, "The Factory Village in the Industrial Revolution," English Historical Review 79 (1964), pp. 516-519; Stanley D. Chapman, The Early Factory Masters (Newton Abbot: David & Charles, 1967), pp. 157-160.

[74]Thomas Bernard, "Extract from an Account of Mr. Dale's Cotton Mills at New Lanerk [sic], in Scotland," Reports of the Society for Bettering the Condition...of the Poor 2 (1800), p. 364; Dale, pp. 61-63. The number of children reportedly increased from 270 in 1792 to 500 in 1800.

[75]Dale, pp. 54-55.

[76]Ferriar, "Prevention," p. 199.

"the health of factories, barracks, and all places where many people reside."[77]

Such comparisons were not limited to local observers. In 1797, Sir Frederick Eden, investigator of the state of England's poor, transferred arguments which were being advanced against workhouses to manufactories, stating that "the objections which have been repeatedly urged against parochial work-houses, and houses of industry...seem to be no less applicable to those places, in which great numbers of boys and girls are thronged together, at the spinning wheels, the loom, or any other mechanical employment."[78] The following year, John Mason Good, physician at London's Coldbath Fields prison, produced a treatise on "maintaining and employing the poor" in workhouses, in which he repeatedly referred to "the cotton manufactory at GLASGOW" as an exemplar of the "order, and regularity" he believed should prevail in parochial workhouses.[79]

The view of the factory articulated by medical and social commentators seems to have corresponded closely to popular perceptions. As Arthur Redford has pointed out, early cotton manufacturers, such as David Dale or the Buchanan brothers at Deanston, in Perthshire, experienced considerable difficulty in obtaining labour for their mills because of the reluctance of the local population "to be employed in what they called 'a

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[77]Campbell, p. 27.

[78]Eden, vol. 1, p. 420.

[79]John Mason Good, Dissertation on the best Means of Maintaining and Employing the Poor in Parish Workhouses... (London: Cadel & Davis & Morton, 1798), pp. 49, 141, 146; Michael Ignatieff, A Just Measure of Pain: the Penitentiary in the Industrial Revolution, 1750-1850 (London: The Macmillan Press, 1978), p. 60.

public work.'"[80] Evidence suggests that working people often perceived of mills as a form of workhouse or prison.[81]

It is not surprising that factories, hospitals, workhouses, and jails were linked in the minds of eighteenth-century observers, for, as Michael Ignatieff has argued in his history of the penitentiary, these institutions shared many roots.[82] The cotton factory of the late eighteenth century was foreshadowed by late seventeenth and eighteenth-century bridewells, houses of correction, and houses of industry, in which masters of outwork trades, often textiles, contracted for the work of the inmates and in which the motives of labour, discipline and profit were closely entwined.[83] The factory came into existence at the same time as proposals were being put forward for the reshaping of Poor Law institutions; as hygienic reforms were being made in hospitals, ships, and army camps; and as prisons were being transformed into penitentiaries. Ignatieff argues that such reformations and transformations were closely related, and that they were linked to demands for political reform as well. He identifies them as the work of

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[80]Redford, pp. 21-24.

[81]Ibid., p. 24. In 1799, the London radical, John Thelwall, Monthly Magazine (1 November 1799), quoted in E.P. Thompson, The Making of the English Working Class (Harmondsworth, Middlesex: Penguin Books, 1968), pp. 378-379, questioned whether a large factory was anything "but a common prison-house, in which a hapless multitude are sentenced to profligacy and hard labour, that an individual may rise to unwieldy opulence."

[82]Ignatieff, passim.

[83]Ibid., pp. 13-14, 31-32, 111; Ignatieff, pp. 36-37, points out that the profit motive operated not only on the part of the outwork masters, but also on the part of jailers and nurses, who charged institutional residents fees for services rendered. See also A.P. Wadsworth and J. de L. Mann, The Cotton Trade and Industrial Lancashire 1600-1780 (Manchester: Manchester University Press, 1931), p. 406; Redford, p. 24.

a reform constituency, composed of Nonconformist, moderate or radical Whig doctors, scientists, and manufacturers, whose personal interest in regimen and discipline extended to a concern with the hygiene and morals of the poor.[84] The interests of these reformers often overlapped, as exemplified in the figure of Thomas Percival, who, as noted in the previous chapter, was active not only in the investigation of factories, but also in the expansion of Manchester Infirmary, the founding of the Manchester Board of Health, the construction of penitentiaries, and the establishment of the Manchester Poor House.

It might be argued that the inclination of late eighteenth-century reformers was to differentiate institutions housing the poor and to create, out of the heterogeneous asylums of the past, specialized institutions catering to the needs of particular groups of the poor.[85] In support of such an argument, one could point to Gilbert's Act of 1782, which removed the profit motive from poor relief through its prohibition on "farming" the poor, or to remarks made by Thomas Bernard, founder of the Society for Bettering the Condition and Increasing the Comforts of the Poor, in which he distinguished between the types of treatment appropriate to "the idle and criminal" sorts of the poor and those suitable for "the friendless and distressed."[86]

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[84]Ignatieff, pp. 57-71.

[85]Gertrude Himmelfarb, The Idea of Poverty: England in the Early Industrial Age (New York: Alfred A. Knopf, 1984), p. 83, makes such an argument.

[86]Ignatieff, p. 111; A.W. Coats, "Economic Thought and Poor Law Policy in the Eighteenth Century," Economic History Review 13 (1960), p. 43; Thomas Bernard, "Preliminary Address to the Public," Reports of the Society for Bettering the Condition ...of the Poor 1 (1798), p. xv.

The appearance of Jeremy Bentham's Panopticon, however, suggests that at the close of the century reformers still tended to view public institutions in a non-specific and almost interchangeable way.[87] Inspired by a factory built by his brother, Bentham published the Panopticon in 1791 as a plan for prisons.[88] He emphasized, though, that the scheme was equally applicable to "houses of industry, work-houses, poor-houses, manufactories, mad-houses, lazarettos, hospitals, and schools," and maintained that by means of its particular design, the various goals of such institutions could be achieved:

> Morals reformed, health preserved, industry invigorated, instruction diffused, public burthens lightened, Economy seated, as it were upon a rock, the Gordian knot of the Poor-Laws not cut, but untied—all by a simple idea of Architecture.[89]

Bentham enshrined the profit motive as an essential element in the operation of establishments for the poor, arguing that they should be managed by keepers, who would retain the profits generated by the work of the occupants, and whose self-interest would ensure discipline and good health.[90]

Though Bentham's ideas seem to have run counter to the prevailing stream of official thought—they received little support when elaborated in 1798 in Pauper Management Improved and were decisively rejected in 1810 by a parliamentary committee dealing with penitentiaries—they corresponded to the confused reality of

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[87]Jeremy Bentham, Panopticon; or, the Inspection-House... (Dublin: 1791).

[88]Ignatieff, p. 110.

[89]Bentham, p. 139-140.

[90]Ibid., pp. 42-79.

establishments containing the poor.[91] In the late eighteenth century, factories, workhouses, and prisons still functioned in similar ways. In a penitentiary at Preston, for instance, prisoners laboured for a local cotton magnate, Mr. Horrocks, picking and weaving cotton in huge workshops.[92] Less than twenty miles away at the Radcliffe mill, local residents and apprentices worked for another such eminent figure, Robert Peel, who was said to have "insisted upon a system of punctuality and regularity which approached the discipline of military drill."[93]

IV

If the cotton mill of the 1780s and 1790s was not regarded as a unique place of work, neither were its inhabitants perceived as distinctive sorts of labourers. The image of factory workers as "hands," or automatons, was to come later.[94] In this period mill workers were discussed most often as the "manufacturing" or "industrious poor," persons who engaged in productive activity, and who displayed many of the moral attributes of their social superiors.[95] In the literature on fever and poverty,

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[91]In Pauper Management Improved, Bentham argued that the relief and control of the "whole body of the burdensome poor" should be vested in a national company modelled on the East India Company; see Himmelfarb, pp. 78-83; Ignatieff, pp. 112-113.

[92]Ignatieff, p. 97.

[93][A.E. G. Jones], "The Putrid Fever at Robert Peel's Radcliffe Mill," Notes and Queries 103 (1958), p. 32.

[94]On this point I disagree with Ignatieff, pp. 67-68.

[95]See, for example "Establishment of a Committee..." in Board of Health, p. 1; Campbell, p. 21. Raymond Williams, Culture and Society 1780-1950 (New York: Harper & Row, 1958), pp. xi-xii, points out that in the late eighteenth century the

factory workers were, in general, apprehended sympathetically as fully human beings, whose "vices and faults" were those "of an unfavourable situation, rather than of individual delinquency."[96] If their moral stature was not seen to be identical to that of the higher orders, it was nonetheless, believed to be considerable. From observing their conduct, "every day, in the most trying situations," Ferriar, for one, was convinced that the poor who resided in manufacturing towns possessed many "virtues."[97]

Such a view was strengthened by contemporary investigation of the nature and causes of typhus. Typhus was seen to arise most often among "the poor and labouring" sorts of people.[98] By emphasizing the role that "moral" causes, such as anxiety and poor spirits, could play in its production and progress, fever theorists accorded factory labourers a physical and moral nature which was essentially the same as that of higher-ranking individuals.[99] As well, in asserting that the effluvia which issued from impoverished bodies only acquired malignant potency in situations of

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words "industry" and "industrious" referred not only to manufacturing activities and institutions, but also to such human attributes as perseverance and diligence.

[96]Thomas Bernard, "Prefatory Introduction to the Second Volume," Reports of the Society for Bettering the Condition...of the Poor 2 (1800), p. 14.

[97]Ferriar, "Prevention," p. 204.

[98]Campbell, p. 53.

[99]Ignatieff, pp. 60-61, argues that eighteenth-century medical men saw a close relationship between physical illness and mental or emotional disturbance, and that this view derived from David Hartley's materialistic philosophy. DeLacy, p. 88, denies that physicians such as Percival and Ferriar were materialists, although she acknowledges their interest in the link between physical and psychic disorders.

overcrowding and confinement, medical investigators exculpated the labouring poor from direct personal responsibility for the spread of disease and immorality. In their judgement, it was not individual workers who were defective; rather, it was situations in which they were massed that constituted the threat to public health.[100]

For all their mental and moral capabilities, however, mill workers were not seen to have an adequate understanding of the problems of contagion and health. Percival spoke of the "credulity" of the poor and of their "prejudices" concerning treatment, while Ferriar described "their want of knowledge, and want of foresight."[101] According to those with professional expertise, the flawed understanding of the manufacturing community frequently gave rise to practices, such as visiting and offering mutual aid, which unintentionally resulted in greater harm than good. To take but one example, cited by the Medical Committee of the Manchester Infirmary:

> A boy employed at a cotton-mill, brought the fever into his family in Fleet-street, consisting of his father, mother, and seven children. From a scarcity of beds, the infected person slept in turn with the rest of the family; in consequence of which, they all became infected: the disease proved fatal to the mother and one daughter. The family were humanely visited by the mother's sister, who resided in Southern-street. She caught the fever, and communicated it to her daughter, who slept with her. The mother died; and the daughter, with difficulty, struggled through the disease.
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> This family were visited, and attended upon, by a neighbour in Priestner-street.

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[100]Ferriar, "Prevention," p. 202.

[101]Clerke, pp. 17, 18; Ferriar, "Origin," p. 241. For similarly held views of the French peasantry see Harvey Mitchell, "Rationality and Control in French Eighteenth-Century Medical Views of the Peasantry," Comparative Studies in Society and History 21 (1979), pp. 82-112.

> This last person became infected by the fever, and imparted it to her husband, and one child. The husband, wife, and child, all perished by the disease.
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> The fever, after attacking five more of the family, still rages in the house—after an interval of seven weeks from the attack of the first individual.[102]

In the view of medical observers, the "abuses and errors" that prevailed within the factory population required and legitimated "instruction and assistance from the more enlightened" sectors of society.[103]

Assistance from above was desirable for another reason as well, for, in addition to being seen as misguided, the ever-increasing numbers of poor persons who congregated in the manufacturing towns were regarded as "strangers."[104] In the late eighteenth century, the term "strangers" applied particularly to industrial immigrants, who lacked settlement rights in their new parishes and who could not claim statutory relief in times of sickness or need.[105] While many of the manufacturing poor were strangers in this technical sense, they also were perceived in a more general way as

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[102]Board of Health, pp. 45-46.

[103]John Ferriar, "Account of the Establishment of Fever-Wards in Manchester," in Medical Histories, vol. 3, p. 91. See also Clerke, p. 11.

[104]In "Observations on the Bills of Mortality for the Towns of Manchester and Salford," Memoirs of the Manchester Literary and Philosophical Society 3 (1790), pp. 159-173, Thomas Henry argued that "the introduction of machinery" had led to "a very considerable increase of inhabitants" in Manchester and Salford. He estimated that the population of these towns had increased from 29,151 in 1773 to 48,681 in 1786. The growth of other manufacturing towns was equally rapid; see John Aikin, A Description of the Country from Thirty to Forty Miles round Manchester (1795; rpt. New York: Augustus M. Kelley, 1795), pp. 227-305 passim.

[105]Ferriar, "Prevention," p. 192, uses the term in this way.

"unrecommended or unknown" persons, whose presence was concealed in the opaque and subterranean dwellings of the towns.[106] Such a view was especially evident in Manchester and its environs in the 1790s, when, as John Pickstone has argued, industrial depression, harvest failure, and the outbreak of war with France led to instability and growing apprehension of unrest among the poor.[107]

In the volumes of his Medical Histories and Reflections, John Ferriar was at pains to point out that it was "persons newly arrived from the country," who were most likely to fall prey to the causes of fever.[108] He spoke of such persons being hidden away in "small, dark cellars," "dark, narrow courts, or blind alleys," and maintained that very often their existence was ignored even in the houses in which they lodged.[109] In his account of the 1789-1790 epidemic, he related an especially poignant case of a woman named Jane Jones, who was "fresh from the country" and who had contracted fever by entering an infected lodging house.[110] Because the mistress of the house did not wish to admit her "imprudence" in admitting a newcomer, Jane's condition was kept secret and her illness was only revealed "by the screams of

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[106]Thomas Percival, "Remarks," in Board of Health, p. 6.

[107]John V. Pickstone, Medicine and Industrial Society (Manchester: Manchester University Press, 1985), p. 24.

[108]Ferriar, "Prevention," p. 183.

[109]Ibid., p. 193; John Ferriar, "Epidemic Fever of 1789, and 1790," in Medical Histories, vol. 1, p. 137.

[110]Ferriar, "Epidemic," pp. 126-127.

the poor creature, which were heard in the adjoining house."[111]

It was not merely the presence of strangers which demanded attention at the close of the eighteenth century, their mobility, too, was cause for concern. In his essay on fever prevention, Ferriar maintained that "at present, the workman, after leaving the warehouse, wastes his evening in the alehouse, or strolls about the streets and fields to a late hour, for the purposes of intrigue," and in his "Advice to the Poor," he cautioned that such behaviour occasioned "much sickness."[112] Socio-medical investigators were particularly alarmed by the manner in which the movements of the poor contributed to the spread of fever. They warned of the danger of "irregular patients" returning to work and carrying the disease back into the factories, and of "passengers" and persons in search of employment transmitting the infection from one locale to another.[113]

V

For all their difficulty, the problems posed by fever were not seen to be insoluble. Although the local populace was stirred to agitation by the epidemics that swept through their communities, medical spokesmen maintained an attitude of reasoned calm and, while not underrating the urgency of the matter, were confident about their

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[111]Ibid.

[112]Ferriar, "Prevention," pp. 205-206; John Ferriar, "Advice to the Poor," in Medical Histories, vol. 3, p. 217.

[113]Clerke, p. 22; Ferriar, "Prevention," p. 197; Ferriar, "Remarks," pp. 19-20; Ferriar, "Account," pp. 44-45; Percival, "Remarks," p. 6.

abilities to bring the disorder under control. Even in the initial investigation of the fever that prevailed at Radcliffe, Percival and his colleagues spoke with assurance: they were "fully satisfied" that the disease in question was a low, contagious fever; they were "decided" in their view that it had been intensified by conditions such as overcrowding and confinement; and they "trust[ed]" that the factors they had identified were "not without remedy."[114] Such confidence can be attributed to the environmentalism of late eighteenth-century medical thought, which emphasized the possibilities of understanding and controlling the relationship between human beings and their surroundings.[115] It also derived, no doubt, from previous experience in confronting fever and from the availability of a rich body of fever literature, which indicated ways of preventing and managing the disease.

In the 1780s and 1790s, socio-medical investigators advocated a number of solutions that aimed to avert the threat of fever in factory settings. One approach, favoured by Thomas Gisborne, was a return to traditional socio-economic practices and relations. In his Enquiry into the Duties of Men in the Higher and Middle Classes of Society, Gisborne argued that factory owners should urge their employees to live in small villages, rather than populated towns, and, wherever possible, should supply them with work in their homes, rather than bring them into the factories.[116] He maintained, too, that the owner of a mill should exercise close, paternal authority and

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[114]Meiklejohn, p. 68.

[115]Jordanova, pp. 119-146.

[116]Gisborne, vol. 2, pp. 396-397, 401.

supervision over his workers:

> Let him acquire their confidence and secure their attachment by joining uniform mildness and affability of behaviour to the firmness requisite for the maintenance of his authority. Scrupulously abstaining from every mark of pride and superciliousness, let him convince them that he has their interest at heart, by studying their comforts; by advancing them little sums of money beforehand, when sickness, or an approaching rent day, or the necessity of laying in fuel against winter, or some other emergency, distresses them. Let him acquaint himself, as far as may be practicable, with each of his workmen, individually, and observe his temper and dispositions, his habits of life, and the state of his circumstances, that he may be able to admonish him occasionally in such a manner as may be most likely to be beneficial. Let him uniformly show favour to the meritorious, and check the idle and profligate. And never let him forget the efficacy which he may give to his own instructions and reproofs, by his own virtuous example.[117]

By means such as these, Gisborne believed, the worst excesses of the manufacturing system would be curbed.

Gisborne's proposals drew strength from numerous studies, which promoted the beneficial effects of domestic labour and rural environs on the health and morals of the working poor. In 1800, in the second volume of his Reports of the Society for Bettering the Condition...of the Poor, Thomas Bernard held up "the industrious and thriving cottager" as a social ideal and advocated the possession of a cow, a piece of ground, and a cottage as the state most conducive to virtue, contentment, and prosperity.[118] In 1789, the Bath physician and associate of Thomas Percival, William

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[117]Ibid., pp. 402-402. In "A General View of the Situation of the Mining Poor," Reports of the Society for Bettering the Condition...of the Poor 1 (1798), Appendix I, p. 385, Gisborne similarly urged the proprietor of a mine "to attach his workmen to himself."

[118]Bernard, "Prefatory Introduction," pp. 6-10.

Falconer, published An Essay on the Preservation of the Health of Persons employed in Agriculture, which enumerated the benefits derived from country employment.[119] Falconer argued that agricultural work was constant, diverse, and pursued in open air, free from "putrid exhalations...which are well known to taint the air in large cities, and in manufactories of every kind, where great numbers of people are assembled in a small compass."[120] Furthermore, it involved a wholesome diet, freedom from anxiety, few temptations to licentiousness, and regular, day-time hours. The significance of the last factor was explained by reference to the quality of the air: Falconer noted that night air was commonly believed to be less healthy than that encountered during the day, and that this was "confirmed by chemical experiments, which tend to shew that the air exhaled by vegetables, whilst the sun is above the horizon, is much more pure and fit for respiration than that which issues from them in the absence of the sun."[121] Falconer argued that as a result of such salubrious conditions agricultural workers were exempt from many of the diseases which afflicted other sorts of labourers, and that the illnesses they were likely to experience were markedly different from those of other workers. He contrasted individuals engaged in

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[119]William Falconer, An Essay on the Preservation of the Health of Persons employed in Agriculture... (Bath: R. Cruttwell, 1789); Francis Lobo, "John Haygarth, Smallpox and Religious Dissent in Eighteenth-Century England," in Andrew Cunningham and Roger French (eds), The Medical Enlightenment of the Eighteenth Century (Cambridge: Cambridge University Press, 1990), pp. 220, 223.

[120]Ibid., p. 2.

[121]Ibid., p. 3. Such experiments were conducted by Joseph Priestley, among others, and as Corbin, p. 15, points out, contributed to "an optimistic vision of a providential design that caused vegetation to correct the air that animals had corrupted."

rural labour with "the effeminate inhabitants of populous towns," stating that while the latter were liable to putrid ailments, the former, whose bodies were "robust and athletic, of a firm fibre and dense blood," were more commonly afflicted by inflammatory disorders.[122]

Falconer's essay was perhaps familiar to the Edinburgh surgeon and political writer, Benjamin Bell. Bell had a special interest in agriculture, which he described in 1802 as a pursuit "favourable at once to population, to the morals, the health, and the happiness of mankind," and in a collection of essays published in 1802, he proposed a scheme for improving agriculture through the distribution of premiums.[123] As part of his plan he suggested allotting small plots of land, sufficient for a garden and a cow, to persons engaged in manufacture. In response to the argument that agriculture and manufacturing should be pursued independently, Bell cited the example of broad-cloth manufacturers. Unlike cotton workers, "who in general are collected together in great numbers, often to the extent of more than a thousand," he declared, those who produced broad-cloth:

...almost every where work separately and unconnected with each other,

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[122]Falconer, p. 34. As Marie-France Morel, "City and Country in Eighteenth-Century Medical Discussions about Early Childhood," in Medicine and Society in France: Selections from the Annales Economies, Sociétés, Civilisations, vol. 6, edited by Robert Forster and Orest Ranum, translated by Elborg Forster and Patricia M. Ranum (Baltimore: The John Hopkins University Press, 1980), pp. 48-65, shows, the contrast between the effects of city and country life was a common theme of eighteenth-century French medical literature.

[123]Benjamin Bell, Essays on Agriculture, with a Plan for the Speedy and General Improvement of Land in Great Britain (Edinburgh: Bell and Bradfute, 1802), pp. iv, 243-301.

> and employ all the hours which they devote to relaxation and amusement, in the care of their gardens and other small portions of ground that they possess....Nor does this variety of occupation make them worse tradesmen, or induce them to work less, as some speculative men have supposed it would do, while, in various ways, it tends to make them more virtuous citizens. These manufacturers are every where noted for their industry, and for the quantity of cloth which they produce; and we all know that the article itself, which has long been considered as the staple commodity of our country, is the best of its kind that any where can be met with.[124]

Bell conceded that it may have been advantageous for "a few large money-proprietors" to gather workers together and benefit from the profit of their labour, but, he asserted, "this being highly detrimental both to the morals and the health of those whom they employ, and being thereby injurious to the whole nation," it was necessary to restrict such enterprises though the application of "some check or regulation."[125]

Topographical accounts showed that where the pursuit of gardening or agriculture was combined with that of manufacturing, residents enjoyed good health and displayed virtuous qualities. In A Description of the Country from Thirty to Forty Miles round Manchester, the Manchester physician, John Aikin, depicted the conditions prevailing in some of the towns in the West Riding of Yorkshire. He found that at Leeds, "the dispersed state of manufactures in villages and single houses over the whole face of the country" was extremely conducive to virtue and contentment.[126] Similarly, at nearby Huddersfield, he was impressed with "the comparative healthiness

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[124]Ibid., pp. 288-289. Bell's view of the advantages of small-scale manufacturing was not new. As Wadsworth and Mann, p. 384, reveal, in 1757, Josiah Tucker similarly compared the benefits of small and large-scale industry.

[125]Bell, pp. 289-290.

[126]Aikin, p. 574.

of a manufacture carried on in rural situations and at the workmen's own houses."[127] Leeds and Huddersfield were woollen manufacturing centres, but contemporary observation showed that it was also possible to combine the practices of agriculture and manufacturing in cotton manufacturing regions.

One place where this was achieved with apparent success was at Catrine, in Ayr. Catrine was an industrial village, built around a cotton-twist mill and a jeanie factory, established by Claude Alexander and his partner, David Dale. In the 1790s, the inhabitants of the village were described by the resident minister, Robert Steven, as being in sound health.[128] Steven believed that their condition was largely due to the practice of renting small pieces of land, which were attended after work hours in the raising of potatoes and keeping of cows. "The exercise, and smell of the new turned-up earth," he wrote, "must undoubtedly be beneficial to their health; and their emulation to have the best and cleanest crop renders them all very industrious. It is an extremely pleasant sight, on a fine summer's evening, to see such a number of people so usefully employed."[129] According to Steven, the residents of Catrine were not only healthy, they were moral. Steven attributed their "sobriety" and "regularity" to "the indefatigable attention of Mr. Alexander," a proprietor cast in the mould of Gisborne's ideal type, who undertook "to learn the real character and circumstances of

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[127]Ibid., p. 554.

[128]Sinclair, vol. 20, p. 177.

[129]Ibid.

each individual."[130]

Although Gisborne advocated an adherence to the ways of the past in his Enquiry into the Duties of Men, he was not totally opposed to the new industrial system, for he also believed that humankind had benefitted from the introduction of machinery, being enabled by this development "to emerge from a state of barbarism to civilization, to exchange dens and caves for comfortable houses, coverings of raw skins for clean and convenient clothes, acorns and wild fruits for salubrious food, [and] unlettered ignorance for books and knowledge."[131] Gisborne's attitude to the technical and social changes of his day was marked by an ambivalence, which also can be seen among contemporary writers on population. Until the late eighteenth century, investigators of population believed that large towns and cities were unfavourable to the growth in numbers they held to be desirable.[132] Thus, in 1767, in an essay on "the increase and decrease of mankind," Thomas Short referred to cities as "Golgothas, or Places of the Waste and Destruction of Mankind."[133] One aspect of urban life which was sometimes implicated in the charge of waste and destruction was the presence of industry. In 1757 for instance, in a Dissertation on Numbers of Mankind in Ancient and Modern Times, Robert Wallace spoke of the "operose manufacture" of various

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[130]Ibid., p. 180.

[131]Gisborne, Enquiry, vol. 2, p. 383.

[132]D.E.C. Eversley, Social Theories of Fertility and the Malthusian Debate (Oxford: Clarendon Press, 1959), p. 36.

[133]Thomas Short, A Comparative History of the Increase and Decrease of Mankind... (London: W. Nicoll & C. Etherington, 1767), p. i.

sorts of goods.[134]

By the late eighteenth century, however, the views of those concerned with the progress of population had shifted and large towns and industrial activity were no longer regarded in quite the same manner. In a "Defence of his Pamphlet on Population," published in 1782, John Howlett at one point described "*arts* and *manufactures*" as:

> a secret successful *war* upon a large proportion of our species....If *War* can tell its dismal tale of thousands slain in the field...*Arts* and *Manufactures* can present as long a catalogue of our fellow creatures suffocated in mines and pits, or gradually poisoned by the noxious effluvia of metals, oils, powders, spirits &c. used in their work...[135]

In a earlier passage, however, he maintained that the manufactures found in towns such as Manchester, Liverpool, and Birmingham aided the species by providing employment to the residents of nearby rural parishes. Howlett likened such parishes to a "*Polypus*," which was able to regenerate its limbs, or population levels, after these had been cut off through emigration to the towns.[136] He argued that rural inhabitants were encouraged to marry early and have large numbers of children in the expectation that their offspring would find employment in the manufacturing centres.

Similar views were expressed in 1786 by the Manchester manufacturer and medical practitioner, Thomas Henry. In a paper read before the Manchester Literary

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[134]Cited in Eversley, p. 39.

[135]John Howlett, "Defence of his Pamphlet on Population," Gentleman's Magazine 52 (1792), p. 526.

[136]Ibid., pp. 474-475.

and Philosophical Society, Henry asserted that large towns acted unfavourably on human longevity.[137] By drawing in persons from other locations, he explained, they ended many lives through the effects of impure air, infection, and alterations in mode of life. Henry maintained, however, that large towns were not as detrimental to the progress of population as they might seem, for by their manufacturing presence they offered inducements to marriage, "and, therefore, if life be more speedily wasted, it is probably, reproduced in a far greater ratio."[138] "A sensible, industrious manufacturer," Henry declared, "considers his children as his treasure, and boasts that his quiver is full of them; for where children can be employed at an early age, the fear of a large family is not only diminished, but every child that is born may be regarded as an addition of fortune."[139]

Thus, while there were many in the late eighteenth century who were opposed to large-scale industrial development and wished to revert to an existence they saw as more balanced and orderly, there were others, such as Henry, who were accepting of and even ascribed positive benefit to the realities of contemporary urban, industrial life. Faced with problems of health and morality among a growing and largely unknown manufacturing population, such persons advocated not a return to traditional ways, but the regulation of present conditions. Given the prevalent concern with the factory as a hotbed of fever and licentiousness, much of their attention focussed on the regulation

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[137]Henry, "Observations," pp. 168-170.

[138]Ibid., p. 170.

[139]Ibid., pp. 170-717.

and management of factory conditions, especially those that pertained to the quality of the factory atmosphere.

In their report on the epidemic at Radcliffe, Percival and his colleagues put forward a number of "practicable regulations," which were aimed at improving the state of the air within the Radcliffe works.[140] The physicians advised leaving the window casements and "three large western doors" of the mill open at night and during the noon recess, erecting fire places "with open chimnies," sweeping and washing the floors, scraping and whitewashing the walls and ceilings, burning tobacco, washing and ventilating the privies, employing a purer oil in the machinery, and enjoining "a strict observance of cleanliness" on those employed in the mill.[141] The same recommendations were contained in David Campbell's Observations on the Typhus, and similar proposals appeared in the anonymous Short Essay, in John Ferriar's essay on fever prevention, and in Thomas Henry's submission to the Manchester Board of Health.[142] Such advice centred on the practices of ventilation, cleanliness, and fumigation.

Interest in ventilation was not new in the 1780s and 1790s. Half a century earlier, the London physician, Stephen Hales, produced a treatise on "ventilators," which described how "great quantities of fresh air may with ease be conveyed into

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[140]Meiklejohn, p. 68.

[141]Ibid., pp. 68-69. They also proposed restricting the time persons spent in the mill, so as to ensure the physical well-being of child workers, in particular, and to provide opportunities for education.

[142]Campbell, pp. 23-29; A Short Essay, pp. 12-19; Ferriar, "Prevention," pp. 198-199; Henry, "Remarks," pp. 31-33.

mines, gaols, hospitals, work-houses and ships, in exchange for their noxious air."[143] Following the "Black Assize" of 1750, in which some fifty people in London's Old Bailey died apparently as a result of a fever carried into the court by two Newgate prisoners, Hales, along with John Pringle, worked at developing ventilators for Newgate prison.[144] In the ensuing decades, further attention was directed to the ventilation of ships, camps, and hospitals.[145] Through ensuring the "circulation of the aerial fluid," ventilation was perceived to sweep away noxious bodily exhalations and to restore the "antiseptic property of air," thereby disinfecting the space within large, public establishments.[146]

By the end of the eighteenth century, medical advisors promoted an arsenal of ventilating devices. Percival and his associates, as noted above, recommended the use of open windows and doors. In situations where this was not convenient, David Campbell suggested that "two tubes, of diameters proportioned to the size of the apartment" could be inserted from outside, "one of which should enter at the top, and

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[143]Stephen Hales, A Description of Ventilators: Whereby Great Quantities of Fresh Air may with Ease be Conveyed into Mines, Gaols, Hospitals, Work-Houses and Ships, in Exchange for their Noxious Air (London: W. Innys, 1743).

[144]Ignatieff, pp. 44-45.

[145]Corbin, pp. 94-100, 105-110.

[146]Ibid., pp. 94, 102; Pickstone, "Ferriar's Fever," pp. 405-406. On eighteenth-century medical and social ideas of circulation, see Anne Marcovich, "Concerning the Continuity between the Image of Society and the Image of the Human Body: An Examination of the Work of the English Physician J.C. Lettsom (1746-1815)" in P. Wright and A. Treacher (eds), The Problem of Medical Knowledge: Examining the Social Construction of Medicine (Edinburgh: University Press, 1982), pp. 69-86.

the other at the bottom of the room, at opposite sides."[147] By this means, he believed, there would be "a pretty constant ingress and circulation of fresh air"; furthermore, if the bottom tube were made of iron and positioned so that it travelled through a stove or fireplace, the air entering the apartment could also be warmed.[148] In 1796 Thomas Henry proposed modifications to such a plan, suggesting that "various channels" be provided for the ingress of fresh air, and that "earthen tubes" be used rather than iron, since the latter left the air "in a burnt and injured state."[149] Henry also put forward a method of his own for transporting pure air into factories. He recommended the use of an "iron vessel" containing manganese, which was to be connected to the interior of a mill by a series of tubes. "When the vessel is exposed to a red heat," he explained, "a large quantity of pure or vital air will be separated, and pass into the room, and contribute essentially to the restoration of the injured air."[150] He added that the cost of instituting such a plan would be minimal since manganese had the capacity to reabsorb "its pure part" upon exposure to the atmosphere.[151]

Although ventilation was regarded as an important preventive measure, especially in new mills, it was not seen to be adequate for the task of purifying older

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[147]Campbell, p. 18.

[148]Ibid., pp. 18-19.

[149]Henry, "Remarks," pp. 32, 31.

[150]Ibid., pp. 31-32. See also Dr. Garnett, "Hints," in Board of Health, pp. 41-44. Farrar, Farrar, and Scott, p. 202, point out the similarity between Henry's plan and contemporary schemes of pneumatic medicine.

[151]Henry, "Remarks," p. 32.

mills, or those in which contagion was present.[152] In such cases, more vigorous methods of control were required. One of these consisted in routines of cleansing, especially washing, not only with water, but with more pungent, disinfectant substances.[153] Percival and his colleagues advised the weekly use of "strong lime water, or...water impregnated with the spirit of vitriol or the acid of tar" for the floors of the Radcliffe factory and a monthly and then thrice-yearly wash of "lime, fresh burnt, and as soon as it is stacked" for the mill's walls and ceilings.[154] The author of the Short Essay added that one afternoon a week, the floors and frames of factory machines should be scraped and "afterwards be washed with *vinegar*, or some *vegetable* acid."[155]

To complement such procedures, medical men also recommended the practice of fumigation. In so doing they referred to the authority of James Lind, the naval doctor, who promoted the use of fire and smoke for the purification of the vessels under his care.[156] Lind favoured the smoke of tobacco, brimstone, arsenic, and gunpowder, which David Campbell speculated were "disposed to act *chemically*" on contagious matter.[157] In the case of cotton factories, Lind's practices had to be adjusted

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[152]A Short Essay, p. 13.

[153]Corbin, pp. 103-104.

[154]Meiklejohn, p. 68.

[155]A Short Essay, p. 16.

[156]James Lind, Two Papers on Fever and Infections (1763); Corbin, p. 65.

[157]Campbell, pp. 44-45.

somewhat. Percival and his colleagues pointed out that the burning of brimstone would produce an acid which would be harmful to the cotton. They therefore recommended that the Radcliffe works "be fumigated weekly with tobacco," while the author of the Short Essay believed that much advantage might also be derived from "burning wood and other vegetable productions that yield a subtil [sic] volatile acid, such as pitch and tar, &c."[158]

For the physicians charged with finding solutions to the problems of fever, purification of the space within factories demanded control not only of the air, floors and machine frames, but also of human bodies. As Alain Corbin has remarked with respect to hospitals, "ventilation was not enough; individual behaviour patterns had to be changed."[159] Patterns of cleanliness, in particular, were a source of concern. Like Percival and his associates, John Ferriar advised that "personal cleanliness should be strongly recommended and encouraged" among the factory population and that child workers, especially, should be kept clean.[160] In his "Advice to the Poor," a series of rules which were drawn up for, though never distributed by, the Manchester Board of Health, he informed mill workers that they should keep their "persons and houses as clean" as possible and that they should "not regret the loss of an hour's wages" when

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[158]Meiklejohn, p. 68; A Short Essay, p. 14. The benefits that were believed to arise from the use of vegetable substances in fumigating and cleaning parallel those attributed to gardening and agriculture, providing further evidence of the observation made by Corbin, p. 15, that vegetable substances were seen to act as an antidote to animal corruption.

[159]Corbin, p. 107.

[160]Ferriar, "Prevention," p. 189; see also Clerke, p. 20.

pursuing cleanliness, although in his original remarks to the Board he acknowledged that "the attention of the poor [was] diverted from cleanliness by the value of their time," and suggested that monetary rewards might be given to mothers who contrived to keep their children clean.[161]

Medical concern for the regulation of the poor extended beyond cleanliness. In his "Advice," Ferriar offered directions concerning where the poor should live, how they should obtain clothing or furniture, what their duty was concerning inoculation, how they should deal with sickness in their neighbourhood, and when they should allow their children to be employed in factories.[162] Similarly, in the plan that he prepared for the control of fever at Bury, Thomas Percival prescribed a regimen not only for fever victims, but for "the whole body of the poor," and gave particular instructions concerning temperance and diet.[163] In addition, medical men directed attention to the interaction and mobility of the manufacturing poor. Ferriar, for instance, warning of the hazards of "incautious visits" to the sick, argued that access to fever victims should be restricted, that such persons should be retained in fever wards "till their clothes and persons [were] sufficiently purified," and that they should not be permitted to resume factory employment "without leave from their physicians."[164]

At the end of the eighteenth century, the key to successful regulation of both the

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[161]Ferriar, "Advice," p. 213; Ferriar, "Remarks," pp. 16-17.

[162]Ferriar, "Advice," passim.

[163]Clerke, p. 20.

[164]Ferriar, "Remarks," pp. 19-20.

physical and social conditions of manufacturing centres lay in the principle of inspection. In 1800, the philanthropist, Thomas Bernard, observed that although cotton mills were still "in their infancy," their numbers were escalating and "without public attention" they would be destructive of health and morals.[165] To minimize their harmful effects, Bernard proposed a number of regulations, culminating with the demand that factories:

> ...be liable to the periodic inspection of the magistrates, who should have power to order the regular whitewashing and cleaning, and the warming and ventilating of the work-rooms; and who should receive quarterly or monthly reports, from each manufactory, of the number, the health, and the respective ages, of all the apprentices and other persons employed there.[166]

Inspection was deemed especially necessary to ensure the well-being of factory apprentices, who, in the words of John Aikin, served "unknown, unprotected, and forgotten by those to whose care nature or the laws had consigned them."[167] In 1797, Thomas Gisborne argued that the condition of apprentices should be monitored through registers and quarterly returns, as well as by having magistrates visit the factories in their vicinity and examine "the situation and treatment of the children."[168]

The advocacy of inspection also applied to the factory town. Manchester, in particular, was believed to require the watchful gaze and "interference of a public

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[165]Bernard, "Extract," pp. 370-371.

[166]Ibid., p. 373.

[167]Aikin, p. 219.

[168]Gisborne, Enquiry, vol. 2, p. 395.

body."[169] For John Ferriar, it was the town's lodging houses which stood in greatest need of surveillance. In 1792, he recommended to the newly-formed Committee of Police that lodging houses be brought under a system of licensing and that they be superintended by "Inspectors," who would visit the houses and be "empowered to take proper steps for checking infection wherever it appears."[170] In his view, such a system would be doubly advantageous: it would not only do much to control the generation and spread of contagion, it would also "answer a very desirable purpose respecting the police," permitting authorities to keep "a constant check...on houses, which at present are the refuge of the most profligate and dangerous part of society."[171] In 1795, Ferriar amended his proposals, suggesting that immigrant workers would best be housed in "public lodging-houses, on the plan of barracks or caravanseras."[172] He believed that in such institutions, where they would be placed "in a more conspicuous point of view," workers "would be saved, at once, from the danger of disease, and the hazard of ruinous idleness."[173]

In 1796, concerns for scrutiny and watchfulness coalesced in the agenda of the Manchester Board of Health, which aimed to inspect "the general accommodations of

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[169]Ferriar, "Remarks," p. 11.

[170]John Ferriar, "To the Committee for the Regulation of the Police, in the towns of *Manchester* and *Salford*," Bodleian Library: Gough Lancs. 30 (11), p. 2; see also Ferriar, "Epidemic," pp. 141-143.

[171]Ferriar, "To the Committee," p. 2.

[172]Ferriar, "Prevention," p. 202.

[173]Ibid., pp. 202-206.

the poor," as well as:

> ...cotton-mills, or other factories, at stated seasons, with regular returns of the condition, as to health, clothing, appearance, and behaviour of the persons employed in them; of the time allowed for their refreshment at breakfast and dinner; of the number of hours assigned for labour; and of the accommodations of those...who are not under the immediate direction of their parents or friends.[174]

The Board was assisted in its endeavours by the Strangers' Friend Society, a Methodist charity, founded in Manchester in 1791. Established to relieve persons not entitled to parochial aid, the Society was especially notable for its use of volunteer Visitors, who were "daily to seek out objects of real woe," among the manufacturing population, "and to visit their miserable retreats; and, after inquiring minutely into the nature of their complaints, to afford them that relief their circumstances called for."[175] In the rapidly-expanding situation of the manufacturing city, where face-to-face contact was becoming increasingly difficult, agencies such as the Board of Health and the Strangers' Friend Society aimed to practice the kind of close and careful supervision that Thomas Gisborne had recommended to factory proprietors.

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[174]Percival, "Remarks," pp. 5-6.

[175]Pickstone, "Ferriar's Fever," pp. 408-409; G.B. Hindle, Provision for the Relief of the Poor in Manchester 1754-1826 (Manchester: Manchester University Press, 1975), p. 82.

CHAPTER THREE

RELIEF AND REGULATION OF THE POOR

> ...it must be much for the interest of every gentleman, as well as the neighbourhood in which he lives, to attend to the health of all his servants...[1]

> ...though a spirit of benevolence already prevails among the inhabitants of Manchester, it may add strength to its exertions to shew, that the health of the rich is often nearly connected with the welfare of the needy.[2]

In the judgement of the Lancaster physician, David Campbell, fever was a disorder "which equally attracts the attention of the magistrate, the manufacturer, and the faculty."[3] In the latter decades of the eighteenth century, the fever epidemics that prevailed in northern cotton towns not only attracted the attention of magistrates, cotton manufacturers and members of the medical faculty, they also impelled such persons to action and gave rise to concerted efforts to prevent the contagious disorder and to improve the condition of those most threatened by it.

The most immediate response came from the magistrates for the County of Lancaster, who not only initiated investigation into the Radcliffe epidemic, but were led

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[1]A Short Essay Written for the Service of the Proprietors of Cotton Mills, and the Persons Employed in Them (Manchester: C. Wheeler, 1784), p. 17.

[2]John Ferriar, "Epidemic Fever of 1789, and 1790," in Medical Histories and Reflections (Warrington: 1792, 1795, 1798), vol. 1, p. 136.

[3]D. Campbell, Observations on the Typhus, or Low Contagious Fever (Lancaster: H. Walmsley, 1785), p. 4.

by the ensuing medical report to impose restrictions on the hours that parish apprentices could be employed in cotton factories. In the following years, authorities in Birmingham and the West Riding also launched inquiries and passed resolutions concerning the treatment of factory apprentices. While the actions of the magistrates might be viewed as the first, local attempts at limiting the operation of textile mills, they affected only a small proportion of the factory workforce, and are better understood as assertions of more traditional concern for protecting and regulating the parish poor.

In the minds of the medical and social theorists who expounded on the problem of factory health, the responsibility for preventing fever and attending to the needs of the fevered poor lay not so much with local authorities, as with persons whose wealth derived from the labour of the poor. Appealing to principles of moral obligation and self-interest, and espousing a view of mutual dependence of rich and poor, physicians and philanthropists urged the prosperous inhabitants of manufacturing towns to respond to the conditions that expert investigation had revealed.

It appears that the manufacturing community was receptive to such urging, for in the two decades following the Radcliffe inquiry, factory owners were remarkably active in making charitable provision for the poor and in introducing preventive measures in their mills, with one individual going so far as to sponsor a national bill for the protection of the health and morals of apprentices. Although seemingly directed at self-regulation, the endeavours of textile manufacturers primarily aimed at managing the lives of factory workers.

Attention to the efforts of those in positions of power and influence should not obscure consideration of the initiatives of mill workers themselves. While little is known of the manner in which workers accepted the provisions made for them, it is clear that, in the 1780s and 1790s, the factory population began to respond in its own ways to the threats of sickness, suffering, and death. Adults relieved one another through the agency of friendly societies, protested against the conditions of their employment, and interceded with authorities, and even children demonstrated a capacity for resistance.

I

In the autumn of 1784, the attention of the magistrates for the County Palatine of Lancaster was drawn to the issue of factory health by the fever epidemic that gripped the cotton town of Radcliffe.[4] Wary of the devastation that could result, Thomas Butterworth Bayley and his associates on the bench acted swiftly, commissioning a medical inquiry and then resolving at the Manchester Michaelmas Sessions "to Refuse their Allowance to all Indentures of parish Apprentices, who shall be Bound to Owners of Cotton Mills or other Manufactories, in which Children are obliged to Work in the Night or more than Ten hours in a Day."[5] They ordered that the resolution be

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[4]A. Meiklejohn, "Outbreak of Fever in Radcliffe Cotton Mills, 1784," British Journal of Industrial Medicine 16 (1959), pp. 68-69; [A.G.E. Jones], "The Putrid Fever at Robert Peel's Radcliffe Mill," Notes and Queries 103 (1958), pp. 26-28.

[5]Margaret Delacy, Prison Reform in Lancashire, 1700-1850: A Study in Local Administration (Stanford: Stanford University Press, 1986), pp. 70-82; "Order Book," Manchester, 14 October 1784, Lancashire Record Office.

transmitted to the authorities of the neighbouring counties, as well as published in Manchester and Liverpool.[6]

While the immediate impact of their actions is unknown, it seems that no long-lasting change was effected. In 1792, one of the magistrates, Samuel Clowes Junior, maintained that the situation of parish apprentices was as bad as that of Negro slaves, and in 1796, the condition of factory workers in and around Radcliffe again became a matter of public concern.[7] In February 1796, a month after Percival outlined his resolutions on factories to the Manchester Board of Health, the Guardians of the Poor in Birmingham decided to hold an enquiry into the well-being of the children they had apprenticed to the Peel factories in Lancashire.[8] Although initially satisfied with what they found, reports of bad treatment led them to undertake a second investigation and in June 1796, they sent two visitors, Samuel Bolton and Thomas Robinson Junior, to examine the state of ninety-seven children apprenticed to the Peel works at Radcliffe, Hinds, and Somerset.

The visitors were instructed to inspect diet, clothing, accommodation, hours of work, provision for education, general treatment, and health at each mill. Conditions apparently varied; in the eyes of the visitors, the worst mill was Radcliffe. But even at

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[6]"Order Book."

[7]Manchester Mercury, 31 January 1792. Although the image of factory workers as slaves was prevalent in the 1830s, Clowes' reference appears not to have captured the imagination of his eighteenth-century contemporaries.

[8]Thomas Percival, "Heads of Resolutions for the Consideration of the Board of Health," in Board of Health of Manchester, Proceedings and Observations (Manchester: 1806), pp. 33-35; F.E. Manning, "Sir Robert Peel the elder, and early Factory Legislation" (M.A. thesis, University of Bristol, 1932), pp. 17-19.

Somerset, where conditions were relatively better, the visitors reported that "many of the Poor Children flocked around us and cryed to come home."[9] Bolton and Robinson judged the conditions at all three mills to be negative, commenting that "the boys begged they might not stay longer."[10] Although the Guardians seem not to have taken any immediate steps to halt the flow of apprentices to Lancashire, a decision was evidently made later to refrain from sending children to the Peel factories. In 1816, Theodore Price, a Warwick magistrate and Guardian of the Poor, stated that it was common knowledge that Birmingham magistrates would not apprentice children to cotton factories and that this situation had existed for some time.[11]

The decisions of the justices in Manchester and Birmingham perhaps influenced authorities in the West Riding of York, for at the Wakefield Sessions in 1800, the West Riding magistrates enunciated a comprehensive set of measures concerning the apprenticing of pauper children.[12] They resolved that they would not allow apprentices to be bound unless surviving parents, the parish overseers, and the proposed master had been examined by the magistrates; that they would not normally allow children to be bound to masters in parishes other than their own; and that they would not "on any account, allow of the *apprenticing of poor children* to the masters or

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[9]Guardians' Minute Book, quoted in Manning, p. 18.

[10]Ibid.

[11]P.P. 1816 (397) III, 124; Manning, p. 19.

[12]"Resolutions of the Magistrates of the West Riding of the County of York, at the Wakefield adjourned Sessions, 22d May, 1800," Reports of the Society for Bettering the Condition and Increasing the Comforts of the Poor 4, Appendix I, Supplement IV (1803-1805), pp. 20-22.

owners of *Cotton Mills* or other works of the kind, where such poor children shall be obliged to work in the *night time*, or for an unreasonable number of hours in the day time."[13] They also deemed it expedient that the overseers of the poor should be required to make general returns of the condition of parish apprentices at least twice-yearly, "in order that the justices, who are the legal guardians of such poor children, may the better do their duty, and render the situation of a parish apprentice more comfortable, and less dreaded than at present."[14]

As B.L. Hutchins and A. Harrison pointed out in their study of factory legislation, the decisions of late eighteenth-century local authorities to refrain from apprenticing poor children to particular factories belong to the realm of poor law administration, and should be viewed as actions under the Elizabethan poor law, rather than as innovative attempts at factory regulation.[15] The decisions were restricted to children in the care of the parish, who formed no more than a third of the population even of rural mills.[16] They were directed at protecting such children and regulating the conditions of their apprenticeship, rather than at imposing constraints on the operation of the new textile mills. Such resolutions must be set in the context of widespread concern over apprenticeship, which marked the middle and latter decades of

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[13]Ibid., p. 21.

[14]Ibid., p. 22.

[15]B.L. Hutchins and A. Harrison, A History of Factory Legislation, 3rd ed. (1926; rpt. New York: Augustus M. Kelley, 1966), p. 9.

[16]Arthur Redford, Labour Migration in England 1800-1850, 3rd ed. (Manchester: Manchester University Press, 1976), pp. 28-29.

the eighteenth century. The power of the traditional regulators of apprenticeship, the guilds, having broken down, it became apparent that the treatment and training of apprentices was open to considerable abuse.[17] Numerous attempts were made in these years to safeguard and regulate the position both of ordinary apprentices and those obtained from parochial authorities.

That the efforts of the authorities in Birmingham and the West Riding fall into this category, and that they show a blindspot to the massive industrial changes taking place, is evident by their similarity to the actions taken a generation earlier with respect to the conditions prevailing in domestic industry. In 1772, following several notorious cases of ill-treatment of domestic workers, magistrates in Manchester ordered that prospective masters submit to examination, and insisted that overseers pay frequent visits to the children they had bound out, in order "to enquire whether they are treated with Humanity by their several Masters and Mistresses, and are provided by them with proper and sufficient Cloaths, Meat and Lodging; and also duly taught and instructed in the several Trades and Occupations they are to learn."[18]

II

While the inquiries and resolutions of local authorities were no doubt regarded

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[17]Ivy Pinchbeck and Margaret Hewitt, Children in English Society (London: Routledge and Kegan Paul, 1969), vol. 1, p. 249.

[18]L.S. Marshall, The Development of Public Opinion in Manchester, 1780-1820 (Syracuse, N.Y.: Syracuse University Press, 1946), p. 65; A.P. Wadsworth and J. de L. Mann, The Cotton Trade and Industrial Lancashire 1600-1780 (Manchester: Manchester University Press, 1931), p. 407.

favourably by those concerned with the health of the factory population, it was wealthy mill owners who were deemed primarily responsible for attending to the needs of the manufacturing poor. In the second volume of the Reports of the Society for Bettering the Condition of the Poor, the London philanthropist, Thomas Bernard, stated in general terms that the possession of "rank, power, wealth, influence" carried with it a burden of "real accumulated responsibility" to the poor, while in an Enquiry into the Duties of Men in the Higher and Middle Classes of Society, Thomas Gisborne spoke more specifically of the moral duties of persons engaged in trade and business.[19] Gisborne enumerated two guiding principles of commercial morality: the first, "that no man stands authorised...to enter into, to continue in, any species of traffic or business, which...in any way tends on the whole to impair the happiness of the human race," and the second, "that every trader is bound, in following his occupation...to conduct it on such principles, and to direct it, as far as may be possible, to such objects, as to advance the comforts, the prosperity, the intellectual, moral and religious improvement of his dependents, of his neighbours, of his countrymen."[20] Gisborne argued that factory proprietors were morally obliged to take every measure, however costly, to preserve the health of their employees. "Let [the factory owner] not think himself at liberty to barter the lives of men for gold and silver," he declared, "let him not seek

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[19]Thomas Bernard, "Prefatory Introduction to the Second Volume," Reports of the Society for Bettering the Condition...of the Poor 2 (1800), p. 28; David Owen, English Philanthropy 1660-1960 (Cambridge, Mass.: Harvard University Press, 1964), pp. 104-109; Thomas Gisborne, An Enquiry into the Duties of Men in the Higher and Middle Classes..., 4th ed. (London: B.&J. White, 1797), vol. 2, pp. 201-403, passim.

[20]Gisborne, vol. 2, p. 207.

profit by acting the part of the executioner."[21]

Lest the affluent manufacturers and other wealthy inhabitants of cotton towns not be swayed by moral considerations alone, medical and philanthropic advisors also maintained that the rich themselves would benefit from assisting the poor. In a study of the "Origin of Contagious, and new Diseases," John Ferriar asserted that by "minute and constant attention" to the wants of the poor in large towns, the rich might do much to disarm "the virulence of animal poisons," and argued that such attention constituted "an act of self-preservation," no less than "virtue."[22] Gisborne, too, believed that the imperatives of morality coincided with self-interest. In advocating that factory owners inculcate habits of cleanliness among their employees, he cited testimony from a "gentleman," very experienced in cotton mills, who avowed that cotton factories where the inhabitants were the "least numerous, and most cleanly and comfortable" were also the "most profitable."[23] Gisborne remarked that he could see no reason why the same should not hold for all manufactories. He also argued in more general terms that by carefully supervising the well-being of his workers, a manufacturer would not only fulfil "an indispensable duty," but at the same time further his own success. Among other benefits, he would infuse his workers with a sense of "personal attachment," which would "contribute to secure him from the machinations of any unprincipled competitor, who may be base enough to tempt them by bribes to betray their master's

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[21]Ibid., p. 396.

[22]John Ferriar, "Origin of Contagious, and New Diseases," in Medical Histories, vol. 1, pp. 246, 248.

[23]Gisborne, vol. 2, pp. 396-397.

operations, or to desert him for the purpose of entering into a rival manufactory."[24]

In advancing their arguments for entrepreneurial concern, commentators such as Bernard, Ferriar and Gisborne drew support from a view of society which emphasized the connectedness of its component parts. According to Thomas Bernard, both the rich and the poor were "parts of one harmonious whole," and "while each does his duty in his station, each is, reciprocally, a support and blessing to the other."[25] In his Medical Memoirs, the Quaker physician, John Coakley Lettsom, also espoused a philosophy of social cohesiveness, stating that the poor:

> are a large, as well as a useful part of the community; They supply the necessary and ornamental articles of life; and they have, therefore, a just claim to the protection of the rich...[26]

In 1790, the Bury clergyman, the Rev. Sir William Clerke, similarly maintained that the rich, whose prosperity derived from the industry of the poor, should be impelled to preserve the health of such a "numerous and valuable...class of people" by "knowledge

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[24]Ibid., pp. 403-404. Redford, pp. 22-23, indicates that the mobility of early factory workers constituted a serious problem for their employers.

[25]Bernard, p. 27.

[26]J.C. Lettsom, Medical Memoirs of the General Dispensary in London (London: 1774), p. v; quoted in Robert Kilpatrick, "'Living in the Light': Dispensaries, Philanthropy and Medical Reform in Late-Eighteenth-Century London," in Andrew Cunningham and Roger French (eds), The Medical Enlightenment of the Eighteenth Century (Cambridge: Cambridge University Press, 1990), p. 268. See also J.C. Lettsom, Hints Designed to Promote Beneficence, Temperance, and Medical Society (London: 1801), vol. 1, p.184; quoted in Francis M. Lobo, "John Haygarth, Smallpox and Religious Dissent in Eighteenth-Century England," in Cunningham and French, p. 233.

of the necessity of mutual dependence."[27]

Clerke was particularly concerned with motivating the rich to take steps to prevent and suppress fever. His concern was shared by many lay and professional observers, but especially by John Ferriar, who was Manchester's leading public health advocate in the 1790s. As part of his propagandizing efforts, Ferriar stressed the links which the progress of fever revealed between the condition of the rich and that of the poor. He pointed out that while contagious disease was not generated in "the close rooms of an elegant house," it could enter such rooms by "secret avenues" (such as the sale of infected clothing or visits among servants), and there drastically repay the "neglect or insensibility" of the well-to-do.[28] In Ferriar's opinion, "the safety of the rich [was] intimately connected with the welfare of the poor," and it was in this connection that "the true danger of luxury" lay, for when "voluptuous habits" led to the withholding of superfluities, a rich individual not only injured himself, but contributed "to the diseases and destruction of thousands."[29]

Late eighteenth-century social theory corresponded closely with medical ideas concerning fever and institutions housing the poor.[30] Just as factories, prisons, and

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[27]Rev. Sir Wm Clerke, Bart., Thoughts upon the Means of Preserving the Health of the Poor, by Prevention and Suppression of Epidemic Fevers (London: J. Johnson, 1790), pp. 3, 23-24.

[28]Ferriar, "Origin," pp. 241-243.

[29]Ibid., pp. 246-247.

[30]Anne Marcovich, "Concerning the Continuity between the Image of Society and the Image of the Human Body—An Examination of the Work of the English Physician, J.C. Lettsom (1746-1815)," in Peter Wright and Andrew Treacher (eds), The Problem of Medical Knowledge: Examining the Social Construction of Medicine

ships were seen as enclosed spaces, in which individuals were connected by means of the atmosphere, in which disease or depravity could readily spread, and in which health was maintained through ventilation and free circulation of air, so society was regarded as a closed structure, in which the different orders were linked through bonds of mutual obligation, in which the impaired condition of one could affect another, and in which equilibrium was maintained through the circulation of wealth. For the socio-medical investigators of the late eighteenth century, fever not only demanded the attention of wealthy manufacturers, it also offered valuable instruction in the importance of redistribution.[31]

III

In the latter decades of the eighteenth century, cotton manufacturers seem to have heeded the concerns of writers on disease and poverty and to have taken their social obligations seriously. Research shows that in at least two of the major cotton centres, Manchester and Bury, mill owners made extensive voluntary provision for the poor, especially at times of fever. In Bury, a charitable subscription was set up in 1789, to relieve the poor afflicted by the fever epidemic that broke out that year.[32] From December 1789 to January 1792, a total of £246 was collected, principally from

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(Edinburgh: Edinburgh University Press, 1982), pp. 69-86. See also Kilpatrick, pp. 254-280.

[31]John V. Pickstone, "Ferriar's Fever to Kay's Cholera: Disease and Social Structure in Cottonopolis," History of Science 22 (1984), p. 406.

[32]Clerke, passim.

persons whose "property and opulence" arose from the labour of the poor.[33] As was customary at the time, the disbursement of the funds and administration of the charity were managed by a committee drawn from the subscribers, and in this case, was chaired by the local rector, William Clerke. Nearly half of the funds collected went to the provision of medical attendance and medicines, while much of the remainder was distributed in the form of bedding, clothing, and wine.[34] In addition to providing relief, the Committee distributed a series of "Rules for the Prevention and Suppression of Epidemic Fevers."[35] The regulations, which were based on advice which Clerke had solicited from Thomas Percival, were concerned with cleanliness and ventilation and with the need to reduce unnecessary social intercourse. Rewards were promised to the heads of households in which the rules were observed, while the withdrawal of support was threatened to those who ignored them. The business of overseeing the observance of the regulations, and of providing information on the state of poor families, was assigned to an Inspector, appointed and paid by the Committee.[36]

Over four hundred persons were relieved in the two years of the charity's

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[33]Ibid., p. 23; "Bury Fever Relief Book, 1789-1790," Lancashire Record Office, CBB2, CBB3. It is likely that Robert Peel and his partners were among the subscribers, since, as Manning, p. 4, states, the industrialists were so powerful and influential they controlled every institution in the town.

[34]Review of Thoughts upon the Means of Preserving the Health of the Poor, by Rev. Sir Wm Clerke, Bart., in Medical Commentaries (December 1791), p. 362.

[35]Clerke, pp. 13-14.

[36]Clerke, p. 21; Review of Thoughts, p. 362.

existence.[37] Given the extent of the Peel cotton works, it is likely that most of the recipients were associated with the mills.[38] Considering Bury's rapid population growth, it is likely, too, that a sizeable number were industrial immigrants, unable, by the laws of settlement, to benefit from statutory assistance.[39] From surviving record books, some further idea may be formed of their identity and the nature of their distress.[40] Many of the charity's recipients evidently belonged to large households, and to households which were headed by women, especially widowed women. Their level of poverty appears to have been profound; very often the recipients lacked the most basic of household goods. Thus we find that on January 12, 1790, Widow Kenyon, of Mooreside, was supplied with a bed, one coverlid, one sheet, one blanket, one bolster, one shift and two boy's shirts worth a total of £1.10.10.[41] Similarly, in February 1790, "Hartley's Orphans" were provided with one bed, one bolster, one coverlid, and one pair of blankets, worth £1.4.10. (One wonders what became of these orphans for the records show that the items were subsequently returned to the

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[37]Review of Thoughts, p. 359.

[38]Only a few years later, John Aikin, A Description of the Country from Thirty to Forty Miles round Manchester (1795; rpt. New York: Augustus M. Kelley, 1968), p. 268, reported that the size of Peel's mills was "such as to find constant employ for most of the inhabitants of Bury and its neighbourhood, of both sexes and all ages."

[39]Aikin, p. 266, indicates that in the period from 1773 to 1795, Bury's population doubled.

[40]"Bury Fever Relief Book," passim.

[41]Ibid., p. 18.

charity.)[42] While a few individuals received only a single disbursement from the Committee, most remained recipients of the charity for days or months. Thomas Warburton of Bury-Lane, for instance, received physic for his family on December 23, 24, 26, 27, 28, 29, 30, 1789; one sheet, one blanket, one shirt, and one shift on January 1, 1790; and half a pint of wine on January 3, 5, 22, 28, 31, and February 2, 1790.[43] The length of time that families remained on the books is perhaps an indicator of the period of their greatest distress. Entries in the record books show that fever often resided in households for a considerable time, attacking and leaving members in rhythmical succession. Thus we read that on January 15, 1790, ten shillings was paid to Mr. Barlow for his attendance upon, and the subsequent recovery of two members of Richard Kellet's household, that on January 29, a further five shillings was paid for the recovery of a third, and that on February 7, another five shillings was paid for the recovery of a fourth member of the household.[44]

Bury was not the only place where charities for the relief of the manufacturing poor were set up. G.B. Hindle and John V. Pickstone have devoted considerable attention to the provision of relief in late eighteenth-century Manchester, and have emphasized the charitableness of the town's manufacturers, as well as their close

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[42]Ibid., p. 52.

[43]Ibid., p. 35.

[44]Ibid., p. 14.

association with the reforming physicians of the Manchester Infirmary.[45] Although statutory aid was available to poor persons having settlement rights in Manchester, recent immigrants to the town did not qualify for such support. In years of distress, "strangers" among the poor were assisted by dispensations from voluntary committees, comprised of men who were normally engaged in the pursuit of commercial success.[46] In the 1790s, as the economic and political situation of the region worsened through the outbreak of war and a massive downturn in the cotton industry, such committees operated with increasing frequency.[47]

In 1793, the year that war was declared and financial and industrial crisis rocked the town, the Manchester Poor Committee was established. Assisted by the Strangers' Friend Society, a Methodist charity whose mission was to seek out and relieve the indigent with no claim to parish funds, the Poor Committee collected subscriptions through a house-to-house canvass, and called on local clergy to support the cause through charity sermons and collections. The Committee's efforts coincided with political agitation among the unemployed operatives of the town, as well as the sedition trial of Benjamin Booth, "one of the new Patriotic Society."[48]

The Committee concluded its affairs in the summer of 1794, just as the

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[45]G.B. Hindle, Provision for the Relief of the Poor in Manchester 1754-1826 (Manchester: Manchester University Press, 1975), pp. 78-128; Pickstone, p. 406; John V. Pickstone, Medicine and Industrial Society (Manchester: Manchester University Press, 1985), pp. 24-31.

[46]Hindle, pp. 106-107.

[47]Pickstone, Industrial Society, p. 24.

[48]Hindle, pp. 78-89; 112-113.

contagious fever that had maintained a hold in Manchester since the 1789-1790 epidemic, again flared into epidemic proportions. The new outbreak was attributed by John Ferriar to the lack of food and clothing in many poor families, brought about by the economic slump and the enlisting of husbands and fathers in the army.[49] Noting that in many instances families were forced to subsist on "little more than cold water," Ferriar criticized the existing system of parochial relief, pointing out that many of the persons who contracted fever were ineligible for assistance, and that the allowance for those who did qualify was very small: a sick woman burdened with four or five children, for instance, received only two shillings a week.[50] The epidemic persisted through the summer and autumn, and in December 1794, a new committee "for the Relief of the Sick Poor afflicted with Epidemic Fever" was set up.[51] At its initial meeting, the Committee received a lengthy report from Ferriar and his fellow physicians at the Infirmary, outlining the causes of the epidemic and recommending various measures. With the help, once again, of the Strangers' Friend Society, the Committee took action "as far as the Funds of the Town would permit," supplying beds, clothing and food to the sick poor, and providing for the ventilation and whitewashing of infected houses.[52]

Although the Committee was effective to some degree, there were problems

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[49]John Ferriar, "Of the Prevention of Fevers in Great Towns," in Medical Histories, vol. 2, p. 192.

[50]Ibid., pp. 192-193.

[51]Hindle, p. 113.

[52]Ibid.

with the scope of its operations. Because it was established to relieve the fevered poor, those who were poor, but not sick, were not entitled to receive any benefits. At a meeting of the Weekly Board of the Infirmary, it became evident that the borderline between poverty and illness was beginning to blur: it was pointed out that many applications for relief were turned down every day because the applicants were not ill, and that other applications were granted on the basis of deception, with individuals feigning sickness in order to procure relief. It was emphasized, too, that "exposure to hunger and cold" very often precipitated the onset of fever, and thus that poverty was a better object of charitable endeavour than fever alone.[53] Accordingly, in January 1795, a new subscription was launched for the general relief of the poor.[54] A total of £1332 (over and above the poor rates) was collected in the first quarter of the year. Almost half the sum was expended in the form of food, while much of the remainder went to the provision of clothing, bedding, and coals. The distribution of the goods depended on the efforts of "visitors," who were to investigate and make daily reports on the condition of impoverished households. "Idle and dissolute characters," without settlements in the town, were to be relieved and then reported to local authorities, in order that they be sent back to their places of origin.[55]

For the remainder of 1795 and into 1796, Manchester's middle class continued to express its concern for the poor through the establishment of committees and raising

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[53]Ibid., p. 114; Ferriar, "Prevention," pp. 185-186.

[54]Hindle, pp. 114-115.

[55]Ibid., p. 114.

of subscriptions. During these months, the critical links between food shortages, poverty, disease, and unrest were underscored by the food riots that broke out in Manchester's marketplace in July 1795 and by the fever that reappeared a few months later in Manchester's Poor House, as well as in the neighbouring town of Ashton-under-Lyne.[56] The "terror" evoked by the epidemic at Ashton-under-Lyne was a precipitating factor in the establishment of the Manchester Board of Health and the founding of the fever hospital, or House of Recovery, in May 1796.[57]

The manufacturing community supported these new ventures as willingly as they supported the work of the earlier committees. The initial meeting of the Board of Health was attended by several large factory owners and industrialists, who, in John Ferriar's words, "were desirous to use every means for preserving the health of the persons employed by them."[58] Although the creation of a fever hospital was opposed by a conservative faction of property owners and medical men, the "liberality" of the majority of the townsfolk enabled the Board to raise a subscription "abundantly

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[56]Ibid., pp. 116-119; Manchester Mercury, 4 August 1795; John Ferriar, "Account of the Establishment of Fever-Wards in Manchester," in Medical Histories, vol. 3, pp. 43-44.

[57]Ferriar, "Account," passim; Board of Health, pp. 1-4.

[58]Among those attending the meeting were Robert Owen, manager of Peter Drinkwater's Bank Top Mill, George Lee and George Philips, owners of a large Salford cotton mill, and a "Mr. Marsland," who was likely either Samuel Marsland, owner of an industrial estate at Chorlton, or Peter Marsland, a cotton manufacturer who shortly after donated the land upon which the Stockport House of Recovery was built. Board of Health, pp. 2-3; Ferriar, "Account," pp. 46; W.H. Chaloner, "Robert Owen, Peter Drinkwater and the Early Factory System in Manchester 1788-1800," Bulletin of the John Rylands Library 37 (1954), pp. 78-102; Pickstone, Industrial Society, p. 68.

sufficient for the first demands of the establishment."[59]

The provisions of the House of Recovery were but a more thorough-going version of the charity dispensed through the earlier committees. The creation of the House allowed individuals who had contracted fever in their homes or factories to be brought into a hospital environment. Such persons had previously been visited as home-patients and given medicines and wine by the physicians of the Infirmary. The House of Recovery, however, supplied a space in which they could be received, provided with food, and placed under the care of nurses and the regimen of institutional life.[60] It offered a clean, well-ordered residence, in place of the unhygienic, disorderly space of the lodging-house or cellar, as Ferriar made clear when he praised the "attendance, and the comforts experienced by the patients."[61] Like the relief committees formed earlier in Manchester and Bury, the House of Recovery attempted to relieve the fevered poor by remedying their domestic environment and to regulate such persons by scrutinizing their behaviour and subjecting them to a system of rules.

IV

The charitableness of late eighteenth-century manufacturers stemmed from many sources, one of which was an attachment to the beliefs and traditions of Nonconformity. Though not all factory owners were Nonconformists—the Peels, in fact, were Anglican—the values of Nonconformity pervaded the early manufacturing community,

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[59]Ferriar, "Account," p. 65.

[60]Ibid., pp. 64, 66-69.

[61]Ibid., pp. 86-87.

just as they did the reforming medical community.[62] Nonconformists were bound by a commitment "to feel, and to alleviate the distress of [their] fellow citizens": Unitarians emphasized the importance of "humanity" and justification solely by works; Methodists believed in the necessity of disposing of excess and burdensome wealth; and Quakers felt compelled to lend assistance to those in need.[63] Prosperous manufacturers not only felt obliged to contribute to the charitable schemes that were launched for the manufacturing poor, they also favoured the methods that were used to assist and reform the poor. Preoccupied with matters of discipline and order in their personal and business lives, the new industrialists supported the extension of such management techniques to the lives of the poor.[64]

The support of charity was not only a religious duty, it was also a way for Dissenting factory owners to bypass "the Anglican-dominated parochial machinery" and

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[62]Stanley D. Chapman, The Early Factory Masters (Newton Abbot: David & Charles, 1967), pp. 195-199; Michael Ignatieff, A Just Measure of Pain: The Penitentiary in the Industrial Revolution 1750-1850 (London: The Macmillan Press, Ltd., 1978), pp. 58-71.

[63]T. Kennedy, A Sermon Preached in the Independent Chapel, Mosley Street, Manchester, for the benefit of the Infirmary, Dispensary and Lunatic Hospital and Asylum (Manchester: 1792), p. 25, cited in J.V. Pickstone and S.V.F. Butler, "The Politics of Medicine in Manchester, 1788-1792: Hospital Reform and Public Health Services in the Early Industrial City," Medical History 28 (1984), p. 245; Chapman, p. 196; Kilpatrick, pp. 261-264.

[64]Ignatieff, pp. 62-63; Neil McKendrick, "Josiah Wedgwood and Factory Discipline," Historical Journal 4 (1961), pp. 30-55; E.P. Thompson, "Time, Work-Discipline and Industrial Capitalism," Past and Present 38 (1967), 56-97.

establish themselves in the communities in which they lived.[65] The provision of voluntary relief was very much a public affair in the late eighteenth century, with subscription lists being published in the local press and subscribers meeting publicly to oversee the workings of charitable organizations. By becoming involved in philanthropic ventures, factory proprietors were able to achieve both visibility and respectability.

As well, the support of charity was a means of allaying the anxieties and fears provoked by the appearance of fever. Coinciding with grain shortages and occurring against the backdrop of Revolutionary activity in France, fever not only threatened to strain existing systems of poor relief, to disrupt rhythms of factory production, and to transmit itself to the middle and upper classes, it also represented in acute physical form the disorder which seemed to be swelling among the labouring poor. By the closing years of the Revolutionary wars, especially, subscriptions to voluntary relief schemes constituted a defence of existing order; as John Pickstone has remarked, such schemes "were the philanthropic, progressive aspect of social control."[66]

V

In the 1780s and 1790s, factory proprietors attended to the health of their employees not only through the arena of community relief, but also by instituting

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[65]Pickstone, "Ferriar's Fever," p. 404; Robert Glen, Urban Workers in the Industrial Revolution (London: Croom Helm, 1984), pp. 52-53; Hilary Marland, Medicine and Society in Wakefield and Huddersfield 1780-1870 (Cambridge: Cambridge University Press, 1987), pp. 140-142.

[66]Pickstone, Industrial Society, p. 29.

measures within their own works. In the years following the enquiry into the state of the Radcliffe mills, "several proprietors of large factories" were said to have "adopted regulations favourable to health and morals."[67] The implementation of such regulations evidently resulted from the publicity surrounding medical investigation and intervention. In 1798 John Ferriar maintained that one of the advantages of the establishment of the Board of Health and House of Recovery was that "the owners of cotton-mills [had] been instigated, by the facts brought before them, to pay a more scrupulous regard to the health of their work-people," while in its first annual report, the Board of Health itself commented on the "generous spirit of improvement" that had been evoked among factory owners, "not only in the town and neighbourhood of Manchester, but in different parts of the country."[68]

The health measures undertaken by manufacturers—which were said to have arisen from an equal mixture of "judgement and benevolence," or "good sense and humanity"—consisted of greater attention to cleanliness and ventilation, as well as the partial abandonment of night work.[69] For Dissenting industrialists, who shared in the growing middle-class preoccupation with cleanliness, attention to the physical condition

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[67]Thomas Percival, "Biographical Memoirs of the late Thomas Butterworth Bayley, Esq." in The Works, Literary, Moral, and Medical (Bath and London: 1807), vol. 2, p. 294.

[68]Ferriar, "Account," p. 78; "First Annual Report," Board of Health, p. 144.

[69]Ferriar, "Account," p. 79; A Short Essay, p. 10; Ferriar, "Prevention," p. 198; Percival, "Thomas Butterworth Bayley," p. 294; Thomas Percival, "Narrative of the Sufferings of a Collier...and on the Action of Foul Air on the Human Body," in Works, vol. 4, p. 293. Chapman, pp. 195-199, elaborates on the way in which early factory masters were simultaneously committed to principles of laissez-faire economics and Christian morality.

of their premises was not only an agreeable means of expressing concern for the poor persons in their employ, it was also a method which made good social and economic sense: it promised to stem the threat of fever and to produce a healthier and more virtuous work-force, and to do so without impinging in any significant way on the operation or productive capacity of the mills.[70]

One individual who perhaps carried an interest in factory management further than any other was Robert Peel, the Bury manufacturer. In 1790, Peel entered Parliament and in 1802, he brought in a bill "for the preservation of the health and morals" of factory apprentices.[71] Ironically, in 1784, when fever first broke out in the vicinity of the Radcliffe mill, Peel opposed interference in the cotton industry and resented the fact that local magistrates had been called on to intervene in the dispute concerning the origins of the disease.[72] Over the next two decades, however, his perspective shifted, perhaps because of his increasing association with Thomas Percival, the chief investigator of the epidemic. Although Peel's operations were based in Bury, he maintained a warehouse in Manchester, which he visited at regular intervals and which gave him the opportunity to meet Percival and become familiar with his views and his involvement in institutions such as the Manchester Board of Health.[73] Peel

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[70]Pickstone, Industrial Society, p. 16, refers to the "polite concern with cleanliness" which arose in the mid-eighteenth century.

[71]Manning, passim; 42 Geo. III c. 73.

[72]Manchester Mercury, 26 October 1784.

[73]R.B. Hope, "Dr. Thomas Percival: A Medical Pioneer and Social Reformer, 1740-1804" (M.A. thesis, University of Manchester, 1947), p. 122.

evidently came to share a number of Percival's concerns, for in June 1796 he joined the Board of Health and later became President of the House of Recovery.[74]

By 1802, Peel employed approximately fifteen thousand persons, of whom almost a thousand were parish apprentices.[75] According to testimony given several years later, he was able to visit his mills only occasionally and found it difficult to superintend them at a distance.[76] When he did visit the factories, he "was struck with the uniform appearance of bad health, and in many cases, stinted growth of the children."[77] Discovering that, not only in his own mills, but in cotton works all over the country, children were overworked and little attention was given to cleanliness and ventilation, and receiving assistance from "Dr. Percival and other eminent medical gentlemen of Manchester," he proceeded to introduce his regulatory bill.[78]

As originally constituted, the bill was limited to bettering the condition of apprentices in the cotton industry. There were many who felt it did not go far enough. The Manchester magistrate, Thomas Butterworth Bayley, for instance, maintained that the provisions of the bill were "too partial and limited in their operation, to answer the

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[74]Ibid., [Jones], p.32.

[75]Hope, p. 122; P.P. 1816 (397) III, p. 132. Manning, p. 5, states that the figure of 15,000 includes hand loom weavers, but that the majority of the 15,000 were factory employees.

[76]P.P. 1816 (397) III, 132-144.

[77]Ibid., 132.

[78]Ibid., 132-133.

important and necessary purposes of reformation."[79] Bayley was opposed to factory owners employing apprentices from distant places and to "the dissolution of family connections" that resulted from such a practice.[80] With his fellow magistrates, he wrote to M.P.s urging them to oppose the bill in its present form.[81] The criticism expressed by the Manchester authorities reinforced objections raised in the House of Commons. At various readings of the bill, members advocated that its terms be amended. They argued that the number of apprentices who obtained parochial settlements, and thereby the number who were sent to distant cotton factories, should be restricted; that the provisions of the bill should extend to other industries; and, most persistently, that the terms of the bill should be enlarged to include free-labour children.[82] On May 18, for instance, Lord Belgrave rose to declare that the benefits of the bill should be more widely distributed. He pointed out that by applying only to apprentices, the bill undercut itself, for manufacturers would still be able to hire free labourers to work during the night and the occurrence of night labour would militate against the practices of ventilation and cleanliness the bill promoted.[83]

Peel's reply to his fellow members was revealing. He stated that several of the amendments which had been brought forward "encroached on the secrecy of the trade,

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[79]Percival, "Thomas Butterworth Bayley," p. 294.

[80]Ibid.

[81]P.P. 1816 (397) III, 140; Manning, p. 39.

[82]Parliamentary Register 17 (6 April 1802); 18 (14 April, 4 May, 18 May, 2 June 1802).

[83]Ibid., 18 (18 May 1802).

and went to violate the freedom of individuals to extend their commerce," and that the inclusion of free labourers, in particular, would be "extremely prejudicial" to the cotton industry.[84] "It was right," he maintained, "that apprentices who were compelled to labour, should have the periods of work and relaxation regulated by law; but with regard to free labourers, there could be no reason why the Legislature should interfere in their voluntary tasks."[85] He asserted that he was opposed to "hazardous innovation," and argued that improvements should be made gradually, based on experience, rather than in a single leap, guided only by theory.[86]

The debate in the House notwithstanding, Peel's bill passed into law almost as he had drafted it. According to its title, the new act was intended "for the better preservation of the health and morals of apprentices and others, employed in cotton and other mills, and cotton and other factories," but in the preamble, the provisions of the act were more narrowly restricted to cotton and woollen mills in which "three or more apprentices, or twenty or more other persons" were employed.[87] Despite the seeming inclusion of free labourers in the form of "other persons," the regulations of the act applied almost exclusively to apprentices, the only exception being the initial clause pertaining to the whitewashing and ventilation of factory premises. According to the terms of the act, apprentices were to be supplied with clothing; their sleeping rooms

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[84]Ibid.

[85]Ibid.

[86]Ibid., 18 (18 May, 2 June 1802).

[87]42 Geo.III c. 73.

were to be segregated by sex; they were to be instructed in reading, writing and arithmetic, as well as religion; and they were not to work more than twelve hours a day, or at night. The act required that the justices of the peace annually appoint two visitors, who should "from time to time" inspect and report on the condition of the apprentices and mills in their jurisdiction. If the visitors encountered evidence of fever, or other contagious disorder, they were to insist that the "master or mistress" of the mill call in medical assistance. Offenders against the act were to be liable to fines ranging from forty shillings to five pounds, and mills were to be registered with the local clerk of the peace.[88]

In his study of Peel and early factory legislation, Frederick Manning observed that the passage of the Health and Morals of Apprentices Act differed from the enactment of later factory legislation in that it did not excite the same degree of "violent opposition" that the later efforts provoked.[89] As we have seen, the opposition that Peel encountered in the House of Commons came from those who wished to carry the legislation further, and it was Peel himself who resisted this. Manning attributed the relative unanimity with which the bill was received to the traditional composition of a House, "in which commercial and manufacturing interests were still very little represented."[90] While it is true that the House represented chiefly landed interests, it is also true that the Health and Morals of Apprentices Act differed significantly from

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[88]Ibid.

[89]Manning, p. 37.

[90]Ibid.

later factory acts. As is evident from its provisions, the Act of 1802, like the local magisterial resolutions which preceded it, was concerned primarily with regulating the conditions of life of parochial apprentices, and only incidentally with restricting the operation of textile mills. In their history of factory legislation, Hutchins and Harrison have argued that the Health and Morals of Apprentices Act "was in reality not a Factory Act properly speaking, but merely an extension of the Elizabethan Poor Law relating to parish apprentices."[91] "The Government, having taken upon itself the responsibility of bringing up and placing out these children," they state, "found itself compelled, when need was shown, to attempt to regulate their conditions of work."[92]

Though worked out on a grander scale, Peel's attempts to remedy the condition of factory labour were similar to other, less prominent, expressions of manufacturing concern. Guided by the findings of medical science, Peel applied himself to the task of improving the conditions of a group of factory workers whose need could be judged to be greatest (since they not only worked, but lived within the confines of factory space) and at the same time, feasibly and economically met. By his own account, Peel was led to introduce a factory bill "by motives of humanity," but in the minds of himself and his entrepreneurial associates, humanity had to be balanced by the dictates of sound business sense, which, in this instance, meant interfering neither with the conditions of the majority of free factory labourers, nor with the operation of factory machinery.[93]

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[91]Hutchins and Harrison, p. 16.

[92]Ibid.

[93]P.P. 1816 (397) III, 140.

Several years after the passing of the 1802 Act, Peel pointed out that in promoting the bill, he "had a great deal of care upon [his] hands to prevent the manufacturer suffering, as well as the apprentice," and asserted that his opponents had been directed more by "their humanity than by their good sense."[94]

VI

The effect of the various measures undertaken by magistrates, manufacturers, and medical men in the 1780s and 1790s is difficult to evaluate. While some actions, such as the provision of linen and food, no doubt aided the poor and were gladly received by them, others, such as the visits by inspectors and the imposition of rules, were more ambiguous in intent and perhaps less willingly received. Furthermore, such positive benefit as the initiatives did convey was restricted by their limited scope: for every mill owner who attended to the cleanliness of his establishment or shut it down at night, there were others who did nothing, and for every person who was aided by the charities set up in towns such as Manchester and Bury, there were others who went empty-handed. It has already been emphasized that the local magistrates' resolutions, as well as the Health and Morals of Apprentices Act, applied only to parish apprentices, who constituted a minority of the early factory workforce. It was also the case that the 1802 Act, which relied for its effectiveness on the vigilance of local officials, carried little force. While some justices took their visitation duties seriously,

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[94]Ibid.

others did not.[95] Several years after the passage of the Act, a Middlesex Clerk of the Peace remarked that if "Parliament intended this Act should have any Effect the Entry should have been enforced by a penalty, and it should have been someone's Business to see it enforced; as it is, it will ever remain a Dead Letter, and will soon be ranked amongst the Obsolete Acts."[96]

In examining late eighteenth-century responses to the problem of factory health, it is necessary to focus not only on the endeavours of mill owners and justices of the peace, but also on the efforts of those most immediately threatened by disease, disability, and death. In the 1780s and 1790s, factory workers and their families were not simply passive recipients of aid from above. Just as they maintained their own views of the relationship between ill-health and work in the cotton mills, so, too, they employed their own resources in the struggle to evade the worst consequences of factory life.

Adult male workers increasingly joined forces through the agency of friendly societies. Although these working-men's associations had existed prior to the eighteenth century, they began to proliferate in the industrializing north in the latter half of that century.[97] H.F.M. Maltby has determined that between 1776 and 1788 ten

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[95]Hutchins and Harrison, p. 18.

[96]Quoted in J.L. and Barbara Hammond, The Town Labourer 1760-1832 (London: Longmans, Green, and Co., 1920), p. 154.

[97]P.H.J.H. Gosden, The Friendly Societies in England, 1815-1875 (Manchester University Press, 1961), pp. 1, 24; P.H.J.H. Gosden, Self-Help: Voluntary Associations in Nineteenth-Century Britain (London: B.T. Batsford, 1973), p. 9; W.T. Bushrod, "The Development of the Great Affiliated Friendly Societies from their Humble and often Obscure Origins in the Eighteenth Century" (M.A. thesis, University

friendly societies were established in Manchester and Salford, while in 1797, Sir Frederick Eden also counted ten societies in both Bury and Preston.[98] It is likely that many of these societies, which went under the name of "Benevolent," "Amicable," or "Humane" Societies, were composed of members of various occupations.[99] However, societies devoted especially to the needs of cotton factory operatives also existed at this time.

In 1795, a friendly society was established at the Deanston cotton works, in Perthshire. It was open to male workers between the ages of eighteen and forty-five employed at the Deanston mill, as well as other operatives in the area.[100] The men paid one penny a week, or four shillings four pence a year, into the society's coffer, from which they received five shillings a week if bed-ridden, and two shillings six pence if convalescent. Their widows received a pound annually. The society was initially prosperous, due in large part to its youthful membership, but as its members grew older, it began to experience difficulty. It was forced to raise its subscription rates in 1815 and 1819, and to disband entirely in 1834.

Another society which was established specifically for factory workers, the Friendly Associated Cotton Spinners of Manchester, held its first meeting in January

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of Manchester, 1924).

[98]H.F.M. Maltby, "Early Manchester and Salford Friendly Societies," Transactions of the Lancashire and Cheshire Antiquarian Society, 46 (1929), pp. 32-40; Sir Frederick Eden, The State of the Poor (London: J. Davis, 1797), vol. 2, pp. 295, 369.

[99]Ibid.

[100]"Factory Inspectors' Reports," P.P. 1839 [159] XIX, App. 5, pp. 102-103.

1795 at the Three Horse-Shoes, in the marketplace.[101] In the preamble to their "Articles, Rules, and Orders, and Regulations," the Friendly Associated Spinners provided a clear statement of their *raison d'être*, declaring that:

> Whereas the Township and Neighbourhood of Manchester contain a great number of Cotton Spinners, many of whom have settlements in distant parts, and when afflicted with sickness, or other misfortunes, cannot obtain relief without bringing a charge and burden on the inhabitants of the respective Township, and Places wherein they reside; and then only a small allowance, insufficient to support themselves and families; it is therefore agreed amongst them to form a society, in order to raise a fund for the maintenance of such as shall hereafter be in distress, and to defray the funeral expenses, of those who may die members of this society.[102]

The Society was open to male spinners, who were required to pay an initial entrance fee and then a weekly subscription of three pence. The rules promised that if a member should "fall sick, blind, or lame, and thereby become incapable of working" (provided these afflictions were not brought on through "intemperance, or debauchery"), he would receive five shillings six pence weekly for the first year, and three shillings six pence thereafter, as long as the situation required.[103] As well, if he was without work (again provided that this was not the result of personal wrong-doing) he would be relieved for the duration of the unemployed period. Finally, if a member was to die, his widow or next of kin would receive five guineas to cover the costs of a

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[101]Articles, Rules, Orders, and Regulations, Made, and to be Observed, by and between the Members of the Friendly Associated Cotton Spinners... (Manchester: 1795).

[102]Ibid.

[103]Ibid., p. 13.

funeral.[104]

It is likely that many early factory workers not only joined friendly societies, but also practised their own forms of medicine. This was certainly the case for workers engaged in other occupations. In an essay on lead poisoning, Thomas Percival observed that lead workers in Sheffield, who were "frequently and violently disordered" rarely applied to the medical faculty for aid, adding that they relied instead on "certain popular remedies...which are chiefly of the laxative kind."[105] Similarly, he noted that "in Derbyshire, when the miners or smelters of Lead find themselves affected with the asthma, they usually leave their occupation for awhile, and work at the lime kilns, experience having taught them that the fixed air, or *mephitus*, arising from the calcination of lime stone, is an effectual and speedy remedy in this disorder."[106] It would be surprising if cotton factory operatives did not draw from a similar store of practical remedies and empirical knowledge when confronted by sickness and suffering. As is evident from works such as William Buchan's Domestic Medicine, household and popular medical practices prevailed throughout the towns and villages of eighteenth-century Britain.[107]

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[104]A similar society was established several months later in Stockport; see Articles, Rules, Orders, and Regulations, Made and to be Observed, by and between Members of the Friendly Associated Mule Cotton Spinners... ([Stockport]: 1795.)

[105]Thomas Percival, "Observations and Experiments on the Poison of Lead," in Works, vol. 3, p. 463.

[106]Ibid., p. 460.

[107]William Buchan, Domestic Medicine: or a Treatise on the Prevention and Cure of Diseases by Regimen and Simple Medicines, 13th ed. (London: A. Strahan, 1792); Charles Rosenberg, "Medical Text and Social Context: Explaining William

On occasion, the workers employed in the early cotton mills attempted not only to secure their physical well-being, but also to alter the conditions of their employment. In September 1779, several thousand Lancashire operatives protested against the introduction of large spinning machines into factories. They "pulled down and broke in pieces several hundreds of the Carding, Doubling, and Twisting Engines and large Jennies; and...set fire to and burnt down one of the large Patent Machines," and then went on to petition Parliament, requesting the use of the large spinning machinery be taxed.[108] Though noteworthy by their size, the 1779 riots were not the only instance of popular protest. In June 1805, a dozen or so men from the parish of Whitney, in Oxfordshire, created a "very great riot, rout, and tumult" to prevent parish officials from transporting six girls to a Warwickshire cotton mill, where they were to serve as parish apprentices.[109] As Joan Lane has remarked, the involvement of the men may be viewed as a "form of corporate, community action that resisted the removal of village children" to distant factories.[110]

Knowledge of the horrific conditions encountered by factory children inspired not only corporate action, but also individual parental exertion. A cloth manufacturer,

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Buchan's Domestic Medicine," Bulletin of the History of Medicine, 57 (1983), p. 27.

[108][Ralph Mather], An Impartial Representation of the Case of the Poor Cotton Spinners in Lancashire (London: 1780), p. 2; [Rev. Thomas Barnes], Thoughts on the Use of Machines, in the Cotton Manufacture (Manchester: J. Harrop, 1780); Journal of the House of Commons 37 (1778-1780); J.L. and Barbara Hammond, The Skilled Labourer 1760-1832, 2nd ed. (London: Longmans, Green, and Co., 1920), pp. 53-56.

[109]Joan Lane, "Apprenticeship in Warwickshire Cotton Mills, 1790-1830," Textile History 10 (1979), pp. 168-169.

[110]Ibid., p. 169.

William Kershaw, recalled that in the 1790s, when he was employed as a piecener in a woollen mill, he was frequently abused by the slubber under whom he was placed.[111] On one occasion, toward evening, he was beaten so hard he began to vomit blood. On returning home, he related the incident to his mother, but begged her not to intervene, lest he should be beaten again. The following morning, the mother followed her son to the mill, and in Kershaw's words:

> ...came to the slubber that had used me in that way, and gave him a sharp lecture; and when she had done she retired into the engine-feeder's house, and left me to my work; and as soon as she was gone, he beat me severely again for telling, when one of the young men that served the carder, went out and found my mother, and told her, and she came in again and inquired of me what instrument it was I was beaten with, but I durst not do it; some of the by-standers pointed out the instrument, the billy-roller, and she seized it immediately, and beat it about the fellow's head, and gave him one or two black eyes.[112]

It appears that even parents who were separated from their children fought to improve their well-being. Some time after the passage of the Health and Morals of Apprentices Act, William Wilberforce, one of the M.P.s who had advocated the extension of Peel's bill, recalled that his efforts had been strengthened by the appeal of "an honest and hard-working couple," whose child had been "barbarously torn from them and sent down to a distant cotton mill."[113] "I have since conversed with these people," Wilberforce stated, "and seldom have heard a more artless, affecting

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[111]P.P. 1831-2 (706) XV, 46-47.

[112]Ibid., 47.

[113]R. Coupland, Wilberforce: A Narrative (Oxford: Clarendon Press, 1923), p. 433; quoted in Manning, p. 38.

tale."[114]

Further evidence of intercession from a distance is contained in the well-known Memoir of Robert Blincoe, written in the 1820s as a polemic against juvenile labour by the journalist, John Brown, but based on the real-life experiences of "an orphan boy," Robert Blincoe, at the turn of the century.[115] Among the children initially apprenticed with Blincoe at Lowdham Mill, in Nottinghamshire, were two girls, Fanny and Mary Collier, whose mother lived in London. "Finding their health declining from excess of labour, bad provisions, and want of wholesome air and exercise," the girls wrote to their mother, who then travelled to Lowdham to observe the situation in the mill for herself.[116] Significantly, the mother did not approach the factory manager or proprietors, but waited until she returned home and then directed her grievances at the parish officers of Saint Pancras, the family's home parish. According to Brown, the mother's entreaty, which coincided with parliamentary discussion of Peel's bill, persuaded the Saint Pancras officials to send a committee to Lowdham to investigate the state of their former charges. After interviewing the apprentices, and inspecting their living conditions, the committee, in association with the local magistrates, secured a number of reforms: hours were reduced, improvement in accommodation and diet were planned, and several of the supervisory personnel were let go. As Brown relates, however, the benefits of the reforms did not last long, for soon after the visit of the

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[114]Ibid.

[115]John Brown, A Memoir of Robert Blincoe (Manchester: J. Doherty, 1832), pp. 26-27.

[116]Ibid.

Saint Pancras officers, Lowdham Mill ceased operation and the majority of the apprentices were sent to a new factory in Derbyshire, where conditions proved to be even worse.

What of the vast numbers of factory children and youths who had no parents, or whose parents were unable to assist them? It appears that even these workers were able to engage in limited forms of resistance. Perhaps the most typical response to the intolerable and destructive conditions of factory life was the act of running away. Newspaper ads, such as that placed in the January 31, 1792 edition of the Manchester Mercury listing the names and descriptions of five apprentices who had "eloped" from the Pendleton firm of William Douglas and Co., testify to the frequency of the practice.[117] So, too, do the short average terms of employment listed the wage books of the early textile mills.[118] Running away was clearly not an easy option—at the Radcliffe mill, children were reportedly denied shoes in an attempt to forestall their escape—yet even contemplation of the act must have brought some sense of purpose and capability.[119] Recalling his own plan to run away from Lowdham Mill, Robert Blincoe asserted: "I cannot deny that I feel a glow of pride, when I reflect that, at the age of seven years and a half, I had courage to resent and to resist my oppression, and generosity to feel for the sufferings of my helpless associates."[120]

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[117]Manchester Mercury, 31 January 1792.

[118]Redford, p. 22.

[119]According to Manning, p. 18, despite having no shoes, five of the sixteen Birmingham children apprenticed to the Radcliffe mill managed to run away.

[120]Brown, p. 20.

CHAPTER FOUR

THE FACTORY QUESTION AGITATED

> That the question regarding the necessity of legislative interference to regulate the employment of children in cotton factories, a question which has agitated the public feeling for a number of years, unsettled the minds of the working classes, and introduced among them a spirit of discontent and insubordination...ought not to be left much longer undetermined, is a position which no one will venture to controvert.[1]

With the passage of the Health and Morals of Apprentices Act in 1802, interest in the relationship between factories and worker health declined for a number of years. Although opposition to the Act was voiced by some mill owners and the plight of apprentice children received periodic attention in Parliament, the Act was on the whole ignored and the issue of factory health attracted little public concern. The relative quiescence of the decade or so following 1802 provides a marked contrast with the dissension and disturbances that characterized the period from 1815 to 1819. In these years, the problem of the link between textile manufacture and physical well-being again rose to prominence, becoming one of the central and divisive topics in the agitation concerning the establishment of a new factory act.

The demand for new factory legislation was formally enunciated by Robert Owen in January 1815. For the next four and a half years, until the passage of the Cotton Factories Regulation Act in July 1819, the necessity and legitimacy of restricting

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[1]An Examination of the Cotton Factory Question with Remarks upon Two Pamphlets (London: Longman and Co., 1819), p. 3.

the conditions of "free" factory labour was disputed throughout the industrial regions of the Midlands and north, as well as in the legislative assemblies of the south. Addressed in numerous petitions and pamphlets, and taken up by three parliamentary committees, the "factory question," as it came to be called, became a major focus of public attention.

Consideration of the factory question, and of the matter of worker ill-health, was inspired by different conditions than those which gave rise to the late eighteenth-century investigation of factories and fever. As the cotton industry continued its phenomenal expansion, factories grew both in number and size. With the advent of steam power and the development of mule spinning, the composition of the factory workforce altered: apprentice labour declined and the employment of adult male spinners increased. Distinguished by their organization in unions, as well as by a semi-autonomous position on the factory floor, the spinners emerged as active and outspoken industrial leaders. They conducted strikes for better wages and from 1814, championed the cause of shorter factory hours.

Early nineteenth-century attention to the ill-health of mill workers not only arose from different sources than its eighteenth-century counterpart, it also assumed a markedly different form. Fuelled by the growing awareness and capability of operatives themselves, and by increased antipathy between the workers and their masters, the new discourse on factory health developed as an impassioned and acrimonious debate that resounded on a national scale. In its new form, the voices of lay commentators achieved much greater audibility: both workers and manufacturers

spoke out at length about the reputedly pernicious conditions of factory work. The voice of professional expertise, on the other hand, became less clear. In attempts to buttress their position, both the advocates and opponents of factory legislation appealed to the authority of medicine, but although a large number of doctors, from London, as well as the textile towns, offered views on the matter, they were unable to make a decisive contribution to the question of how factory employment impinged on worker health. Unlike the late eighteenth-century observers of fever, medical men in the period from 1815 to 1819 were divided, and while they spoke with conviction, their testimony revealed considerable uncertainty.

I

The years between 1802 and 1815 were not devoid of interest in matters of factory health. The passage of the Health and Morals of Apprentices Act in December 1802 sparked some comment, principally on the consequences of the new legislation. In February 1803, manufacturers from Manchester, Glasgow, Preston, Leeds, Keighly, Tutbury and Holywell expressed opposition to the Act, calling it "prejudicial" and "impracticable."[2] A few months earlier, Messrs. Whitaker and Merryweather, proprietors of a cotton mill in Burley, near Otley, prepared a series of "Observations," which detailed their objections to the statute.[3] They pointed out that night work, which

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[2]House of Commons Journal, 11, 14, 22, 25 February 1803; cited in J.L. and Barbara Hammond, The Town Labourer (London: Longmans, Green, and Co., 1920), p. 152.

[3]"Observations on an Act passed in the last Session of Parliament, respecting Apprentices employed in Cotton and other Factories," Reports of the Society for

was no longer to be performed by apprentices, was essential to the profitable operation of their mills, and that as non-apprentice "free" labour could only be got to do the work "upon very disadvantageous terms," the Act imposed a heavy burden on mill owners.[4] They argued, too, that the provision which the law made for education was onerous and, if adhered to, would "amount to a surrender of all the profits of the establishment."[5] They were most opposed, however, to the visitation clauses of the Act and detailed the manifold consequences that would ensue if cotton mills were opened to visits by magistrates:

> All subordination will be at an end...the Mills and Factories will become a scene either of idleness and disorder, or of open rebellion; or the masters, harassed and tired out by the incessant complaints of their apprentices, and the perpetual interference of the visitors, will be obliged to give up their works; and some of them, after being involved in difficulties (resulting from the operation of the Act) may perhaps become bankrupts, or be obliged to remove to a foreign country, leaving their apprentices a grievous load upon the parish where they were employed.[6]

Not all manufacturers, however, shared the sentiments of Messrs. Whitaker and Merryweather. In September 1802, the recently-formed Society for Bettering the Condition and Increasing the Comforts of the Poor reported that a Mr. Bannatine, owner of a cotton mill at Rothsay, on the Isle of Bute, was "perfectly satisfied" with the provisions of the Act, and that the foremen of mills in several parts of England and

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Bettering the Condition and Increasing the Comforts of the Poor (1803-1805), Appendix, pp. 10-16.

[4]Ibid., p. 11.

[5]Ibid., p. 12.

[6]Ibid., pp. 13-14.

Scotland, though initially opposed to the restrictions, were now convinced of their value.[7] The Society itself was eager to promote the benefit of the legislation. On December 3, 1802, the day after the Act was passed, it produced a report countering Messrs. Whitaker and Merryweather's objections and assessing an account of their mill provided by a Leeds surgeon, Mr. Hey. The report found the conditions in the Burley mill to be much less benign than Mr. Hey had stated, and argued that even if the factory was well run, it still provided no case against the legislation. It concluded that the provisions of the Act were "essential," not only for the well-being of apprentice workers, but also for that of the "community at large."[8]

Discussion of the provisions of the Health and Morals of Apprentices Act seems to have been shortlived: after December 1802, the Reports of the Society for Bettering the Condition...of the Poor no longer refer to the statute and after February 1803, the House of Commons Journal no longer records protest from mill owners. Yet the issue of worker health did not die altogether. In the ensuing decade, several attempts were made in Parliament to restrict and improve the condition of factory apprentices. In May 1804, William Wilberforce introduced a bill "for the better regulation of parish apprentices."[9] The fate of the bill is unclear, but since in 1807 Colonel Bathhurst

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[7]"Extract from an Account of the Cotton Mills at Rothsay in the Isle of Bute," Reports of the Society for Bettering the Condition...of the Poor, (1803-1805), p. 63.

[8]"Report of a Select Committee of the Society," Reports of the Society for Bettering the Condition...of the Poor, (1803-1805), Appendix, p. 10.

[9]House of Commons Journal, 23 May 1804.

again introduced such a bill it must have been allowed to die.[10] Bathhurst's bill was defeated in the House of Lords on a trifling assertion relating to church attendance, and in 1811, Wilbraham Bootle, introduced yet another bill, forbidding parish officers from sending apprentices more than forty miles from their home parish.[11] Bootle's bill was strenuously opposed by the London authorities and was referred to a parliamentary Committee, which did not present its findings until 1815. In 1816, the bill finally passed into law.[12]

The report prepared by Bootle's Committee revealed a general state of indifference concerning the circumstances of apprentice labour. It showed that little was known of the actual workings of the binding-out system and that the fate of almost one-quarter of the apprentices sent out from the metropolitan parishes in the years 1802 to 1811 was unaccounted for.[13] Four years later, a parliamentary paper on the operation of the Health and Morals of Apprentices Act similarly indicated the extent to which contemporary observers had lost interest in the well-being of factory apprentices.[14] The paper contained lists of mills registered and visitors appointed under the terms of the Act, as well as copies of the reports made by the visitors. There

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[10]Hammonds, p. 154.

[11]Ibid., 42 Geo. III c. 46.

[12]56 Geo. III c. 139; Hammonds, pp. 154-156; William Smart, Economic Annals of the Nineteenth Century (London: Macmillan and Co., Ltd., 1910, 1917), vol. 1, pp. 441-442.

[13]Hammonds, p. 155.

[14]P.P. 1819 (66) CVIII; for further evidence see P.P. 1816 (397) III, 115, 168, 316, 320.

were only thirty-six reports in total, three-quarters of which were submitted in the first three years of the Act's operation. While the low number of reports suggests that magistrates and visitors were negligent in carrying out their duties, the brevity of the accounts signifies that such visits as were made were generally perfunctory. The reports point to the laxity of factory masters, as well. Though tending to be congratulatory rather than critical in tone, they revealed numerous instances of masters ignoring the provisions of the Act.

The interest in factory health that persisted in the period from 1802 to 1815 tended to focus on the conditions of apprentice labour. Yet, as was evident from the reports submitted after the enactment of the Health and Morals statute, apprentices no longer formed a substantial portion of the factory workforce. In 1806, the Rev. John Whalley Master, Visitor of Factories in the Hundred of Leyland in Lancaster, suggested to the Court of Quarter Sessions:

> ...the Propriety of some Attention being paid to the *prevailing Custom* of employing Children in Factories as hired Servants, at so much per Week, by which Means the present Act of Parliament is rendered in a great measure nugatory. The Obligation upon them, so far as respects Apprentices, not extending to Children who are hired by the Week or longer Period.[15]

The discussion of worker health that took place in the years immediately following 1802 was not only minimal, therefore, it was also directed at an aspect of the problem which no longer had much significance.

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[15]P.P. 1819 (66) CVIII, 135.

II

Apprentices had never formed the majority of the factory workforce; even in the late eighteenth century, they usually constituted only a third of the population even of mills in outlying districts.[16] In the early years of the nineteenth century, however, their numbers declined substantially. As Bootle's Committee report showed, approximately fifteen hundred apprentices were bound from the metropolitan parishes to provincial factory masters in the period from 1802 to 1811, a figure roughly equivalent to only one per cent of the population growth of Lancashire at the time.[17] In 1816, Sir Robert Peel provided a major reason for the decline of apprentice labour:

> ...owing to the present use of steam power in factories, the Forty-second of the King is likely to become a dead letter. Large buildings are now erected not only as formerly on the banks of streams, but in the midst of populous towns, and instead of parish apprentices being sought after, the children of the surrounding poor are preferred, whose masters being free from the operation of the former Act of Parliament are subjected to no limitation of time in the prosecution of their business...[18]

Steam power had begun to be used in cotton mills in the 1790s, and while exact figures comparing the use of water and steam are not available for the early years of the nineteenth century, it is apparent that steam was becoming the predominant form of power. By 1800, it was responsible for approximately one-quarter of the cotton spun in

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[16]Arthur Redford, Labour Migration in England 1800-1850, 3rd ed. (Manchester: Manchester University Press, 1976), p. 29.

[17]Ibid., p. 32.

[18]P.P. 1816 (397) III, 133.

Britain.[19] Over the next two and a half decades, the number of steam engines in the manufacturing districts increased dramatically. In 1800, Manchester had thirty-two engines, producing a total of 430 horsepower. By 1825, this figure had increased to 240 engines producing 4760 horsepower, while Lancashire as a whole contained 1400 steam engines yielding 25,000 horsepower.[20] Freed from the need to be sited on isolated mountain streams, cotton factories were increasingly located in urban centres with easy access to labouring populations.

As Peel also suggested, the Health and Morals of Apprentices Act itself contributed to a decline in the employment of parish apprentices. By confining its most important restrictions to apprentices, it created a legislative distinction between two classes of factory labour, apprentice and "free," and to the degree that it was adhered to, promoted the use of unrestricted free workers.[21] The passage of time also helped ensure that parish apprentices would not be employed in cotton mills for more than a generation. Where they had been placed in relatively humane situations, the workers often thrived sufficiently to raise new sets of children, who were then available as free labourers.[22]

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[19]G.N. von Tunzelman, Steam Power and British Industrialization to 1860 (Oxford: Clarendon Press, 1978), pp. 177-179; Richard Guest, A Compendious History of the Cotton Manufacture (1823; rpt. London: Frank Cass and Co. Ltd., 1968), p. 32; G.W. Daniels, The Early English Cotton Industry (Manchester: Manchester University Press, 1920), p. 126; S.D. Chapman, The Cotton Industry in the Industrial Revolution (London: The Macmillan Press, Ltd., 1972), p. 19.

[20]von Tunzelman, pp. 31-32.

[21]Redford, p. 29.

[22]Ibid.

The increasing use of non-apprentice labour was not the only discernible change in the cotton industry. The industry also continued to grow at an unprecedented pace. The quantity of raw cotton spun in factories rose from 18.67 million pounds in 1788 to 110 million pounds in 1817, while the number of spindles used to process the cotton increased from 1.94 million in 1788 to 6.65 million in 1817.[23] By the end of the first decade of the nineteenth century, cotton had become the most important textile industry in Britain, overshadowing the more ancient trades of wool, linen, and silk.[24] By 1811, cotton mills employed some 100,000 workers.[25] Thus, by the time of the early nineteenth-century debate on the factory question, the cotton industry had achieved a much greater physical presence than it had in the eighteenth century.

If the industry as a whole expanded, there was one part whose growth was especially notable. This was the fine-spinning sector. The earliest cotton mills, based on Arkwright's water frame, were capable of spinning only very coarse yarns. Sixty hanks per pound, termed "60s," was the finest that Arkwright was able to achieve.[26] In the last quarter of the eighteenth century, however, demand began to move away from the coarse yarns necessary for fustians and calicoes toward the finer yarns used

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[23]von Tunzelman, p. 182.

[24]Phyllis Deane and W.A. Cole, British Economic Growth 1688-1959 (Cambridge: Cambridge University Press, 1967), pp. 184, 191.

[25]Ibid., p. 191. According to P.P. 1816 (397) III, 323, Manchester mills employed nearly one-quarter of these workers.

[26]Chapman, p. 21.

for muslins.[27] The demand was met by Samuel Crompton's mule, which was conceived as a manually-operated machine, but which was rapidly associated with steam.[28] By the end of the century, the steam-powered mule was able to spin "300s."[29] By the early years of the nineteenth century, the cotton industry had become divided into two main branches: that which still produced coarse yarns on the water-frame and that which produced fine yarns on the steam-driven mule. Of these, it was the fine-spinning branch, which was concentrated in Manchester and Glasgow and led by a number of large, oligopolistic firms, which was clearly becoming the leading sector.[30] Representing the "white heat of technology, as then understood," it attracted considerable attention from contemporary observers.[31]

Fine-spinning mills differed considerably from the older water-frame factories. They required higher temperatures and they also employed a different type of labour force. Whereas water-frames, and the throstles by which they were succeeded, were operated chiefly by children and unskilled women, mules were operated by skilled male spinners, assisted by child piecers. These spinners were more like craftsmen than proletariat. Not only were they the highest paid group of cotton factory workers, they also exercised a certain degree of control in the labour process: they were paid by the

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[27]von Tunzelman, p. 179.

[28]Ibid., pp. 176, 180.

[29]Chapman, p. 21.

[30]P.P. 1816 (397) III, 231; von Tunzelman, p. 184.

[31]von Tunzelman, ibid.

piece, and it was they, rather than the mill owner or manager, who hired and supervised the piecers.[32] Though they constituted only a fraction of the factory workforce—it is estimated that in 1818, Manchester mills employed twenty-two hundred spinners out of a total population of twenty thousand operatives—the spinners assumed a leading role in industrial activity.[33] From the 1790s, mule spinners in Manchester, as well as its satellite towns, combined in unions and launched strikes for increased wages.[34] By the second decade of the nineteenth century, they were well prepared to lend their strength to the struggle for new factory legislation.

III

Debate over the establishment of a new factory act was set off at a Glasgow meeting of textile manufacturers held on January 25, 1815 and attended by Robert Owen, master of the New Lanark cotton works. At the meeting, Owen raised two issues for the consideration of his associates: the desirability of a remission of cotton

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[32]William H. Lazonick, "Industrial Relations and Technical Change: The Case of the Self-Acting Mule," Cambridge Journal of Economics 3 (1979), pp. 231-262; P.P. 1819 (24) CX, 99, passim. G.J. Wood, The History of Wages in the Cotton Trade during the past 100 Years (1910), cited in R.G. Kirby and A.E. Musson, The Voice of the People: John Doherty, 1798-1854 (Manchester: Manchester University Press, 1975), p. 15, states that in the period from 1814 to 1822, fine spinners in Manchester earned 32s. per week. From this sum, the spinners paid their piecers on a daily basis. According to "The Cotton-spinners' Address to the Public," The Annual Register...for the Year 1818 (London: Baldwin, Cradock, and Joy, 1819), Chronicle, p. 101, in 1816, the clear weekly wage of Manchester spinners amounted to 24s.

[33]J.L. and Barbara Hammond, The Skilled Labourer 1760-1832 (London: Longmans, Green, and Co., 1920), p. 97; Donald Read, Peterloo: The 'Massacre' and its Background (Manchester: Manchester University Press, 1958), p. 15.

[34]Kirby and Musson, pp. 13-15; Robert Glen, Urban Workers in the Early Industrial Revolution (London: Croom Helm, 1984), pp. 68-70.

import duties and the need for restriction of the conditions of factory employment. With regard to the latter, Owen asserted that the cotton industry was "destructive of health, morals and social comforts," and proposed that no child under the age of twelve should be permitted to work in "cotton or other mills of machinery," that the daily hours of work in such mills should be restricted to ten and a half (with an additional hour and a half for meals and recreation), and that no child should be hired into a mill without first passing a test of education.[35] Not surprisingly, the manufacturers endorsed Owen's first concern, but rejected his second. Not easily daunted, Owen travelled to London, where he succeeded in having the cotton tax reduced and where he presented his reform proposals to members of the government. "I was in general well received," he later recalled, "and had much promise of support."[36] After meeting several times with interested members, Owen amended the proposals and requested that Sir Robert Peel introduce them in Parliament.

Owen serves as a fitting link between late eighteenth-century commentators on fever and early nineteenth-century agitators of the factory question, for, like Peel, he was present in Manchester in the 1780s and 1790s and associated with those who were particularly concerned with the connection between factories and health. Owen arrived in Manchester in 1788 and after a time in the drapery business, in machine-making and

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[35]J.T. Ward, The Factory Movement 1830-1855 (London: Macmillan & Co. Ltd., 1962), p. 20; J.T. Ward, "Owen as Factory Reformer," in John Butt (ed), Robert Owen: Prince of Cotton Spinners (Newton Abbot: David and Charles, 1971), p. 103.

[36]Robert Owen, Life (London: Effingham Wilson, 1857), vol. 1, p. 115.

as an independent spinner, became manager in 1792 of a large fine-spinning mill owned by Peter Drinkwater.[37] Four years later, he assumed management of another large Manchester firm, the Chorlton Twist Company, which in 1799 bought out the Scottish New Lanark mills from David Dale. In 1800, Owen left Manchester to marry Dale's daughter, Caroline, and assume control of the New Lanark factory.

During his time in Manchester, Owen entered with some degree of success into the cultural life of the town and became acquainted with such men as Thomas Percival and John Ferriar.[38] In 1793 he joined the Manchester Literary and Philosophical Society and in 1796 aided Percival in drafting resolutions for the Manchester Board of Health, including the proposal "for parliamentary aid...to establish a general system of laws, for the wise, humane, and *equal* government of all [manufacturing] works."[39] Though the degree to which he was influenced by his association with Manchester's cultural elite is unclear, it is evident that by 1815 Owen had developed a personal interest in factory reform, indeed in reform at large.

As revealed in his New View of Society, Owen spent a number of years at New Lanark working out a plan of moral education, which he believed should be applied to

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[37]W.H. Chaloner, "Robert Owen, Peter Drinkwater and the Early Factory System in Manchester 1788-1800," Bulletin of the John Rylands Library 37 (1954), pp. 78-102.

[38]E.M. Fraser, "Robert Owen in Manchester, 1787-1800," Memoirs of the Manchester Literary and Philosophical Society 82 (1937-1938), pp. 29-41; V.A.C. Gatrell, "Introduction," in Robert Owen, A New View of Society and Report to the County of Lanark (1813-1814, 1821; rpt. Harmondsworth: Penguin Books, 1970), pp. 25-26.

[39]Thomas Percival, "Heads of Resolutions," in Board of Health of Manchester, Proceedings and Observations (Manchester: 1806), p. 33; Gatrell, p. 24.

the nation as a whole and which he maintained would yield "industrious, intelligent, virtuous, and valuable members of the state."[40] The legislative proposals that he put to his fellow manufacturers and then to members of the government formed part of his more encompassing scheme of reform. By 1813, Owen himself had discontinued the practice of hiring children under the age of ten, in order that they be afforded an opportunity for education which he provided in the "New Institution."[41] He clearly desired that the same opportunity be extended to all factory children. In the New View, he noted that even at ten, children were not ready for constant employment and that it would be better for them, their parents, and society in general if they did not begin factory work until they were twelve, "when their education might be finished, and their bodies more competent to undergo the fatigue and exertions required of them."[42]

In the breadth of his reform vision, Owen had more in common with the Manchester physicians of the 1780s and 1790s than with those who took up the factory question after 1815. Unlike Percival and Ferriar, whose proposals regarding factory reform were wide-ranging and interwoven with plans for urban improvement, the persons who became involved in the early nineteenth-century factory agitation concentrated almost exclusively on the issue of restricted work hours.

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[40]Owen, New View, p. 196.

[41]Ibid., pp. 123, 142-147.

[42]Ibid., p. 123.

IV

On June 6, 1815, Sir Robert Peel brought Owen's reform bill before the House of Commons.[43] The bill met with little opposition from members of the House, but owing to the lateness of the session and to Peel's desire that it "be put into the most perfect state that was attainable," he thought it advisable not to press for its completion at that time.[44] The bill was circulated during the parliamentary recess and then reintroduced the following spring.

On April 3, 1816, Peel queried the benefit of machinery having been introduced into the nation's manufactories and advocated the measure that in 1802 he had strenuously opposed: limitation of the labour of non-apprentice labour. He acknowledged that it might be said "that free labour should not be subjected to any control," but argued that "surely it could not be inconsistent with our constitution, to protect the interests of these helpless children."[45] He concluded his submission by

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[43]As amended, the proposals stipulated that children were not to be employed in "Cotton, Woollen, Flax and other Mills" until ten years of age, that the hours of work for those under eighteen was to be restricted to ten and a half per day, with an additional hour and a half for meals, and half an hour of instruction for those in their first four years of employment, and that justices of the peace were to appoint paid visitors, who were to oversee the workings of the act. P.P. 1814-1815 (394) II, 739.

[44]The Parliamentary Debates 31 (6 June 1815), p. 625; P.P. 1816 (397) III, 132.

[45]The Parliamentary Debates 33 (3 April 1816), pp. 884-885. Peel's uncertainty regarding the benefits of mechanization provides an instance of the early nineteenth-century questioning of technical progress that Maxine Berg addresses in The Machinery Question and the Making of Political Economy 1815-1848 (Cambridge: Cambridge University Press, 1980). The controversy considered here as the "factory question" may be viewed as part of a larger debate that Berg discusses as the "machinery question."

moving for the appointment of a Select Committee.

Despite opposition from several of the members, one of whom argued that cotton mills had been much improved in recent years, particularly with respect to the quality of their air, a Select Committee was appointed.[46] The Committee sat from April 25 to June 16, 1816 and heard evidence from forty-seven witnesses, including Peel, Owen, a number of manufacturers hostile to the proposed legislation, a group of Manchester merchants associated with the town's Sunday schools who supported the legislation, several metropolitan physicians and surgeons and one northern surgeon.[47] The metropolitan doctors, whose experience lay in the large London hospitals or among the middle and upper orders of society, testified on the basis of "general reasoning" and "knowledge of animal economy," rather than "acquaintance with the facts."[48] They were critical of the long hours and "confinement" of factory children, but their concern with confinement differed somewhat from that of the late eighteenth-century investigators of factory fever. Whereas Percival and his associates had been primarily concerned with confinement as a factor which contributed to the corruption of air and the generation of disease, the London doctors regarded it as an impediment to a healthy regimen, arguing that it obstructed the "natural appetency of all young creatures to loco-motive exercise, and the open air," and that it prevented the free movement of

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[46]The Parliamentary Debates 33 (3 April 1816), p. 886.

[47]P.P. 1816 (397) III.

[48]Ibid., 29-49, 58-59. The witnesses included the physicians: Matthew Baillie, Christopher Pemberton, George Leman Tuthill, and Sir Gilbert Blane and the surgeons: Ashley Cooper, Anthony Carlisle, and Richard Ogle.

thought and limbs.[49]

The views of the northern surgeon, Kinder Wood of Oldham, derived from a more intimate knowledge of the workings of the factory system, yet also deviated from the perspective of the earlier investigators. Though Wood expressed concern with the state of factory air, it was the temperature of the air, rather than the degree of ventilation, that he regarded as particularly injurious. He maintained that the current operation of factories, especially of the small, make-shift mills around Oldham, impaired the health of workers, leaving them thin, scrophulous, and debilitated, and he advocated the regulation of both temperature and hours.[50] The testimony of Wood and the London doctors notwithstanding, the Select Committee failed to come to any definite position on the advisability of further legislation. Parliament was nearing the end of its session when the Committee completed its inquiries, and no immediate action was taken. The following year Peel fell ill, and it was not until 1818 that the issue of factory reform was again broached in the House.

In the meantime, agitation was building outside Parliament. From the time that Owen's bill was brought into the Commons, manufacturers in various parts of the country began to show signs of apprehension and to unite to protect their interests.[51]

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[49]Ibid.

[50]Ibid., 191-208.

[51]It was not only cotton manufacturers who were apprehensive. Soon after the bill was introduced, a number of earthenware manufacturers gathered together to consider the effects of the proposed act. They resolved to oppose the legislation, believing it to be unnecessary in the case of their own industry, and sent one of their number, Josiah Wedgwood, to represent them at the Select Committee hearings. P.P. 1816 (397), III, 62.

Joseph Dutton, a Liverpool ironmonger who conducted a tour of Lancashire factories and then gave evidence before the Select Committee, reported that mill owners in Manchester were alarmed by the bill and that he could only gain entry to one factory in the town.[52] Similarly, George Gould, one of the Manchester merchants who supported the bill, stated that he encountered difficulty in visiting local mills and that there were many "that even a friend cannot get to look at," the owners being "so tenacious to keep people out."[53] By 1816, factory owners in the town had formed themselves into a Committee, which soon proved to be a powerful lobbying group.[54]

Cotton manufacturers in other parts of the country began to unite as well. A number of master spinners in the neighbourhood of Mansfield, Nottinghamshire gathered together and deputized one of their number, Henry Hollins, to attend the proceedings of the Select Committee and to hand in various papers concerning the conditions in their mills.[55] In a like manner, twenty-four factory owners in Preston sent William Taylor, manager of the extensive Horrocks, Miller and Co. cotton works, to London to act as a deputy on their behalf.[56] Manufacturers in Glasgow were particularly energetic. On April 3, 1816 they held a meeting to consider the legislative proposals. They prepared a petition opposing Owen's bill and appointed a delegation,

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[52]Ibid., 298.

[53]Ibid., 99-100.

[54]Ibid., 83; P.P. 1818 (90) XCVI, passim.

[55]P.P. 1816 (397) III, 186.

[56]Ibid., 260.

consisting of Henry Houldsworth, Archibald Buchanan, and Adam Bogle, to testify before the Select Committee and to oversee the progress of the bill. Over the next few weeks, members of the group worked diligently to prepare for the hearings, gathering information on the conditions at New Lanark, on the status of education among the poor, and on the state of manufactories in Scotland. They also drafted an anti-bill petition, which they intended to have signed by factory workers in the area, and procured the services of "an exceedingly fit person," who, "merely for the payment of his expenses," promised to accomplish the task.[57]

At the same time, however, factory operatives throughout the textile regions of the Midlands and north were seizing the opportunity to express their own views. Shortly after the introduction of Owen's bill, cotton workers in Carlisle presented the Commons with a petition complaining of the practice "of employing children in Cotton Mills for a length of time daily, which is not only evidently injurious to their health, but dangerous in an eminent degree to the morals of the youth of both sexes," and urging members of the House to "adopt such measures as will be the means of putting a stop to such a serious evil."[58]

Not surprisingly, the greatest degree of support for the proposed act came from Manchester, the centre of the cotton trade. As a response to an extension of work hours that had occurred as the trade was recovering from an lengthy slump, Manchester

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[57]"Sederunt-book of the Cottonspinners and other manufacturers, &c. &c.," Glasgow, 3 April, 1816, Strathclyde Regional Archives: T-MJ 100.

[58]The Parliamentary Debates 34 (26 April 1816), pp. 1-2.

mule spinners had already established a short-time committee in 1814.[59] From 1816, however, operatives took on the cause of supporting Owen's bill and, over the next three years, dedicated themselves to the task with unexampled determination.

Though the spinners themselves contributed to the funds of the short-time committee, the body was largely supported by donations from a local merchant, Nathaniel Gould, who reputedly gave £20,000 to the cause during his lifetime, and left £5,000 after his death in 1820.[60] Gould not only financed the efforts of the committee, he also worked tirelessly on its behalf, lobbying members of Parliament and soliciting support from prominent citizens. In 1816 and 1817, he approached a number of local clergy and medical men, requesting their opinion of the effects of factory work on child health. Drawing on extensive experience among the poor, as well as observation of children in Sunday schools, the doctors reported that they had little difficulty in distinguishing children who were employed in mills from those who were not, and maintained that thirteen or fourteen hours of labour per day, along with high temperatures, impure air, and lack of exercise had a decidedly detrimental impact on health, causing workers to become pale, sickly, emaciated and deformed.[61]

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[59]P.P. 1840 (504) X, Q. 8475; Kirby and Musson, p. 346; Glen, p. 70.

[60]Kirby and Musson, p. 346; [Samuel Kydd], The History of the Factory Movement (London: Simpkin, Marshall, and Co., 1857), vol. 1, pp. 61-64; Ward, Factory Movement, p. 23.

[61][Nathaniel Gould], Information concerning the State of Children Employed in Cotton Factories (Manchester: J. Gleave, 1818); P.P. 1816 (397) III, 286-287, 328-329. The doctors who provided Gould with testimony in 1816 and 1817 included John Mitchell, Honorary Physician to the Manchester Infirmary; William Simmons, Honorary Surgeon to the Infirmary; Henry Dadley, Surgeon to the Manchester Poor House; John Windsor, Surgeon to the Manchester Eye Institution; Thomas Bellot,

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In January 1818, the Manchester short-time committee adopted a petition containing the signatures of some six thousand operative spinners, many of whom were also the parents of factory children, and requested that John Hollis, a spinner who was out of work because of ill-health, take it to Westminster.[62] The petition detailed the "extended labour" endured by factory workers and denounced the delayed progress of Owen's bill.[63] A few weeks later, the owners and occupiers of a number of Manchester mills drew up a petition of their own, asking that Parliament appoint a special commission to investigate the state of cotton mills, and compare it with the conditions prevailing in other manufactories.[64] The petitions were presented to the Commons in early February and served to redirect the attention of the House to the question of legislative restriction and to set off a further year and a half of turmoil and debate.

On February 19, Peel brought a moderated form of the 1815 bill before the House.[65] The amended proposals evoked some support. Sir John Jackson, for

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Surgeon and Man-midwife to the Manchester Lying-in Charity; and John Johnson Boutflower, a Salford surgeon.

[62]Kirby and Musson, p. 348; [Gould], p. 3.

[63]Kirby and Musson, p. 348.

[64]The Parliamentary Debates 37 (16 February 1818), pp. 440-441.

[65]P.P. 1818 (61) I, 91. In its new form, the bill applied only to cotton factories; it lowered the age of admission to nine years, restricted the work day only for employees under the age of sixteen, increased the length of this day by half an hour, made no provision for education, required that visitors be appointed only upon complaint, and made no provision for the payment of such visitors.

instance, voiced his approval, arguing that since the House had turned its attention to the condition of slaves abroad, it could not reasonably ignore the state of factory children at home.[66] However the bill also provoked a good deal of hostility. George Philips, a silent partner in the huge Salford firm of Philips and Lee, was strongly opposed to the measure and criticized the Manchester workers' petition, suggesting that it was the product of a conspiracy of "four or five persons," who had secretly dispatched emissaries and circulated papers throughout the country.[67]

Over the next two months, tension increased as members continued to dispute the issue and as petitions flooded in from towns such as Ashton-under-Lyne, Staly-bridge, Stockport, Blackburn, New Lanark, Glasgow, Halifax, and Royton.[68] A particularly poignant appeal came from factory workers in Warrington, who stated in part:

> The principal Cotton Mills in this Town & neighbourhood work from half past five in the morning till half past Eight at night So that the poor Children are calld out of Bed at 5 in the Morning and it is nine at night when they get Home Some of them being under Six many of them under Eight years of age We feel exquisitely for these in the Winter time Coming out of the warm Bed Cloathed in Rags or half naked through the Cold frost & snow winds & Rain many of them barefoot into the Hot Room were no Air is permitted to enter that can be prevented as it is

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[66]The Parliamentary Debates 37 (19 February, 1818), p. 565. Jackson's remark notwithstanding, the comparison of the condition of factory workers to that of slaves was not frequently made until the 1830s, when it became a common part of the rhetoric of factory reform.

[67]Ibid., p. 561; Anthony Howe, The Cotton Masters 1830-1860 (Oxford: Clarendon Press, 1984), pp. 92-93.

[68]The Parliamentary Debates, 37 (23 February 1818), pp. 581-588; (2 April 1818), pp. 1182-1183; (6 April 1818), pp. 1188-1189; (10 April 1818), pp. 1259-1263; 38 (17 April 1818), pp. 169-175.

> Injurious in the Manufacturing especially in the Spinning of Cotton We could mention Several Instances of both Males & females now in our Employ above 16 years of age who are not four foot high and whose pallid looks and emaciated frame would almost affect the callous Heart of the arrogant Mr Phillips and call for the sympathetic tear of that affected friend of the poor Mr Curwen [another M.P. opposed to the bill] If that pretended Philanthropist could be prevailed on to visit our Mills or the Cotton Mills at Preston and stay in one of them a whole Day On seeing the Spinners so close and attentive to their work from Morning till night scarce allowing Himself time to go and make water eating his Breakfast and afternoons Repast (and Sometimes His dinner) while hard at work And working so hard that the veins on His Arms appear like Ropes as thick as ones fingers The three Children Employed by him as piecers are equally attentive and assiduous in their Respective occupations. Suppose He should enquire "Why do you exert yourself and work so very hard and keep so close to? The answer would be Something of the following nature "We have a Large Family My Father being 40 years old or upwards is unable to Spin the Quantity required consequently has lost His work or is severely afflicted with the Rheumatism, Asthma, Consumption, or some other Disease Incidental to old [age] or is Dead. or I have a wife and three or four Children in to work and our Wages are now Reduced so low that I am obliged to exert myself to the utmost of my power to earn as much as will be barely Sufficient to procure the necessaries of life. besides I must do the quantity required or I shall lose my work In the card Rooms He would find them equally attentive & Diligent where the Squallid fumes would almost suffocate him. We think If He has one grain of Charity or the least degree of Humanity He would Say we Deserved to participate [in] the liberty of our fellow Subjects...[69]

On April 27, after several hours of debate, the new proposals were put to the vote and the bill finally passed the Commons.[70]

Outside Parliament, interest in the condition of factory workers was heightened by incidents such as a fire at Colne Bridge, where seventeen female workers locked in

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[69]"Papers relating to the Cotton Factory Bill," British Library: BM MSS 40275 ff. 192, 193.

[70]The Parliamentary Debates 38 (27 April 1818), pp. 342-371.

a cotton factory for the night shift burned to death, and by the eruption of a pamphlet war, fuelled by the contributions not only of workers and manufacturers, but also of intellectual spokesmen.[71] Samuel Taylor Coleridge, for instance, authored a particularly fervent tract that took issue with the argument of non-interference with free labour, declaring that if factory labour "were indeed free, the employer would purchase, and the labourer sell, what the former had no right to buy, and the latter no right to dispose of; namely, the labourer's health, life, and well-being."[72]

In Manchester, controversy grew especially intense during the months the bill was before the Commons. Both the advocates and opponents of the bill strove to gather support for their cause and in attempts to garner the prestige of scientific backing, both sides appealed to members of the medical community. Nathaniel Gould continued to solicit the testimony of local physicians and surgeons and at the end of March published a pamphlet "for the use of the members of both Houses of Parliament," which contained the first-hand accounts of almost a dozen prominent doctors.[73] He and his

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[71]Ward, p. 24. See, for example, the pamphlets contained in The Factory Act of 1819 (New York: Arno Press, 1972).

[72][Samuel Taylor Coleridge], Remarks on the Objections which have been urged against the Principle of Sir Robert Peel's Bill (London: W. Clowes, [1818]) p. 2; Alfred Cobban, Edmund Burke and the Revolt against the Eighteenth Century: A Study of the Political Thinking of Burke, Wordsworth, Coleridge and Southey (London: George Allen & Unwin Ltd., 1960), pp. 214-215. As H.C. Robinson, Diary, Reminiscences, and Correspondence (Boston: Fields, Osgood, and Co., 1869), vol. 1, p. 386 reveals, Coleridge produced two pamphlets in support of Peel's bill.

[73][Gould]. The medical testimony provided in 1816 and 1817 was supplemented by that of Samuel Argent Bardsley, Senior Physician to the Manchester Infirmary; William Winstanley, Honorary Physician to the Infirmary; Michael Ward, physician and former Surgeon to the Infirmary; William Wood, Man-Midwife Extraordinary to the Manchester Lying-In Charity; and Robert Agnew, a Manchester physician.

associates also approached magistrates, merchants, manufacturers, and other members of Manchester's professional and bourgeois classes, requesting that they sign a petition in favour of Peel's bill. On April 6 they presented the Commons with the signatures of over seventeen hundred of the town's "principal inhabitants," including those of thirty medical men, who "most feelingly deplore[d] the sufferings" of factory labourers and earnestly solicited the enactment of restrictions that would "reduce the working hours in Cotton Mills to reasonable limits." [74]

The Mancunian opponents of the measure were equally active. On April 14, they applied to Gould's printer for a copy of the pamphlet, believing it to be "highly prejudicial" to their interests.[75] A few days later, they, too, petitioned the Commons, praying that the progress of the bill be halted in order that they have time to gather evidence to counter the charges made in the work. On April 19, the chairman of the Committee of Cotton Spinners, Mr. Douglas, called a meeting of the "whole of the Medical Men of Manchester," including those who had previously signed Gould's petition, and requested that the doctors visit the factories and Sunday schools in

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[74]The Parliamentary Debates 37 (6 April 1818), pp. 1188-1190; "To the Honourable the Commons of the United Kingdom of Great Britain and Ireland in Parliament assembled," in Answers to Certain Objections made to Sir Robert Peel's Bill, for Ameliorating the Condition of Children Employed in Cotton Factories (Manchester: R. and W. Dean, 1819), pp. 66-68. According to John Foster, "The Making of the First Six Factory Acts," Bulletin of the Society for the Study of Labour History 18 (1969), pp. 4-5, the petition was "largely signed by the calico-printing and merchanting community," whose interests were antagonistic to those of master spinners. For a list of the physicians and surgeons who signed the petition, and of those who subsequently changed their views, see Appendix I.

[75]The Parliamentary Debates 38 (17 April 1818), pp. 169-170.

Manchester and its vicinity in order to collect information on the state of mill workers.[76]

On May 7, 1818, Lord Kenyon introduced Peel's bill in the House of Lords. The following day, the Earl of Lauderdale presented the Lords with a petition from the Manchester master spinners, requesting that they might bring forward medical evidence to buttress their case against the bill. Though Kenyon urged that the progress of the legislation not be delayed and maintained that sufficient testimony had been heard by the 1816 Select Committee, Lauderdale was adamant that the manufacturers and their witnesses be received: "Were their lordships prepared to encroach upon that great principle of political economy, that labour ought to be left free," he asked, "and without taking upon themselves the trouble of investigating the subject?"[77]

The Committee was finally agreed to and met from May 20 to June 5, 1818.[78] It received petitions from workers and factory masters throughout the country and heard evidence from twenty-one witnesses, including nine Manchester medical men, who had undertaken their inquiries at the request of (and, as testimony revealed, in the expectation of payment from) the Committee of Cotton Spinners.[79] The doctors

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[76]P.P. 1818 (90) XCVI, 95, 119, passim.

[77]The Parliamentary Debates 38 (7 May 1818), p. 548; (8 May 1818), p. 578-579; (14 May 1818), pp. 646-649.

[78]P.P. 1818 (90) XCVI.

[79]Ibid., 126, passim. The doctors included Edward Holme, Henry Hardie, and Edward Carbutt, Honorary Physicians to the Manchester Infirmary; Gavin Hamilton and James Ainsworth, Honorary Surgeons to the Infirmary; William Robert Whatton and Thomas Turner, Surgeons to the Manchester Workhouse; and Samuel Barton and William James Wilson, Surgeons to the Manchester Eye Institution. The Committee

presented a very different picture of factory health than that provided by their associates who had contributed to Gould's pamphlet. It was also an assessment that was at odds with the views advanced two years earlier by the London physicians and surgeons. Being very careful to speak only from the "Facts," and referring to statistical data acquired through mass observation in the mills, the Manchester doctors gave a generally favourable account of factory health, arguing that mill workers enjoyed a comparatively better state of well-being than labourers in other occupations.[80] Their unwillingness to go beyond the facts, or to make a "judgment" based on scientific or medical principles, led them to make some remarkable statements, however.[81] When asked, for instance, if a child could be kept standing twenty-three out of twenty-four hours, Edward Holme, the most distinguished member of the group, replied that he would wish to see such a case demonstrated and if "it should appear that the Person was not injured by having stood Three-and-twenty Hours, I should then say it was not inconsistent with the Health of the Person so employed."[82] The evidence of the non-medical witnesses, though not always as startling in nature, was equally unfavourable to the cause of legislative reform, but, as in 1816, no immediate action was taken. Parliament was again almost at the end of its session when the Committee completed its

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also heard evidence from two non-Mancunian medical witnesses: Thomas Wilson, a surgeon and apothecary from Bingley, West Riding, and William Paulson, a surgeon from Mansfield, Nottingham.

[80]Ibid., passim.

[81]Ibid., 19-20, 32, 43.

[82]Ibid., 20.

hearings and on June 5, proceedings were postponed until the following session.

VI

In the summer of 1818, operative spinners in Manchester went on strike.[83] Though the strike was primarily directed at an increase of wages (which had been significantly reduced since 1816), the length of the work day and the conditions of mill work were also contentious issues. In one statement, the spinners protested:

> We believe there is no species of labour so fraught with the want of natural comforts as that the spinners have to contend with, deprived of fresh air, and subjected to long confinement in the impure atmosphere of crowded rooms, continually inhaling the particles of metallic or vegetable dust, his physical powers become debilitated, his animal strength dwindles away, and few survive the meridian of life, and the grave is often the welcome asylum of his woes. His children!—but let us draw a veil over the scene!—our streets exhibit their cadaverous and decrepit forms, and any attempt to describe them would be impossible.[84]

The strike grew increasingly violent towards its conclusion and some "respectable" advocates of Peel's bill repudiated all connection with the striking employees, arguing that the turn-out had nothing whatever to do with the progress of the bill.[85] The author of one pamphlet, for instance, asserted that "no two objects can well be more distinct, or rather opposite, than those contended for by a body of deluded men, and those designed by this humane but calumniated Bill."[86] The opponents of the bill, however, held the supporters to blame for the disturbances. A spokesman in 1819

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[83]Hammonds, Skilled Labourer, pp. 96-109; Read, pp. 103-104.

[84]Quoted in Kirby and Musson, p. 348.

[85]Hammonds, Skilled Labourer, pp. 105-106; Kirby and Musson, p. 348.

[86]Answers, p. 39.

perceived "an intimate connexion between the measures pursued by the advocates of Sir Robt. Peel's bill, and the deplorable scenes of riot and blood-shed, which, during several months last year, disturbed and disgraced this district."[87] In the end the strike failed, though the Manchester masters did agree to restrict the length of the factory day to twelve hours.[88]

Worker activity did not cease with the failure of the strike. While Manchester's short-time advocates continued to issue appeals in the local press and circulate pamphlets arguing their case, operatives in other parts of the country also struggled to advance the bill.[89] In Holywell, North Wales, for example, workers at the Cotton Twist Company mills decided to send a petition to the House of Lords. Lacking expertise in such matters, they wrote away for assistance, and in November were visited by Thomas Worsley, an emissary from a workers' committee at Stockport, Manchester and Bolton, who had attended the Parliamentary session the previous spring and whose own health had suffered as a result of factory employment.[90] Worsley called a meeting at the Black Horse, a public house located between the mills, and helped the Holywell workers draft a petition, which was then confiscated by the mill superintendent, Edward Kenworthy. The following Friday evening, the workers drew

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[87]Examination (London: Longman and Co., 1819), pp. v-vi.

[88]Kirby and Musson, p. 348.

[89]Examination, p. 4.

[90]"Despatch," in ibid., p. 140; P.P. 1819 (24) CX, 21, 140.

up a second petition, at "Mrs. Woodcock's at Greenfield."[91] After successfully sending it off, they continued to demonstrate their support for the bill; in Kenworthy's words, they became "generally more disobedient, and shewed more Independence of their Employers."[92] Several operatives left the mills, with the employees of one department turning out entirely and heading for Manchester.[93]

In February 1819, Lord Kenyon presented the House of Lords with the petition from Holywell, as well as one from Stockport, "praying that a bill similar to that proposed last session, for limiting the hours of the labour of children, might be introduced and passed."[94] In his remarks, Kenyon argued that the evidence gathered the previous session had been very one-sided, and he moved for the appointment of a new committee. He was opposed by the Earls of Lauderdale and Grosvenor, who warned that a renewal of inquiry would reignite the scenes that had disturbed Manchester the previous summer, and who argued that since some mill owners had already voluntarily restricted their hours of labour, "the majority would soon follow their example."[95] Kenyon responded that not more than a quarter of Lancashire's mill owners had limited their hours, with three-quarters of the mills still operating fourteen and a half hours a day, and argued that while the actions of the Manchester masters

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[91]P.P. 1819 (24) CX, 140, 146-147, 373-374, 377.

[92]Ibid., 376.

[93]"Statement of James Knott," in Examination, p. 139.

[94]The Parliamentary Debates 39 (8 February 1819), p. 339.

[95]Ibid., pp. 341-342, 347.

"showed the justice of the principle" of Peel's bill, they also "afforded the strongest motive for passing it into a law."[96] Despite the opposition of Lauderdale and Grosvenor, a new Committee was formed.

Unlike its predecessor, which sat for only two weeks, the 1819 Committee met for two and a half months: from February 26 to May 10, 1819.[97] It heard evidence from eighty-four witnesses and for the first time, the people most intimately affected by the measure, mill workers and their families, gained the opportunity to present their case directly.[98] In often moving tones, the workers spoke of the deleterious consequences of factory employment and argued that the factory population desired a reduction in work hours, even if this also entailed a reduction in wages. They gave details of the long hours, high temperatures, laborious and dusty conditions of factory work, as well as the beatings and loss of meal-times to which young employees were especially subject. Many also spoke of the suffering they had endured through their time in the mills. Joseph Mercer, a thirty-seven year old operative from Chorley, described the "Stoppage at [his] Breast" and cough, which he attributed to "Being hard wrought and over-heated and fatigued," while John Frost, a thirty-two year old spinner from Stockport, referred to the lameness brought on from having to stand for so many hours, and which was so severe that at times he had to be carried to work.[99] The

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[96]Ibid., p. 343; (25 February 1819), p. 653.

[97]P.P. 1819 (24) CX.

[98]Ibid., 5-242.

[99]Ibid., 81, 53.

two men were likely nearing the end of their lives as factory hands, for as testimony revealed, by the time they passed forty, operatives were generally no longer capable of producing the same quality and quantity of work and were forced to seek other employment.

The witnesses spoke not only of their own suffering, but also of the harm done to their children and to family life. George Paxton, a spinner and factory father, testified that his children were often too fatigued to take their meals:

> ...when they get Home at Night they cannot eat; I got a Strap to awaken my own Children, my Feelings got the better of my Passion, and I did not beat them; and what was the more impeaching to my Feelings was they could not eat their supper when they got Home; I reflected upon it, and in Vexation of Spirit I could not eat my Own Supper; and we all went to bed crying.[100]

The workers also gave evidence concerning the previous year's visits by the Manchester doctors in the employ of the Committee of Cotton Spinners. They revealed that in a number of instances the doctors had been misled concerning the true state of the mills: that measures had been taken to improve the appearance of the workers; that workers in bad health had been discharged prior to the doctors' arrival; and that conditions within the mills, such as the temperature of the air and the speed of the mill machinery, had been altered at the time of the visits.[101]

The testimony of the workers' representatives was followed by that of eleven

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[100]Ibid., 221.

[101]Ibid., 162-163, 185-188, 191, 193, 205.

medical men, principally from Manchester and Stockport.[102] These doctors had also visited factories and Sunday schools, but their approach to the question of factory health differed substantially from that of the physicians and surgeons who had testified the year before. When Llewellyn Jones, for instance, was asked if he would base his opinion on established theory or recent observation, he responded:

> If the recent Cases I had seen bearing on the Subject agreed with the Knowledge and general Principles alluded to, I should think that the best Foundation for any Opinion; but if I had seen only One or Two Cases, I should give an Opinion in Conformity with the generally received Principles of medical Science, rather than on the Authority of One or Two Cases.[103]

The conclusions of the medical witnesses also differed substantially from those given at the 1818 enquiry. Reasserting views that in some instances they had advanced since 1816 and 1817, the doctors maintained that employment in cotton factories was highly prejudicial to physical well-being, that the general state of health of factory children was very poor, and that the only effectual means of bringing about improvement was through legislative restriction.

After the supporters of Peel's bill had testified, some two dozen opponents, mainly manufacturers and their representatives, presented their case to the Committee. Testifying with the opponents was Edmund Lyon, a physician to the Manchester

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[102]Ibid., 243-320, passim. The group consisted of William Winstanley, Michael Ward, and Thomas Jarrold, Manchester physicians; William Simmons, John Johnson Boutflower, Thomas Bellot, and Henry Dadley, Manchester surgeons; Peter Ashton and John Graham, Stockport surgeons; William Dean, a surgeon at Slaithwaite, near Huddersfield, and Llewellyn Jones, a Chester physician.

[103]Ibid., 313.

Infirmary, who in 1818 had signed Nathaniel Gould's petition championing the bill.[104] In addition to signing the petition, Lyon had also responded to the overtures of the Committee of Cotton Spinners, visiting three Manchester mills and several Sunday Schools. Though his examinations were cursory—in one day, for instance, he and an associate examined 327 workers at James Kennedy's Great Ancoats Street mill—they ostensibly contributed to a change of view.[105] Unwilling to take a thoroughly positive stance on the matter of factory health, Lyon nevertheless averred that "any Inference to the Prejudice of Mill Owners, drawn from a comparison between Persons working in Cotton Mills and those who are not compelled to work at all, would be extremely unfair," and maintained that the condition of cotton factory workers was not significantly different from that of "almost any of the various Classes of manufacturing Labourers, indispensable in a Commercial Country like this."[106]

Lyon was not the only medical man to retreat from the position advanced in Gould's petition. Two of the doctors who had testified against the bill at the 1818 Committee hearings, and several who had undertaken investigations on behalf of the Committee of Cotton Spinners, had also been signatories to the petition.[107] Not all of Manchester's physicians and surgeons evinced a change of heart, however. Among the documents submitted to the 1819 Committee was a "Declaration," signed by a number

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[104]Ibid., 345-349.

[105]Ibid., Appendix 8, 516.

[106]Ibid., 346, Appendix 9, 532.

[107]See Appendix I.

of magistrates, clergymen and medical men who had earlier supported the petition and who now confirmed "the Sentiments to which we then subscribed," stating that nothing had "occurred to alter the Views we then entertained of the Expediency and Necessity of the Measure."[108]

VII

On June 14, the Committee hearings were discussed in the House of Lords, with Lord Kenyon observing "that though the evidence of the medical men was upon this point contradictory, yet that there were amply sufficient facts given in evidence to prove that the ill state of health" of factory children "imperiously called for legislative interference to prevent that waste of human life which such a system produced."[109] On July 2, 1819, the measure that had excited such conflict and controversy in the preceding four years passed into law.[110] In its final form, the Cotton Factories Regulation Act was a much diluted version of the proposals originally put forward by Robert Owen. The Act prohibited employment in cotton mills by children under the age of nine and restricted the length of the work day for persons under the age of sixteen to twelve hours, with an additional hour and a half for meals, and, in the case of water-powered mills, with the possibility of a further hour to make up time lost due

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[108]P.P. 1819 (24) CX, Appendix 7, 515. The medical signatories to the Declaration included the physicians: Samuel Argent Bardsley, Michael Ward, John Mitchell, and Thomas Jarrold, and the surgeons: William Simmons, William Wood, Thomas Bellot, Henry Dadley, and John Johnson Boutflower.

[109]The Parliamentary Debates 39 (14 June 1819), pp. 1130-1134.

[110]59 Geo. III c. 66.

to irregular water supplies. It made no provision for education and also failed to make arrangements for inspection. To those who were concerned with the well-being of the factory work-force, it quickly became apparent that this Act, like the Health and Morals of Apprentices Act of 1802, was destined to be ineffective. In 1825, J.C. Hobhouse reported that only two convictions had ever been obtained under the law.[111]

With the passage of the Act, agitation on the factory question came to an end—at least for a time—and the debate on worker well-being that had grown increasingly contentious, yet inconclusive, also drew to a close. The discourse on factory health that unfolded in the years between 1815 and 1819 was substantially different from that which had taken shape in the 1780s and 1790s. One of the chief differences was that the persons with greatest personal experience of the matter, the operatives, gained a voice in the proceedings. At a time when working-class Radicals were intent on making their views heard, mill workers from towns throughout the Midlands and north expressed their concerns and demands for a shorter day through petitions, demonstrations and parliamentary testimony.[112] While their voice had a compelling immediacy, however, it was, in the era of Peterloo, not free from restraint. In 1819, an operative spinner named Matthew Carter, revealed that when the Manchester doctors had visited his mill the previous year, workers had been hampered from giving true descriptions of their health. Carter stated that he had asked a work-

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[111]Hammonds, Town Labourer, p. 169.

[112]On the growth of working-class Radicalism in the period leading up to the Peterloo "massacre" of 1819, see Read, pp. 35-56.

mate, James Ogden, "how he had got on, and what he had said; if he had mentioned his Son's Deformity; and he said, They only asked me Three simple Questions, and I could not speak as our Masters were there; except they asked me, I could not tell them anything."[113] Numerous other workers testified that they had been discharged as a result of providing information on the state of their health.[114]

The voice of the workers was offset by that of their employers. Although only one factory owner, Robert Peel, had contributed to the late eighteenth-century discussion of factories, by 1816, manufacturers throughout the country began to speak out. While a good many factory owners, particularly those associated with the powerful Manchester Committee of Cotton Spinners, took a negative stand on the question of legislative interference, there were some who aligned themselves differently. A number of master spinners from Bolton, Stockport, Halifax, and Huddersfield, for instance, publicly supported a limitation of hours and voluntarily restricted the operation of their mills. The masters feared competition from their neighbours, however, and were anxious that the hours to which they adhered be made general through the enactment of Peel's bill.[115] In the view of one local observer, "an invincible Jealousy regarding the Hours of Work pervades the whole Race of Cotton Spinners," though "collectively and individually a strong Wish is expressed for such legislative Restrictions as will apportion the Hours of Confinement, Labour, and

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[113]P.P. 1819 (24) CX, 206.

[114]Ibid., 47, 82, 139, 188-189, 199, 221-222.

[115]"Papers," f. 180; The Parliamentary Debates 38 (27 April 1818), p. 359; P.P. 1818 (90) XCVI, 4; P.P. 1819 (24) CX, 251, 256, 283.

Refreshment."[116]

Perhaps the most distinctive feature of the early nineteenth-century debate was the degree to which medical men were divided. Especially in Manchester, where the controversy centred, the divergence in medical thought was "proverbial."[117] According to George Philips, "those who knew Manchester knew the difficulty there was to get the medical men there to agree in the same opinion....When he had mentioned to a friend Dr. Henry's opinion, the reply was, 'You know that if Dr. Henry thinks one way, Dr. _____ is sure to think another.'"[118] Manchester's medical men not only disagreed with one another, they also dissented from views they themselves had espoused. As noted earlier, several physicians and surgeons changed their minds in the course of the debate, supporting legislative restriction and then expressing contradictory views on the condition of factory workers' health.

The reasons for the disagreement within Manchester's medical community are not immediately apparent. The difference in opinion does not seem to have been a simple matter of integrity versus impropriety, for even the witnesses who testified before the 1819 Lords Committee were reluctant to impugn the character of those colleagues who had allied themselves with the Committee of Cotton Spinners, while in the view of a later observer, both the supporters and opponents of Peel's bill were men

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[116]P.P. 1819 (24), CX, 272-273.

[117]The Parliamentary Debates 38 (27 April 1818), p. 361.

[118]Ibid.

of honour.[119]

Was the division related to differences in political or religious affiliation? Such differences had figured prominently a generation earlier in the dispute concerning the expansion of Manchester's Infirmary.[120] The possibility is heightened by the fact that the debate on factory health was not, as some would have it, a neutral, "scientific" issue, but a highly politicized and emotionally charged subject, which was entangled with the question of the legitimacy of restricting free labour and which provoked responses based on "principle" and "feeling."[121] Insufficient evidence prevents a detailed linking of the political and religious views of Manchester practitioners with medical opinion on the factory question. Such evidence as does exist, however, suggests that, in terms of religious affiliation at least, proponents were more united than divided: attachment to Dissent seems to have characterized both supporters and opponents of Peel's bill, as well as those whose views altered.

In other respects, too, legislative supporters and opponents appear to have shared common ground. As Table I reveals, their educational backgrounds were similar, with individuals from each group having trained not at the traditional seats of learning at Oxford or Cambridge (from which Dissenters were barred), but at the newer

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[119]P.P. 1819 (24) CX, 271, 302; Edward Mansfield Brockbank, Sketches of the Lives and Work of the Honorary Medical Staff of the Manchester Infirmary from its Foundation in 1752 to 1830 (Manchester: Manchester University Press, 1904), passim.

[120]J.V. Pickstone and S.V.F. Butler, "The Politics of Medicine in Manchester, 1788-1792: Hospital Reform and Public Health Services in the Early Industrial City," Medical History 28 (1984), pp. 227-249.

[121][Gould], p. 17; P.P. 1818 (90) XCVI, 131; P.P. 1819 (24) CX, 320.

Table I: Position of Selected Manchester Medical Men on the Factory Question

	Supported Restriction	Opposed Restriction	Changed Mind
Number of practitioners	25	11	7
Education*			
Edinburgh	3	4	2
London	3	2	2
Leyden	2	1	—
Glasgow	1	—	—
Not known	19	5	4
Professional status*			
Physician	7	5	3
Surgeon	19	6	4
Positions held*†			
Infirmary	8	6	5
Eye Institution	3	1	1
Lying-In Charity	4	—	1
Workhouse	1	3	—
None traced	11	2	1
Membership in "Lit. and Phil."†	2	3	1
None traced	23	8	6
Commenced practice in Manchester			
1785-1789	3	—	—
1790-1794	5	1	2
1795-1799	—	—	1
1800-1804	1	—	—
1805-1809	4	2	—
1810-1814	—	2	2
1815-1819	1	4	1
Not known	11	2	1

*Individuals may appear more than once under these headings.
†This information relates to the period up to 1819.
For sources, see note 122.

schools at Edinburgh and London, and at Leyden.[122] In terms of professional status and institutional association legislative advocates and critics also resembled one another. Both groups were comprised of physicians, as well as surgeons, and both were connected with Manchester's major medical institutions, as well as the Literary and Philosophical Society which had close ties to the Infirmary.[123]

One way in which the two groups seem to have differed is in the length of time individuals had resided in Manchester. Table I indicates that the supporters of factory reform tended to have commenced practice ten, twenty, or even thirty years previously, while the opponents were, for the most part, recent arrivals to the town.[124] It appears that the reform cause was upheld by more senior medical men, a significant number of whom would have been present during the earlier outbreaks of fever and would have been cognizant of prior concerns for the regulation of cotton mills. Opposition to reform, on the other hand, seems to have taken root among younger men, who, in the

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[122]The forty-three practitioners referred to in Table I constituted more than half of Manchester's medical men, whose numbers, according to John V. Pickstone, Medicine and Industrial Society (Manchester: Manchester University Press, 1985), p. 44, rose from fifty-one in 1815 to seventy-eight in 1820. Sources for the table, which is modelled in some respects after the Table I contained in Robert Gray, "Medical Men, Industrial Labour and the State in Britain, 1830-50," Social History 16 (1991), p. 23, include: [Gould]; "To the Honourable the Commons"; P.P. 1818 (90) XCVI; P.P. 1819 (24) CX; The Parliamentary Debates 38 (27 April 1818), pp. 360-361; Brockbank, passim; Frederic Boase, Modern English Biography (Truro: 1901); The Dictionary of National Biography (Oxford: Oxford University Press, 1917).

[123]Arnold Thackray, "Natural Knowledge in Cultural Context: The Manchester Model," American Historical Review 79 (1974), pp. 684-686.

[124]This finding is similar to that of Gray, pp. 21-27. Gray argues that in the 1830s and 1840s medical support for the ten hours cause was strongest among established "burgesses" and weakest among "spiralists," active, ambitious practitioners whose positions were less stable.

situation of professional overcrowding and competition that prevailed in post-war Manchester, may have been inclined to align themselves with a powerful middle-class group such as the Committee of Cotton Spinners.[125] It may be, too, that the Committee believed it could exert more influence over the younger doctors than the more established practitioners and so placed more pressure on them. Such a strategy seems to have prevailed in the case of William James Wilson, a surgeon who arrived in Manchester in 1813 and several years later founded the Eye Institution.[126] Testifying in 1818, Wilson revealed that he had originally signed Gould's petition supporting Peel's bill as a "Friend to Humanity," but had then been confronted by the Committee chairman, Mr. Douglas, who told him that the petition contained false information and was harmful to the interests of the master spinners. After being approached four times by Douglas, Wilson finally undertook the investigation that ended in his volte-face.[127]

Even on this point, however, the evidence is inconclusive, for significant exceptions exist within the ranks of both older and younger practitioners. Edward Holme, a long-time Infirmary Physician, who had served as a secretary and reader to Thomas Percival and joined with him in the establishment of the Board of Health, might have been expected to espouse the need for legislative reform.[128] Instead, he

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[125]Pickstone, pp. 44-48.

[126]Ibid.; Brockbank, pp. 269-272.

[127]P.P. 1818 (90), XCVI, 90-91.

[128]Brockbank, pp. 191-199.

adamantly denied it.[129] Three other senior practioners, William Henry, an Infirmary Physician who had also served as a secretary to Percival, Gavin Hamilton, an Infirmary Surgeon, and Robert Killer, a former Infirmary Surgeon, initially lent their support to Peel's bill, but then opposed the measure.[130] Exceptions can be found within the ranks of newer men, as well. Thomas Radford, a surgeon who arrived in Manchester in 1818, endorsed the bill and unlike some of his fellows was not subsequently induced to change his mind.[131]

Perhaps the disagreement and reversals of opinion that distinguished Manchester's medical community in the years from 1815 to 1819 have as much to do with the issue in dispute as the characteristics of the disputants. As the following chapter will argue, in the early years of the nineteenth century, the problem of factory health was reconstituted, and in the process, became more perplexing. Instead of a single, identifiable disease, debate now centred on a host of symptoms and afflictions, whose consequence and connections were not immediately apparent. In attempting to make sense of the manifold complaints of the factory population, commentators assumed differing positions, not only on the quality of worker health, but also on the appropriate standard for industrial well-being. Their dissension and vacillation reveal the degree to which, having resurfaced in the altered circumstances of nineteenth-

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[129]P.P. 1818 (90) XCVI, 5-24.

[130]Brockbank, pp. 186-188, 190, 235-240; "To the Honourable the Commons"; The Parliamentary Debates 38 (27 April, 1818), p. 361; P.P. 1818 (90) XCVI, 98-104.

[131]Boase, vol. III, p. 7; "To the Honourable the Commons."

century industry, the problem of factory health was not yet resolved.

It seems reasonable to conclude that the differences of opinion that characterized Manchester's medical men were for the most part genuine, arising from a sense of obscurity and cannot be attributed merely to mendacity or self-interest. Though striving for a precise understanding of the condition of the industrial workforce, medical spokesmen were puzzled by the manifestations of ill-health that prevailed in the manufacturing population and were unable to agree on their significance, their sources, or on the necessity of a measure aimed at easing worker suffering.

CHAPTER FIVE

DEBILITY AND THE MACHINE

> ...the Fever is not among the Diseases to which [factory workers] are liable; [factory work] seems to produce Chronic Complaints more particularly; in the first instance a great deal of Debility, and Chronic Complaints ensue.[1]

> It is, in fact, difficult to say which part of the system suffers most in one employed in a factory; for it is the whole constitution which appears affected, and may be attributed to heat, and confined air, to which I may add, long and constant exertion.[2]

In the years from 1815 to 1819, the problem of factory health not only attracted greater interest and inspired greater disagreement than it had a generation earlier, it was also perceived in a new way. Whereas in the 1780s and 1790s, investigators had been preoccupied with the acute, epidemic fever that swept through Lancashire's burgeoning industrial communities, in the early years of the nineteenth century, proponents became concerned with a different set of health issues and the link between fever and factories was disclaimed. Through petitions and parliamentary testimony, mill workers drew attention to a multitude of ailments that, in their judgement, were brought on by factory employment. While medical opinion on the incidence and significance of worker maladies varied, physicians and surgeons who supported the introduction of a new

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[1]P.P. 1819 (24) CX, 296.

[2]J. Jackson, "On the Influence of the Cotton Manufactories on the Health," London Medical and Physical Journal 39 (1818), p. 465.

factory act expressed views that were remarkably similar to those of the operatives. They maintained that cotton factory workers presented a distinctly sickly appearance, that they suffered from a variety of illnesses, chiefly chronic in nature, and that these were directly attributable to the conditions of machine work.

While recognizing that the health of the manufacturing populace was far from good, legislative supporters were unable to specify a particular factory disease. They observed that mill labourers were pale and delicate-looking, that their growth was stunted, that they aged prematurely, that they frequently experienced inflammation of the eyes, swelling and distortion of the lower extremities, glandular diseases, coughs, colds, and consumption, but within the panoply of symptoms and disorders, no one item predominated. Indeed, medical reformers argued that, unlike other forms of employment, cotton factory work led not so much to any single localized complaint, as to a general condition of constitutional weakness and exhaustion they termed "debility." In their view, the characteristic paleness, slenderness, glandular diseases, etc., of factory workers were signs or effects of a debilitated state.

The concept of debility was not new. It had occupied an important place in the eighteenth-century theory of nervous fever and, as such, had figured in older accounts of the health of the industrial workforce. In the early part of the nineteenth century however, an interesting shift occurred. As fever apparently abated (at least in the factory towns) and as the disease also came to be redefined, the concept of debility was separated from that of fever and debility itself came to be regarded as the fundamental affliction of mill work.

As medical spokesmen expounded on the sources and signs of debility, new views of the factory and its inhabitants emerged. While not neglecting the issue of atmospheric impurity, early nineteenth-century doctors expressed particular concern with the temperature of factory air and with the laboriousness of the work performed in an overheated environment. Through their examination, the factory was revealed to be not merely a receptacle of human bodies, but a place of machine-dominated labour.

In a similar manner, persons confined within the factory were portrayed as machine labourers, and even as machine components. Medical observers made much of the "dull," "spiritless" appearance of factory children, and in so doing, strengthened the contemporary perception of operatives as mechanical "hands" or "living machines." Medical inquiry also provided evidence of the "otherness" of the factory population. Finding that mill workers could readily be recognized by such attributes as the tone of their skin, the shape of their limbs, and the smell of their breath, and postulating that their constitutions were in a state not shared by persons of higher social standing, early nineteenth-century theorists contributed to a belief, that grew stronger with the passage of time, in the physical distinctness of the manufacturing poor and in the biological-rootedness of class difference.

I

In the years of agitation over the factory question, advocates of legislative restriction argued that factories exacted a severe and wide-ranging toll on human health. Drawing on personal, as well as professional experience, they described numerous ways in which the well-being of persons was injured by their experience in the mills.

Speaking before the 1819 Lords Committee, a Wigan overlooker, George Swanton, gave a grim account of the suffering he had witnessed on the factory floor. He noted that he had employed healthy, "Red-looking" children and that within a period of four to six weeks, he had seen their "Colour quite fade, and their Eyes sink in their Heads."[3] He observed, as well, that his work-mates were frequently "both knock-kneed and hump-backed"; that they were often afflicted with "sore Eyes," coughs, and colds; that they often fell "into a Consumption or Wasting"; and that young workers, especially, were extremely tired at the end of the day, lacked appetite for their food, and were often forced to abandon their position after a short period "on account of ill Health."[4]

Corroborating testimony was offered by a thirty-six year old spinner, Robert Hyde, who felt particularly qualified to speak on the matter, since not only he, but two of his children, were employed in a Manchester fine-spinning mill. Hyde expressed his "Pleasure, as a Parent of Children," in informing the Lords Committee of "the Evils that exist in a Cotton Mill," and revealed that his own children, who had once been "far stouter and rosier," were now "delicate and weakened in the Joints."[5] He maintained that the condition of young workers deteriorated within a fortnight or month of their entering the factory, and offered his own health as evidence of the "Asthmatical

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[3]P.P. 1819 (24) CX, 89.

[4]Ibid.

[5]Ibid., 132-133.

Complaints, Declines, and Rheumatism" that prevailed in cotton mills.[6] He commented on the deformity, fatigue, and impaired appetite of mill workers, and on being questioned about their general state of health, judged it to be "very indifferent," explaining that operatives were "always complaining of Sickness and Pains," and were frequently absent from work.[7]

While the opinions of workmen such as Swanton and Hyde were not endorsed by the entire medical community, they did gain a sympathetic hearing within the camp of legislative supporters. Medical men who spoke out on the need for factory reform in the period after 1815 not only accepted the workers' view of their condition, they also offered accounts that substantiated lay perceptions. The Manchester physician, Robert Agnew, indicated in 1818 that he had long been distressed by the conditions endured by factory children and explained that, through devoting an hour or two each morning to advising the poor, he had had ample opportunity of observing at first hand the situation that prevailed in spinning mills. He maintained that young mill workers were "emaciated, pale, and feeble" and that they were subject to "affections of the spine, distortions of the lower extremities...coughs, hoarseness, and affections of the lungs."[8] He argued, too, that persons employed in factories from an early age seldom achieved full growth and frequently died at an early age.

A similar assessment was provided by one of the surgeons to the Manchester

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[6]Ibid., 133.

[7]Ibid.

[8][Nathaniel Gould], Information concerning the State of Children Employed in Cotton Factories (Manchester: J. Gleave, 1818), pp. 21-22.

Eye Institution, John Windsor. Though not having practised among the poor as extensively as Agnew, Windsor nevertheless believed that the "countenances of labourers" in cotton factories were "generally of a paler hue than those of labourers in other manufactories, or other kinds of business" and that their bodies were "of a delicate and slender frame."[9] He asserted, as well, that cotton factory workers were particularly liable to "rheumatic affections... catarrhal complaints and coughs," and to scrofula, which manifested itself in a number of ways, "sometimes exhibiting itself in the eyes, in the form of inflammation there, sometimes in the mesenteric glands of the bowels...often in the glands of the neck, and very often in the forms of white swellings in the joints, and of consumptions in the lungs."[10]

The assortment of afflictions described by Agnew and Windsor was observed by almost all the physicians and surgeons who contributed to pro-legislative pamphlets or testified before the 1816 and 1819 parliamentary committees. Anxious to aid in the indictment of the current system of factory operation, yet lacking the dramatic evidence that the epidemics of acute, contagious fever had presented a generation earlier, medical reformers sought other indicators of ill-health. Focusing on outward physical appearance and alert to the insidious progress of chronic disease, they diagnosed a multifarious cluster of ailments. At first glance, at least to the twentieth-century observer, the paleness, delicacy, deformity, stunted growth, premature aging, coughs, inflammation of the eyes, joint swelling, consumption, and glandular disease detected in

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[9]Ibid., p. 12.

[10]Ibid., pp. 12-13.

the factory population seem disparate and unrelated. Further enquiry, however, suggests that such symptoms and disorders can be linked through another condition ascribed to factory workers, that of debility.

Though a key concept in the early nineteenth-century lexicon of factory health, debility was a difficult and somewhat obscure notion.[11] Not explicitly defined by its proponents, the term apparently referred to a state of feebleness and depletion that pervaded the entire bodily system. Medical critics of factory labour employed a variety of expressions to describe such a state and to argue that the circumstances of industrial work induced an unacceptable deviation from the standard of sound bodily health. They fulminated against the undermining of natural "vigour," the wasting of "strength," the "languor of constitution," the "relaxation" of the body, the exhaustion of the "frame," the depression of "mental and bodily energies," and the "general injury and loss of tone" caused by long hours of work in a polluted and overheated environment.[12]

As such description indicates, debility was conceived not as a specific disorder, or as a distinct entity that entered the body, but as a general condition of physiological impairment and malfunction. Though occasionally spoken of as a "disease," debility

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[11]The concept pertained to more than just the debate on factory health. It was an important component in the late eighteenth and nineteenth-century understanding of pathology, though as James Copland, A Dictionary of Practical Medicine (London: Longman, Green & Longmans, 1844), vol. 1, p. 473, remarked, the idea provoked considerable perplexity and "scarcely any two [writers on pathology] have agreed as to the manner of discussing it, or as to its nature."

[12]P.P. 1816 (397) III, 286-287; [Gould], passim; P.P. 1819 (24) CX, 243-320.

was usually regarded as an intermediate state hovering on a continuum between wellness and actual sickness. Such a view was expressed by William Dean, a surgeon at Slaithwaite, who characterized the workers at a local cotton mill as "weak and debilitated in a general Way," explaining that while "not labouring under Disease, they could not be said to be well."[13] Debility was seen to occupy an uneasy position on the continuum, however; as most commentators agreed, it frequently degenerated into some form of localized disorder. William Simmons, a Senior Surgeon to the Manchester Infirmary, argued that when cotton factory workers were in a state of debility, they were "more readily susceptible of the impression of the occasional causes of disease, which produce topical affections of various kinds, sometimes acute, but chiefly of a chronic nature."[14]

In Simmons' view, debility typically gave way to the sore eyes, white swellings of the joints, and consumption associated with scrofula.[15] A chronic disease, affecting mainly children and youths and characterized by the formation of abscesses in various parts of the body, scrofula was regarded as "the *endemic* disease" of the cotton manufacturing region.[16] Though its etiology was a matter of some dispute, William Dean traced its origins to debility manifesting itself in the glandular system, stating that

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[13]P.P. 1819 (24) CX, 285.

[14][Gould], pp. 17-18.

[15]P.P. 1816 (397) III, 287.

[16]Ibid.; Elizabeth Lomax, "Hereditary or Acquired Disease? Early Nineteenth Century Debates on the Cause of Infantile Scrofula and Tuberculosis," Journal of the History of Medicine 32 (1977), pp. 356-374.

"when the glandular Part of the Body loses its Tone, it produces Obstruction in that Gland [and] that Obstruction forms a Scrofulous Tumour in that particular Part."[17]

Scrofula was not considered to be the only consequence of debility, however. For Kinder Wood, an Oldham surgeon, one of the most significant effects of debility was a thin, delicate physique. Wood explained to the 1816 Select Committee that under the conditions of factory employment, the digestive organs of young workers became "debilitated with the other parts of the system," rendering the workers incapable of deriving benefit from the food they consumed and promoting the development of a "slender configuration."[18] In the opinion of the Chester physician, Llewellyn Jones, debility and digestive impairment resulted not only in a "meagre" appearance, but in a "pallid" complexion.[19] Other observers maintained that debility predisposed workers to physical deformity. The Manchester surgeon, William Wood, accounted for operatives' distorted spines and limbs by reference to the effects of temperature on the process of assimilation, arguing that "when the body becomes relaxed and emaciated...the consequence is, that deformities in the spine, legs, knees and ancles [sic] often take place."[20] Medical men also asserted that debility led to premature aging and early death. Robert Agnew, for instance, maintained that the "constitutions" of factory workers were "older at forty, than men employed at other

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[17]Lomax, passim; P.P. 1819 (24) CX, 282.

[18]P.P. 1816 (397) III, 196.

[19]P.P. 1819 (24) CX, 312.

[20][Gould], p. 22.

occupations at sixty" and that "very few [factory workers] arrive at old age."[21]

In the view of such spokesmen, the effects of debility were considerable, as were the pathways by which particular disorders ensued from the state of overall weakness. While the digestive system was most often singled out as the avenue through which local afflictions developed, other bodily systems and processes also received attention. Agnew, for instance, pointed to "deficient solidity of ossification" as a cause of deformity, as well as "swelling of the joints, and other scrophulous appearances," while William Winstanley spoke of the loss of "healthy actions" not only in the digestive, but also in the respiratory system.[22] In the early years of the nineteenth century, the relationship between ill-health and industrial production proved difficult to specify. Confronted by the manifold reality of sickness and suffering, yet lacking the kinds of evidence that would permit a direct linking of disease and work, medical men traced complex and sometimes contradictory lines of causation, using the concept of debility to mediate between the specific afflictions of factory workers and the particular circumstances of factory labour.

II

Neither the idea of debility, nor its association with the industrial workforce, originated in the years between 1815 and 1819. As has been argued in Chapter Two, the idea was important in the eighteenth century, particularly in relation to the

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[21]Ibid., pp. 21-22.

[22]Ibid., pp. 21, 25.

understanding and treatment of fever. Confronted by what seemed to be a new form of fever, whose course and symptoms were significantly different from those of the older inflammatory form of the disorder, eighteenth-century physicians developed a theory of fever that emphasized its connection with debility. Debility was implicated in understanding the origins of typhus, in explaining who was most likely to contract the disease, and, especially, in rationales of treatment. For late eighteenth-century medical men it was imperative that sufferers of typhus receive stimulating remedies, rather than be subjected to bloodletting.

The new theory did not prevail for long, however. In the early years of the nineteenth century, doctors began to reject the "doctrine of debility" and to revert to the therapy of bleeding.[23] One of the most influential opponents of the doctrine was the London physician, John Armstrong, who argued in 1816 that the debility that had hitherto characterized typhus was only apparent, that in reality typhus was a "congestive," "inflammatory" disease, and that its most appropriate remedy was "immediate, copious bloodletting."[24] Armstrong's ideas exerted wide appeal—according to the Edinburgh Medical Journal there was scarcely a doctor in the country who did not profess familiarity and agreement with his work—and within a few

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[23]Peter H. Niebyl, "The English Bloodletting Revolution, or Modern Medicine before 1850," Bulletin of the History of Medicine 51 (1977), pp. 463-483. See also John V. Pickstone, "Dearth, Dirt and Fever Epidemics: Rewriting the History of British 'Public Health', 1780-1850," in Terence Ranger and Paul Slack (eds), Epidemics and Ideas: Essays on the Historical Perception of Pestilence (Cambridge: Cambridge University Press, 1992), pp. 138-142.

[24]Ibid., p. 465.

years, fever was again held to be an inflammatory disorder, best treated with the lancet.[25] As Henry Clutterbuck, a physician to the General Dispensary in London, remarked in 1819:

> A great revolution is taking place in the treatment of this disease. Blood-letting, which, but a few years ago, was looked upon with abhorrence in the cure of contagious fever...is proved, by ample testimony, to be not only the most powerful, but the safest of remedies...[26]

Accompanying the reversal in theory and practice, and of particular relevance to disputants of the factory question, was an apparent decline in the local incidence of fever. Witnesses to both the 1816 and the 1819 parliamentary committees asserted that levels of fever in Manchester and its environs had decreased since the 1790s, owing to the establishment of fever-wards.[27] While the opponents of legislative reform could use the decrease to argue that the problem of factory ill-health had eased, supporters of a new factory act maintained that the problem had merely changed and that although fever no longer abounded in the manufacturing districts, workers now suffered from debility and the chronic disorders to which it gave rise.

In the early years of the nineteenth century, medical understanding of factory sickness underwent a significant reorientation. In the wake of both a theoretical shift

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[25]Ibid., p. 466.

[26]Henry Clutterbuck, Observations on the Prevention and Treatment of the Epidemic Fever (London: 1819); quoted in Niebyl, p. 471.

[27]P.P. 1816 (397) III, 199, 338; P.P. 1819 (24) CX, 296. John Pickstone, Medicine and Industrial Society (Manchester: Manchester University Press, 1985), pp. 26-27, remarks that while Manchester's House of Recovery was generally credited with reducing the incidence of fever, the actual effect of the institution is difficult to determine.

and an apparent epidemiological decline, investigators transferred their attention from episodes of acute, contagious disease to an underlying condition of systemic weakness. Severed from its links to fever, debility assumed central place in the discourse on factory health.

III

In endeavouring to account for the debility that prevailed in the manufacturing population, medical men concerned themselves with particular aspects of the industrial workplace. While not ignoring the factors that spokesmen a generation earlier had singled out, they formulated a new view of the circumstances within the factory that constituted risks to health. Like their predecessors, they were attentive to the state of the factory atmosphere, but in the 1810s, it was the temperature, more than the purity, of the air that was deemed pernicious.

In an era in which private rooms, such as a doctor might occupy, were evidently seldom kept above sixty degrees Fahrenheit, and in which a temperature of sixty-five to seventy degrees Fahrenheit was considered almost dangerously high, medical observers were alarmed by the degree of heat that factory workers were forced to endure.[28] Visiting local factories and encountering temperatures that ranged from the high sixties to the high eighties, they themselves experienced considerable discomfort. The Stockport surgeon, John Graham, for instance, toured the Carr mill and was "very much affected" by its eighty-five degree temperature: "I broke out into a Sweat," he

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[28]P.P. 1816 (397) III, 193; [Gould], p. 23.

recalled, "and I felt myself extremely unwell."[29] Graham was perhaps able to tolerate more than the Manchester physician, Michael Ward, who with some associates visited the Frith factory, where the temperature rose from sixty-two to sixty-eight degrees in a matter of minutes. According to Ward:

> The Time we staid was very short; we were so much incommoded by the Heat of the Atmosphere, and the Dust and Closeness of the Place...that we were extremely glad to get away, and made use of all our Exertions to get out as quick as we could; we were in the Factory about Eight or Nine Minutes; the Thermometer kept rising all the time we were there.[30]

In the view of early nineteenth-century doctors, heat acted as a powerful source of debility and chronic illness. According to J. Jackson, a surgeon from Bolton-le-Moors:

> The heat necessary for the easy working of cotton machinery averages about 78° Farh.; the operation of which, in producing bilious disorders and obstructions of the viscera, is universally acknowledged,—and derangement in the functions of the viscera produce the chronic diseases to which [cotton workers] are subject.[31]

Kinder Wood, the surgeon from Oldham, was more succinct, declaring that "too much heat, by inducing debility, [is] the foundation of scrophula and consumption."[32]

Factory critics expressed concern not only about the temperature of mill air, but also about an issue that to their minds was closely related, the laboriousness of mill work. For the factory visitor, Joseph Dutton, cotton work was laborious precisely

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[29]P.P. 1819 (24) CX, 256.

[30]Ibid., 260.

[31]Jackson, p. 464.

[32]P.P. 1816 (397) III, 202.

because of the atmospheric conditions that prevailed in the mills. Though himself an ironmonger, Dutton argued that factory work was more fatiguing than labour in the iron trades because of the heat and dust in which it was carried out. Contrary to those who maintained that mill work consisted principally of "employment of the hand and eye," Dutton insisted that it required exertion of the whole body: "the lungs, most undoubtedly, by a difficulty of respiration; and indeed I may say, every pore of the body, by profuse perspiration."[33]

William Simmons, Senior Surgeon to the Manchester Infirmary, carried the argument a step further by referring to the exertion that derived from movement of the limbs. In his opinion, the level of activity demanded of operatives compounded the debilitating effects of high temperature by increasing "the heat of the body," inducing perspiration, and causing a loss of strength.[34] He maintained that factory work was not only strenuous, but continuous, and warned that "by daily repetition," the fatigue incurred by constant activity "becomes excessive, and the vigour of the body is gradually exhausted: hence the diseases of spinners are for the most part diseases of debility."[35]

Having practised at the Infirmary for almost thirty years, Simmons was a long-

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[33]Ibid., 301-302, 332.

[34]Ibid., 287.

[35][Gould], p. 17.

time observer of the links between manufacturing and ill-health.[36] His views are particularly revealing, in that, while continuing to refer to older issues, such as the effects of crowding and the quality of factory air, they also show the influence of new concerns and represent a significant departure from eighteenth-century thinking. In a statement prepared for use by the 1816 Select Committee, for instance, Simmons commented on "the breath of so many crowded together," but saw this as a factor contributing to the increased temperature, rather than the pollution, of factory air.[37] He also maintained that while experiments had been conducted "in order to ascertain how many cubic feet of atmospheric air are consumed in a given time," these were "imperfectly applicable" to the current consideration of the factory question because they failed to account for the activity of mill workers. He asserted that although such experiments were valid "in a state of rest":

> ...the increased frequency of respiration during labour will demand a corresponding increase in the supply. If, for example, two gallons of air are the necessary quantity when the pulse beats eighty strokes in a minute, when raised to a hundred in the same space of time, a fifth more will be required.[38]

In Simmons' perception, it was the exertion, and not merely the confinement, of human bodies that was a major source of industrial ill-health.

The hours of factory labour also attracted medical attention. Physicians and

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[36]E.M Brockbank, Sketches of the Lives and Work of the Honorary Medical Staff of the Manchester Infirmary (Manchester: Manchester University Press, 1904), p. 282.

[37]P.P. 1816 (397) III, 286.

[38]Ibid., 287.

surgeons who supported legislative restriction of the cotton industry were adamant that the thirteen, fourteen, and even fifteen hours a day demanded of mill workers were "highly injurious to their general health."[39] According to the Manchester physician, William Winstanley, the baneful effects of factory labour intensified through the day and were most harmful in the final hours of employment. In a statement supplied to Nathaniel Gould, he asserted:

> When the frame is exhausted towards the close of a protracted day's labour, then effort continued, even for half an hour, becomes incalculaby injurious and oppressive; and it is these last hours of almost previously exhausted exertion that depress the mental and bodily energies, draw off to unnatural purposes the supports and supplies of young and growing constitutions, and produce at last an emaciated, vigourless, and stunted population.[40]

Labouring for long hours in an overheated environment, cotton workers often experienced drastic temperature changes as they left the factories at night, and this too, in the opinion of contemporary observers, constituted a serious health risk. Medical witnesses were as apprehensive of the consequences of sudden cold as the effects of excessive heat, arguing that the transition from the almost "tropical" conditions inside the mills to the frequently inclement conditions outdoors weakened the constitution and led to coughs, colds, "catarrhal complaints," inflammation of the lungs, and

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[39][Gould], p. 19.

[40]Ibid., pp. 25-26. The attention directed by Winstanley and others to the final portion of the work-day forms an interesting precedent to the "last hour" debate sparked two decades later by Nassau Senior, who contended that factory owners' profits depended on the labour performed in the last hour of employment. See Kenneth O. Walker, "The Classical Economists and the Factory Acts," Journal of Economic History 1 (1941), pp. 171-172.

consumption.[41] The physician, Michael Ward, pointed out that while "People who visit heated Rooms, as Places of Amusement or otherwise, on coming out into the open Air, take care to provide additional Covering to guard against the Inclemencies of the Weather," great numbers of factory workers left the mills "covered with nothing but a ragged pair of Breeches, and what they call a Shirt, open down to the Waist, and which a poor Person would scarcely pick up," and consequently were subject "to all those occasional Causes of Disease from which some Mischief arises."[42]

In contrast to late eighteenth-century investigators, whose interest in issues of atmospheric corruption left little room for consideration of the operations of factory work, early nineteenth-century medical reformers concerned themselves with specific attributes of the manufacturing process. Concurring with workers, whose views of factory sickness had always corresponded closely to the realities of industrial production, they attributed the ill-health of the manufacturing populace to a cluster of factors: to the constant and arduous demands of machine-dominated labour; to the protracted hours of labour; to the high temperatures that prevailed especially in fine-spinning mills, and to the temperature changes that affected operatives at the end of the work-day.[43] Newly attentive to the "occupational" component of the problem,

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[41]P.P. 1816 (397) III, 287; [Gould], pp. 12, 21, 22; P.P. 1819 (24) CX, 279.

[42]P.P. 1819 (24) CX, 268-269.

[43]Interestingly, one factor to which early nineteenth-century medical men did not attach a great deal of significance was the presence of dust. Though as the ironmonger, Joseph Dutton, discovered on his tour through Lancashire, dust was an "inseparable accompaniment of cotton-spinning," with an "astonishing deal" prevailing even in the best-regulated mills, doctors in the 1810s merely noted its existence and viewed it as an accessory to high temperatures. On being questioned about the particular consequences

medical spokesmen also drew explicit comparisons between the conditions that prevailed in manufacturing and those associated with other forms of work. The surgeon, William Dean, for instance, argued that, despite the dampness that attended the practice of hand-loom weaving, factory spinners were less healthy than domestic weavers because of the "sudden Vicissitudes" of temperature they experienced.[44]

The new explanation of factory ill-health can be ascribed, at least in part, to changes in the technology and organization of the cotton industry. With the introduction of steam and the increasing reliance on steam-pipes, rather than stoves, to heat the interior of the mills, as the well as the growing dominance of fine-spinning, which required higher temperatures in order that the cotton fibres not adhere to the machine rollers, factory work unquestionably became a hotter business in the early years of the nineteenth century.[45] It also became a more laborious undertaking, as hours were increased and the work process rationalized.

Witnesses from several cotton towns testified that the hours of factory employment in 1819 were significantly longer than they had been fifteen or twenty years previously.[46] As William Simmons pointed out, this was partly due to the decline of nightwork and the practice of employing two shifts of workers for twelve

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of cotton dust for the well-being of factory children, the surgeon, Kinder Wood, replied that he could detect "no immediate injurious effect" and that "the aggregate of the circumstances influence the health of these children more than any particular point." P.P. 1816 (397) III, 195, 333.

[44]P.P. 1819 (24) CX, 285.

[45]Ibid., 180.

[46]Ibid., 70, 136, 213.

hours each.[47] As well, it was a function of economic fluctuation. In the tumultuous years after the turn of the century, manufacturers had periodically reduced the length of the work-day and in the period from 1811 to 1813, in particular, had responded to a situation of declining demand by decreasing hours. As conditions had improved in 1814, however, they had begun to extend the day, and in Simmons' words, "since that Time...it has become more general; the Hours have been gradually growing longer and longer."[48]

Accompanying the increase in hours was a new stringency in factory operation. According to Thomas Jarrold, a Manchester physician who had begun his career two decades earlier in Stockport, cotton mills had become more "systematized" over the years.[49] Recalling his time as a factory doctor in Stockport, Jarrold asserted:

> ...at that Period Labour was scarcer, the Men took more Liberties than they do now, the Children were not so closely employed, the Food was better, their Hours of Labour less, nominally the same, but they were then permitted to go Home to Breakfast, and in the Afternoon, and very frequently they worked only Five Days in a Week...[50]

In his opinion, as in that of a significant portion of the medical community, the changes that had occurred were clearly for the worse.

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[47]Ibid., 300.

[48]Robert Glen, Urban Workers in the Early Industrial Revolution (London: Croom Helm, 1984), p. 70; P.P. 1819 (24) CX, 300.

[49]P.P. 1819 (24) CX, 303.

[50]Ibid.

IV

If the early nineteenth-century examination of industrial ill-health gave rise to a new understanding of the factory and its deleterious qualities, it also contributed to a new conceptualization of the persons who laboured within the factory. In emphasizing the spiritless, inanimate appearance of mill workers, as well as their outer and inner distinctness, medical men reified workers, locating them both in close proximity to the machinery they tended and at a considerable distance from those who employed and treated them.

Whereas in the late eighteenth-century factory workers had been discussed in terms largely unconnected with the labour process, in the agitation preceding the establishment of the 1819 Factory Act, they were frequently spoken of in mechanical terms and depicted as part of the overall factory apparatus. Such description is especially evident in the testimony of manufacturers. As part of an argument against the proposed restriction of the work-day, the Scottish proprietor, Henry Houldsworth, maintained that his mills were more productive in the last hour of the day than in the first, because in the morning, "the machinery goes stiff...and the hands require some time to be brought to regular application."[51] In a similar vein, his associate Archibald Buchanan, observed that at the end of the work-day, "the People get warmed, and they get interested in their Work, and the Machinery gets into a better State, from the liquid State of the Oil, and the more perfect State of the Machinery."[52]

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[51]P.P. 1816 (397) III, 232.

[52]P.P. 1818 (90) XCVI, 73.

It was not only the opponents of legislative reform who characterized workers as extensions of machinery. In the preface to the Third Essay of his New View of Society, Robert Owen stated that he:

> ...viewed the population [of New Lanark], with the mechanism and every other part of the establishment, as a system composed of many parts, and which it is my duty and interest so to combine, as that every hand, as well as every spring, lever, and wheel, should effectually cooperate to produce the greatest pecuniary gain to the proprietors.[53]

He queried whether, having spent so much time and money on the operation of lifeless machinery, factory owners would not also consider apportioning some of their assets to the improvement of "living machines," and assured them that were they to do so, they would realize a handsome return on their investment.[54]

Unwittingly, perhaps, early nineteenth-century medical spokesmen reinforced the prevailing image of factory workers as barely-animate instruments of production. Responding to requests to examine the condition of children and youths attending Sunday schools, local doctors drew attention to the lack of vitality evident in those engaged in factory labour. After touring two Manchester Sunday schools, Henry

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[53]Robert Owen, A New View of Society (1813-1814; rpt. Harmondsworth: Penguin Books, 1970), p. 94.

[54]Ibid., p. 96. Although, as V.A.C. Gatrell, "Introduction," to ibid., pp. 38-39, argues, Owen's preface may have been a "deliberate, perhaps ironic" attempt to persuade fellow manufacturers of the value of attending to the needs of their employees, its perspective pervades his early writing, as well as his practice at New Lanark, and contradicts his more avowed purposes. While Owen certainly felt a strong sense of paternal responsibility towards his employees and intended that the community he was creating operate as a model of harmonious social relations, he also conceived of workers in an instrumental fashion, and, as Gatrell, p. 40, points out, succeeded in implementing at New Lanark "a mechanical routine of life geared to production."

Dadley described young mill workers as "for the most part dull and inert in their appearance, and destitute of that sprightliness and activity so natural to youth."[55] Having visited a school in Brawley-street, Bank Top, John Mitchell similarly reported that the "general appearance" of the pupils employed in factories was "pale and inanimate."[56] For John Johnson Boutflower and his associate, John Taylor Allen, the lifeless characteristics of young mill workers were sufficient to distinguish them from individuals engaged in other occupations. Reporting on their investigation of Manchester's largest Sunday school, the Boys' School at St. Clement's Church, Allen remarked that the men had little trouble separating "the Boys who are employed in Factories from other Boys,—merely by their outward appearance,—by their stunted growth—their pallid countenances, and the dulness and heaviness of their eyes,—so strong was the contrast between them and the Boys who are employed in other trades."[57]

For observers such as Boutflower and Allen, external features signified not only occupational status, but social position. Though they were unable to name a specific factory disease, legislative supporters nevertheless succeeded in identifying an assortment of factory-related traits. On the basis of close, physical examination, they found that mill workers displayed not only pale skin and lifeless eyes, but other characteristics, such as fetid breath, a hoarse and hollow voice, swollen extremities, a

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[55][Gould], pp. 9-11.

[56]Ibid., p. 5.

[57]Ibid., p. 15.

narrow chest, a tumid abdomen, distorted knees, and crooked bones.[58] In an era in which, as Louis Chevalier has argued, "groups considered each other, judged each other and confronted each other physically," and in which doctrines of physiognomy and phrenology (that postulated a direct link between external peculiarities and internal qualities) had wide currency, such attributes served as powerful indicators.[59] They testified to the inherent difference of industrial workers, providing middle-class onlookers with perceptible evidence of the social distance that had come to prevail between themselves and those who laboured in the mills.[60] Through the inquiries and findings of witnesses in the early years of the nineteenth century, the way was opened

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[58]Ibid., passim; P.P. 1819 (24) CX, 280-285.

[59]Louis Chevalier, Laboring Classes and Dangerous Classes, trans. Frank Jellinik (New York: Howard Fertig, 1973), p. 409. On early nineteenth-century physiognomy see Ludmilla Jordanova, "The Art and Science of Seeing," in W.F. Bynum and Roy Porter (eds), Medicine and the Five Senses (Cambridge: Cambridge University Press, 1993), pp. 122-133. On phrenology see Carla S. Paterson, "The Appropriation of Natural Knowledge: Radical Freethinkers and Phrenology in Britain, *c.* 1820-1890," (M.Sc. Diss., University of Sussex, 1978).

[60]The perception of "otherness" and separation was not one-sided. In an "Address" by "A Journeyman Cotton Spinner," cited in E.P. Thompson, The Making of the English Working Class (Harmondsworth: Penguin Books, 1968), pp. 218-219, and written at the time of the 1818 spinners strike, the author referred to operative spinners and their employers as "two distinct classes of persons" and asserted that "a greater distance" obtained between them than "between the first merchant in London and his lowest servant or the lowest artisan." He described factory proprietors as "ignorant, proud, and tyrannical" and workers as "an inoffensive, unassuming, set of well-informed men" and traced the origin of the gulf between them to the introduction of the steam engine, which resulted in the elimination of the intermediate rank of "little masters."

up for the construction of more elaborate theories of class distinction and separation.[61]

V

In the years between 1815 and 1819, medical understanding of the problem of factory ill-health was in a state of transition. While the old paradigms were more or less rejected, new theories had yet to be fully established or accepted. The sticking point of this second phase of enquiry lay in the determination of precisely what it was that ailed factory workers. With the apparent abatement of fever, physicians and surgeons who supported the demand for legislative restriction were forced to construct a new account of the relationship between manufacturing and sickness. Confronted by an overwhelming array of symptoms and complaints, they used the concept of debility to argue that it was the entire constitution of mill workers that suffered by their employment. The notion of constitutional impairment was nebulous, however, and so broad that it left room for considerable confusion and disagreement. In the absence of a coherent and well-developed theory of worker disease, factory critics resorted to common sense appeals, arguing that the external signs of industrial ill-health were "so striking as not to require the eye of a medical observer to discover," and so plain as to be admitted by "any Person of common Understanding."[62]

In the 1810s, medical reformers approached the question of factory sickness in a

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[61]For a thought-provoking discussion of ways in which distinctions of class, sex, and race were conceived to be biologically determined in the nineteenth and twentieth centuries, see Stephen Jay Gould, The Mismeasure of Man (New York: W.W. Norton & Company, 1981).

[62][Gould], p. 6; P.P. 1819 (24) CX, 296.

manner diametrically opposed to that of their eighteenth-century counterparts. Whereas Percival and his associates had been led by outbreaks of fever to consider how the disease might be related to the existence of factories, doctors in the early nineteenth century were impelled by convictions of the unhealthiness of industrial labour to inquire how factories impinged on physical well-being. Though the one group of investigators succeeded in identifying a worker disorder and the other in specifying pernicious features of machine work, neither was able to establish a solid link between manufacturing and ill-health.

While not settled, the matter was also not forgotten. As Chapter Seven will reveal, it was taken up again in the early 1830s by a third generation of medical inquirers, who, though heedful of past concerns, advanced yet another view of the nature and causes of factory workers' suffering.

CHAPTER SIX

THE CHANGING PATTERN OF PROVISION

> ...the habit of prosecuting a business, that of cotton-spinning more especially, by the excessive confinement and labour of children, has the unfortunate effect of checking those feelings; and that consideration for their sufferings, which would otherwise naturally be excited in us, and which, it must be allowed, we are especially called upon towards those who are in our service.[1]

> And it is to be remarked, that spinners relieve their own sick, as well as subscribe to other casualties.[2]

In the early years of the nineteenth century, a discernible shift in social relations and in practices of health-care provision began to take place in Britain's northern textile manufacturing regions. Whereas in the closing decades of the eighteenth century factory owners had taken an active interest in the condition of the manufacturing poor, by the second decade of the nineteenth century, entrepreneurial interest in the health of the factory workforce had declined considerably. Though manufacturers in isolated rural settings continued to exercise a protective custody over their workers, mill owners in the major cotton towns no longer regarded the care of the labour force as an important or advantageous part of their concern. In the view of contemporary spokesmen, the growth of the cotton trade had weakened the paternal ties between

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[1]P.P. 1816 (397) III, 337.

[2]"The Cotton-Spinners' Address to the Public," The Annual Register...for the Year 1818 (London: Baldwin, Cradock, and Joy, 1819), Chronicle, p. 101.

employers and employees.

If the progress of the industry led to an abdication on the part of factory owners, it also contributed to a greater assumption of responsibility on the part of factory labourers. With the growth of fine-spinning, and of a relatively well-paid, semi-autonomous segment of workers, the task of providing for machine-related morbidity and mortality increasingly became a matter of self-help, rather than charitable endeavour. In the years from 1815 to 1819, mill workers not only began to speak out on the problem of factory health, they also demonstrated the capacity to act on the matter, employing a variety of formal and informal mechanisms to assist themselves and their families.

I

In the earliest days of factory production, it was not unusual for textile manufacturers to make special provision for the well-being of their employees. The manager of the Linwood mill in Kilbarchan, Renfrewshire, for instance, had the mill constructed upon an airy and spacious plan so as to benefit the health of the workforce.[3] The proprietors of Quarry Bank in Cheshire, Darley Abbey in Derbyshire, and the cotton mill in Blantyre, Lanarkshire, employed medical men to attend their workers.[4] David Dale, master of New Lanark, gave particular

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[3]John Sinclair, The Statistical Account of Scotland, vol. 15, p. 504.

[4]Robert Murray, "Quarry Bank Mill 2. The Medical Service," British Journal of Industrial Medicine 16 (1959), pp. 61-67; Jean Lindsay, "An Early Industrial Community," Business History Review 34 (1960), p. 300; Sinclair, vol. 2, p. 216.

consideration to the diet, clothing, and sleeping arrangements of the apprentice portion of his labour force, while Dale's partner, Claud Alexander, of Catrine in Ayrshire, allotted specific time to his workers for recreation, provided medical aid to those injured in machine accidents, endeavoured to keep the factory clean, and even constructed a walk-way along the river Ayr "for the health of the inhabitants."[5]

Solicitude for the well-being of workers was evident not only among masters of isolated factory villages in Scotland and the Midlands, but also among those resident in the larger manufacturing towns of Lancashire. As discussed in Chapter Three, having been aroused to the problem of worker ill-health by recurrent outbreaks of fever, mill owners in towns such as Manchester and Bury directed considerable attention to the condition of their employees, making provision both in the mill and in the community at large.

The interest with which late eighteenth-century manufacturers regarded the health of the factory population was rooted in a number of factors. In rural settings, it formed part of a larger paternalism demanded by the exigencies of a market in which labour was scarce.[6] Manufacturers who employed parish apprentices obtained the

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[5]Sinclair, vol. 15, pp. 37-38, vol. 20, pp. 177, 184, 185; David Dale, "Correspondence," in Manchester Board of Health, Proceedings and Observations (Manchester: 1806), pp. 62-63. It was not only cotton manufacturers who were attentive to the health of their workers. According to E. Posner, "Eighteenth-Century Health and Social Service in the Pottery Industry of North Staffordshire," Medical History 18 (1974), p. 139, Josiah Wedgwood and Thomas Bentley also made provision for the health of the workers at Etruria.

[6]Though E.P. Thompson, "Patrician Society, Plebian Culture," Journal of Social History 7 (1974), pp. 382-405, has argued that paternalism declined in the eighteenth century and that the relations between gentry and labourers took on the quality of

labour of the children in exchange for assuming responsibility for their physical needs.[7] Such an arrangement not only demanded the provision of food and lodging, but also provided a motive for the watchful care of workers who would remain in the charge of the manufacturer for years. Entrepreneurs wishing to employ free labour also found themselves forced to engage in paternal provision in order to attract workers who would otherwise be disinclined to enter large and "disreputable" public establishments.[8] The construction of walk-ways and attempts to make factories clean and airy were incentives to workers in the same way as the provision of churches, schools, houses, garden plots, and milk-cows.[9] Such arrangements served not only to attract labourers, but to discipline them: garden plots and superior cottages could be used as rewards for diligent and obedient service, while churches and schools functioned as centres for the inculcation of virtues such as sobriety, regularity, and industry. As large-scale employers of youthful and migrant labour unaccustomed to the rigours of work-

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theatre, the situation was different in the early factory communities. Here, as Sidney Pollard, "The Factory Village in the Industrial Revolution," English Historical Review 79 (1964), pp. 513-531, has revealed, the difficulties of establishing and managing new industrial settlements necessitated the adoption of paternal strategies. See also David Roberts, Paternalism in Early Victorian England (London: Croom Helm, 1979), pp. 171-183.

[7]Such responsibility was sometimes evaded, as in the case of apprentices at Backbarrow, who were removed from the mill during a time of bad trade and dumped on the Lancaster road to beg their way home. P.P. 1816 (397) III, 181.

[8]"Mr. James Smith's Statement as to the Deanston Cotton-Works," Factory Inspectors' Reports, P.P. 1839 [159], XIX, App. 5, p. 98.

[9]S.D. Chapman, The Early Factory Masters (Newton Abbot: David & Charles, 1967), p. 160, notes that through such measures early manufacturers were trying "to reproduce the comfortable homestead of the independent peasant proprietor."

discipline, early factory masters were necessarily concerned with matters of regulation and control.

The outlook and activities that distinguished late eighteenth-century manufacturers were by no means completely outmoded in the early years of the nineteenth century. Perhaps their most celebrated exponent in these years was Robert Owen. At New Lanark, Owen consciously assumed the mantle of his predecessor, David Dale, and guided by a belief in the possibility of creating a rational and harmonious social order, went on to create a regulated village community that became a showpiece of factory management.[10] Part of Owen's experiment at New Lanark consisted of a reduction in work hours, a step which he believed had improved not only the "willingness" of his workers "to perform their duty," but also their health and "ability" to do so.[11] As Owen pointed out to the members of the 1816 Select Committee, attention to the well-being of operatives produced a double yield: an increase both in feelings of gratitude and in levels of productivity.

While Owen's social vision may have been unique, his regard for his workers was not. The proprietors of factory villages in Scotland continued to exercise a watchful eye over the well-being of their employees. The reportedly "affable and generous" Archibald Buchanan, new manufacturer at Catrine, employed a factory

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[10]V.A.C. Gatrell, "Introduction," in Robert Owen, A New View of Society and Report to the County of Lanark (1813-1814, 1821; rpt. Harmondsworth: Penguin Books, 1969), pp. 38-44. As Roberts, p. 173, reveals, the regulation of the community extended to its morals, which were superintended by special constables.

[11]P.P. 1816 (397) III, 93-95.

surgeon and provided pensions for sick and retired labourers.[12] The managing partners of the Blantyre cotton manufactory also employed a surgeon to attend their works.[13] One of the partners, Adam Bogle, criticized Owen's regime before the 1816 Select Committee, pointing out that his firm had received applications from workers disenchanted with the dances and drills that had been introduced at New Lanark.[14] Yet, in their own way, Bogle and his associates were as interested as Owen in the moral and physical condition of their labourers, taking special pains to control the consumption of liquor in the community.[15]

In the Midlands, too, cotton manufacturers continued to exercise paternal superintendence over their employees. The younger Richard Arkwright was conscious that he wielded more control over the workers at Cromford than he would in an urban centre, and although he suggested to the 1816 Committee that health problems in the cotton industry had largely been eliminated due to improvements in factory management, he was still sufficiently concerned with worker health to allow half-wages to his employees when ill, and to have obtained advice concerning the optimum temperature for the mill from the physician, Erasmus Darwin.[16] In the Nottingham

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[12]Roberts, p. 174; P.P. 1816 (397) III, 11; P.P. 1818 (90) XCVI, 66.

[13]P.P. 1816 (397) III, 176.

[14]Ibid., 167.

[15]Ibid., 164, 168.

[16]Ibid., 279-284. According to Desmond King-Hele, Erasmus Darwin and the Romantic Poets (London: Macmillan, 1986), p. 17, Darwin was very interested in the management of the mill and in the design of its machinery.

area, a number of manufacturers employed medical men to attend their operatives.[17] James Robinson, of Papplewick, frequently called upon his personal physician, Charles Pennington, who also acted as Honorary Physician to the Nottingham Infirmary and Lunatic Asylum. Pennington testified that Robinson had always directed "the most humane attention and careful regard to the health, the morals and the comforts of all engaged" in his works, and that he had spared no cost in the provision of medical assistance.[18] In rural settings, where labouring hands continued to be scarce, and where the use of water-frames required the labour principally of children and women, paternal solicitude for worker health remained an important part of the cotton manufacturer's concern.

II

In urban settings, where the population was increasing at a rapid rate and where steam-powered fine spinning was becoming the dominant mode of factory production, the situation was quite different. Here, the much greater availability of labour, which eliminated the need to import parish apprentices, and the growing employment of adult males as mule spinners removed incentives for paternal provision. As contemporary observers noted, urban manufacturers displayed little interest in the health of their workers.

According to Nathaniel Gould, mill owners in large factory towns generally left

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[17]P.P. 1816 (397) III, 221-222; P.P. 1818 (90) XCVI, 135; P.P. 1819 (24) CX, 328.

[18]P.P. 1816 (397) III, 222.

the superintendence of their workforce to overlookers and took little notice when employees became ill.[19] In 1818, one such overlooker, Thomas Scott, revealed that the owners of the huge McConnell and Kennedy fine-spinning mill in Manchester made little effort to assist or even keep records of workers who were sick. He pointed out that at the factory there "was no Tie or Hiring beyond the existing Week" and that the composition of the workforce changed by the week.[20] The proprietors of the extensive Philips and Lee cotton works at Salford were similarly inactive. They employed no medical attendant, provided no pensions for old or worn-out employees, and made no financial contributions to a factory sick club, maintaining that the workers were "better for doing it themselves."[21] Henry Houldsworth, the owner of large fine-spinning mill near Glasgow, also retained no regular medical assistant. In cases of extreme urgency, he called in his personal surgeon, but, in general, left the provision of medical care to the workers themselves.[22] It was not only in the largest mills that health of the labour force was disregarded. The testimony of the Oldham surgeon, Kinder Wood, revealed that even where factories were smaller, masters were oblivious to the suffering of their workers. Wood reported that he did not know of a single Oldham manufacturer who kept sick lists or made returns on worker health.[23]

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[19]Ibid., 327, 329, 338.

[20]P.P. 1818 (90) XCVI, 168, 177.

[21]P.P. 1816 (397) III, 358.

[22]Ibid., 238.

[23]Ibid., 199.

If urban manufacturers did little to ensure the well-being of workers within the confines of their establishments, they also did little outside the mills. In the early years of the nineteenth century, enthusiasm for relief of the manufacturing poor diminished considerably. In Manchester, voluntary schemes aimed at providing the poor with foodstuffs, clothing, and fuel received little support.[24] Although a committee was struck in June 1816 to relieve poor persons ineligible for parish assistance, and another charity established in November 1816 to distribute soup and coals to the "Necessitous Poor," these stand out in the period from Waterloo to Peterloo as isolated examples of community beneficence.[25] In July 1819, in the same issue of the Manchester Observer that announced the upcoming Reform meeting to be held at St. Peter's field, "A Friend to the Poor" appealed to Manchester's commercial elite to attend to the needs of the suffering poor. In this instance, no subscription was raised and no committee formed, and although the Observer lauded the motives of the "Friend," it also denigrated the effectiveness of charitable relief.[26]

Factory masters were unsupportive not only of the provision of food and fuel, but also of the extension of medical aid. In Manchester, medical charities began to fall under the control of conservative forces in the late 1790s.[27] The Infirmary, for

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[24]G.B. Hindle, Provision for the Relief of the Poor in Manchester 1754-1826 (Manchester: Manchester University Press, 1975), p. 122.

[25]Ibid., pp. 125-126.

[26]Ibid., pp. 126-127.

[27]John Pickstone, Medicine and Industrial Society (Manchester: Manchester University Press, 1985), p. 68.

instance, came under the sway of J.L. Philips, a silent partner in the firm of Philips and Lee, and an ardent loyalist and leader of local volunteer troops. Philips was much more concerned with defending than expanding the Infirmary, and vigorously opposed all plans to enlarge the services of the charitable institution.[28] The growth of conservatism was accompanied by declining subscriptions from local entrepreneurs. In the case of the Infirmary, the decrease in contributions so frustrated Philips that he resigned his office as treasurer in 1811.[29] Although certain manufacturers did lend their support to the Eye Institution and Lock Hospital, two new medical charities established between 1815 and 1819, these were essentially specialist institutions, not directed at meeting the general health needs of the factory population.[30]

Manchester's mill owners also gave little support to Sunday schools, an area of philanthropic endeavour that did flourish in the early years of the nineteenth century. First established in 1784, the schools proliferated over the next three decades, so that by 1816, there were over thirty in Manchester and Salford, with a total enrolment of 16,500 children.[31] The schools were funded voluntarily, through annual subscriptions

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[28]Ibid., p. 30.

[29]Ibid., p. 31.

[30]Ibid., pp. 44-46.

[31]A.P. Wadsworth, "The First Manchester Sunday Schools," Bulletin of the John Rylands Library 33 (1950-1951), p. 299; Thomas Walter Laqueur, Religion and Respectability: Sunday Schools and Working Class Culture 1780-1850 (New Haven: Yale University Press, 1976), pp. 42-62; P.P. 1816 (397) III, 369. As David Hempton, Methodism and Politics in British Society 1750-1850 (London: Hutchinson, 1984), pp. 86-88 notes, following the appearance of Laqueur's study, historians have disputed the degree to which Sunday schools were agencies of middle-class control or authentic working-class establishments. It would seem that in the factory towns of the

and church and chapel collections, with contributions in Manchester totalling nearly £2,500 in 1816.[32] Although cotton manufacturers in neighbouring towns seem to have played some part in the establishment and operation of local schools, in Manchester their support was meagre.[33] In 1816, Nathaniel Gould, a Sunday school visitor for thirty years, reported that "on carefully perusing the yearly reports" of several Manchester Sunday schools, he became aware "that the owners of the spinning factories, who it is conjectured employ at least 23,000 persons [one-fifth of the local population], scarcely contribute one-twentieth part of the money raised [less than £90] towards the support of these schools."[34] Gould linked the parsimony of the Manchester proprietors to their lack of concern for employee well-being.

While there were undoubtedly many reasons for the decline of entrepreneurial concern, it seems likely that the contemporary shift in opinion regarding the nature of industrial illness played a role. Unlike fever, the debility that was held to afflict factory workers at the beginning of the nineteenth century was not a contagious disorder. It did not evoke the alarm or terror that fever had, and did not galvanize local authorities to the same degree of action. In the years between 1815 and 1819, the condition of the manufacturing poor was not as obvious or urgent a problem as it had

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early nineteenth century, they were hybrid institutions and that while largely financed by the middle and upper classes, they were shaped in accord with working-class concerns.

[32]P.P. 1816 (397), 327, 337.

[33]Ibid., 96, 305; Laqueur, p. 196.

[34]P.P. 1816 (397) III, 337.

been a generation earlier, and did not lay as great a claim to manufacturing attention as it had done previously.

The disinterest with which urban manufacturers viewed the health of the factory population also seems to have derived from a larger inertia regarding local issues. In his history of Peterloo, Donald Read states that in the years preceding the "massacre" of 1819, Manchester cotton masters had fallen into a "vague conservative apathy," attaching much greater interest to private than to public affairs.[35] Even during the turbulence of the 1818 cotton spinners' strike, Manchester factory owners showed a marked reluctance to assume an active role in restoring public tranquillity.[36] Robert Glen has similarly noted that in the decade or so preceding 1819, industrialists in Stockport were less inclined than they had been formerly to become involved in local government.[37] The indifference to community matters perhaps stemmed from a lessened concern with the acquisition of status and respectability. Many of the men who entered the cotton trade in the early decades of the nineteenth century were second-generation industrialists, from well-to-do, established families.[38] Just as they no longer felt constrained to distinguish themselves through a Georgian facade on the

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[35]Donald Read, Peterloo: The "Massacre" and its Background (Manchester: Manchester University Press, 1958), p. 8.

[36]A. Aspinall, The Early English Trade Unions (London: The Batchworth Press, 1949), pp. 259-260.

[37]Robert Glen, Urban Workers in the Early Industrial Revolution (London: Croom Helm, 1984), p. 59.

[38]Anthony Howe, The Cotton Masters 1830-1860 (Oxford: Clarendon Press, 1984), pp. 9-10.

exterior of their mills, so, it would seem, they no longer felt compelled to leave their mark in charitable endeavour or local political activity.[39]

Urban manufacturers themselves attributed the shift in industrial attitudes and practices to developments that had occurred within the manufacturing process. George Lee, for instance, managing partner of the Philips and Lee fine-spinning mill in Salford, asserted that in the past, when the workforce of factories had been composed principally of children, it had been "both the duty and the advantage of every proprietor to render his mills as healthy as possible, by cleanliness, ventilation, spaciousness, and temperature; and to interest himself generally for those employed by them."[40] He suggested, however, that under the new conditions of production, when the employment of adults was restoring society "to its natural direction" and when the growth of the industry, along with improved management practices, had eliminated many of the problems which afflicted workers, such a degree of attention was no longer justified.[41]

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[39]Jennifer Tann, The Development of the Factory (London: Cornmarket Press, 1970), p. 157.

[40]P.P. 1816 (397) III, 344.

[41]Ibid., 341-366. Lee maintained that five times fewer children under the age of ten were employed in cotton mills in 1816 than had been the case thirty years earlier. Although there are no extensive figures on the changing composition of the factory workforce which could be used to judge the accuracy of Lee's statement, T.S. Ashton, The Industrial Revolution 1760-1830 (1948; rpt. London: Oxford University Press, 1980), pp. 80-81, notes that whereas in 1789, two-thirds of the 1150 workers at Arkwright's Derbyshire mills were children, in 1816, only 3% of the 1020 employees at M'Connel and Kennedy's Manchester mill were under the age of ten, while 52% were over the age of eighteen. Similarly, H. Freudenberger, F.J. Mather, and Clark Nardinelli, "A New Look at the Early Factory Labour Force," Journal of Economic History 44 (1984), p. 1087, find that in a sample of 1646 cotton factory workers employed principally in Manchester and Stockport in 1818-1819, 4.5% were under ten, while 41% were over twenty years of age. In rural mills, the discrepancy does not

Other spokesmen expressed similar views. The author of a pamphlet opposing Peel's 1818 factory bill, for instance, acknowledged the absence of paternal care in contemporary manufactories, but argued that such solicitude was no longer appropriate or necessary, since, unlike parish apprentices, the free labour children employed in manufacturing towns were under the natural care of their parents.[42] It was not only the opponents of legislative reform who maintained that the progress of the cotton industry had altered the character of employer-employee relations. In 1816, the cotton merchant and short-time activist, Nathaniel Gould, noted with some regret that the "habit," or continued practice, of manufacturing had dulled the sensibility of factory masters to the "sufferings of those who work for them," adding that:

> There are many worthy men, whom I esteem much, in Manchester, cotton-spinners, men of good principles, but I do not think they show themselves superior to the effects I have just mentioned, as proceeding from the constant employment of children...I think it is very probable it might have been my own case if I had been a spinner.[43]

III

In their study of the relations between cotton manufacturers and operatives in the middle years of the nineteenth century, H.I. Dutton and J.E. King have pointed out that the existence of effective industrial paternalism depends both on the commitment of

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seem to have been as great. Ashton, p. 81, reveals that in Samuel Greg's country mill in 1816, 17% of the 252 employees were under ten, while slightly less than 30% were over eighteen.

[42]An Inquiry into the Principle and Tendency of the Bill now pending in Parliament, for imposing certain Restrictions on Cotton Factories (London: Baldwin, Cradock, and Joy, 1818), p. 2.

[43]P.P. 1816 (397) III, 336.

employers and on the willingness of workers to submit to the benevolent rule of their masters. They argue that in the period from 1836 to 1854 neither requirement was fulfilled among those involved in the North Lancashire cotton industry.[44] It is evident that in the early years of the nineteenth century cotton manufacturers in urban locales were similarly uncommitted to the exercise of paternalism, both within and without their factory gates. It is also the case that the employees of these men were unwilling to act as their grateful dependents. The period from 1815 to 1819 was one of vigorous and sustained working-class activity, with cotton workers engaging in both industrial action—to increase wages and shorten hours—and political agitation. The paternalist notion that they should give their assent to a divinely-ordered state of society and the superintendence of their masters was fundamentally opposed by the growing "Radical assertion of natural political rights, especially the right of political equality."[45] In these years, factory operatives began to display a resoluteness and independence that was directly at odds with any sort of willing submission. In 1818, James Norris, Manchester's stipendiary magistrate, reported to the Home Secretary, Viscount Sidmouth, that in consequence of reform ideas taking hold in the population, "the working classes have become not only more pertinacious but more insolent in their demands and demeanour."[46] In 1819, an anonymous pamphleteer similarly remarked on the manner in which agitation over the factory question had introduced "a spirit of

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[44]H.I. Dutton and J.E. King, "The Limits of Paternalism: the Cotton Tyrants of North Lancashire, 1836-54," Social History 7 (1982), p. 72.

[45]Read, p. 88.

[46]Aspinall, p. 257.

discontent and insubordination" among the operative population.[47]

Given the growth of such a spirit, cotton workers were less inclined than they had been formerly to turn to charity for the relief of the sickness and death that was so frequently a part of their lives.[48] In 1817, Manchester's working classes were markedly disparaging of offers of charitable assistance made to them by local philanthropists, much to the amazement of these "loyal" citizens.[49] Though they continued to make some use of established medical charities, the lower orders became increasingly suspicious of and hostile towards such institutions. Their hostility was particularly manifested in a Radical campaign mounted shortly after Peterloo, in which it was claimed that a wounded protester had been denied treatment at the Infirmary.[50]

If factory workers were reluctant to avail themselves of voluntary aid, they also had little recourse to statutory relief. Authorities from a number of cotton towns reported to the Lords Committees of 1818 and 1819 that the operatives in their jurisdictions received little parochial assistance.[51] In part, this was due to the

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[47]An Examination of the Cotton Factory Question: with Remarks upon Two Pamphlets (London: Longman & Co., 1819), p. 3.

[48]It is, of course, difficult to determine to what degree the attribution of such a spirit by outside observers accurately depicts the development of a new consciousness among factory operatives, or how far such an attitude penetrated the industrial population as a whole. For a thoughtful appraisal of such issues, see David Vincent, Bread, Knowledge and Freedom: A Study of Nineteenth-Century Working Class Autobiography (London: Europa Publications Limited, 1981), pp. 1-13.

[49]Read, p. 88.

[50]Pickstone, pp. 48-49.

[51]P.P. 1818 (90) XCVI, 246-248; P.P. 1819 (24) CX, 274, 357, 435.

availability of employment, especially for young people; where there was an opportunity for family members to be employed, relief was either reduced or withheld.[52] In part, too, the relatively small claim that factory employees made on parish funds was due to the large numbers of immigrant workers, who would not qualify for relief.[53] There is evidence, as well, that operatives were sometimes denied relief because of the antipathy of parish officers. James Kerby, an unemployed Manchester spinner, testified before the parliamentary Committee of 1819 that having been turned away from the Holt factory for attending the previous Session's hearings, he had difficulty finding other mill work and had applied to Mr. Rickords, one of the overseers of the poor. Rickords, who was himself a factory owner, denied Kerby's request, declaring that if he had been in London in support of Peel's bill, it was to Sir Robert Peel that he should apply for relief. Kerby then appealed to James Norris, one of Manchester's magistrates. Norris initially did nothing, but later offered Kerby a job sweeping the streets for a shilling a day. Finding this insufficient for the support of himself and his family, Kerby left Manchester in an unsuccessful attempt to seek work in the country. Finally, when his wife, "got to bed," a "Gentleman" appealed to the parish officers on Kerby's behalf, and the family was granted relief for one month.[54]

An additional reason for the low rate of parochial assistance, noted by a number

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[52]P.P. 1818 (90) XCVI, 245-246; P.P. 1819 (24) CX, 360.

[53]Arthur Redford, Labour Migration in England 1800-1850, 3rd ed. (Manchester: Manchester University Press, 1976), pp. 38-41, notes that between 1810 and 1830, the concentration of cotton mills in and around Lancashire caused a swell of migration into the district.

[54]P.P. 1819 (24) CX, 200-201.

of parliamentary witnesses, was that very often mill workers provided for themselves through factory subscriptions and sick clubs. As Thomas Watson, overseer of the poor in Heaton Norris pointed out, "there are many Cases of Sickness which do not come before us."[55] These subscriptions and clubs typically operated in fine-spinning mills, where the adult male spinners were relatively well-paid.[56]

At the Philips and Lee factory in Salford, operatives supported one another through a well-organized system of relief. Each made a voluntary contribution of one two-hundredth of their wages to a sick-fund, which was controlled by the workers. Contributors who became ill were entitled to half-wages for a period of three months, with a possibility of the allowance being extended. The funeral expenses of those who died were also partially defrayed. In 1816 the fund was in its ninth successful year of operation.[57] In addition, the operatives contributed to "club-boxes," which were independent of the mill fund and were meant to support "aged and worn-out workmen."[58]

At other mills, the system of relief was less established, but equally effective. At the Preston factories in which the operative, Richard Coar, had been employed, spinners contributed to a fund according to the number of workers currently on the sick

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[55]Ibid., 362; see also P.P. 1816 (397) III, 147.

[56]P.P. 1819 (24) CX, 98; William Lazonick, "Industrial Relations and Technical Change: The Case of the Self-Acting Mule," Cambridge Journal of Economics 3 (1979), pp. 232-236.

[57]P.P. 1816 (397) III, 341-342.

[58]Ibid., 365.

list, "sometimes Three-pence, sometimes Sixpence Halfpenny, sometimes Thirteen pence."[59] When ill, each subscriber received ten shillings a week. At the Holt factory in Manchester, workers also kept no permanent fund, but simply raised money when necessary for temporary relief.[60] Operatives frequently assisted one another not only through periods of sickness, but also through times of unemployment. A worker at Pooley's factory in Manchester, who had been fired for revealing to the medical visitors in 1818 that only forty minutes were allowed at the mill for dinner, received such support. On Saturday evenings, he went to the mill and the men would give him "Two-pence a-piece, or what [they] could spare."[61] "It is the general Thing done when a Man is out of Employment," his former associate, Matthew Carter, informed the 1819 Lords Committee.[62]

Although occasionally worker relief funds were boosted by financial contributions from mill owners, in general the funds were raised and managed by the workers themselves. Usually, however, subscriptions and club benefits applied only the adult male portion of the factory labour force, and did not extend to their young assistants. One way in which younger workers were supported was through Sunday school sick societies.

A sick society was established at the St. Clement's and St. Luke's Sunday

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[59]P.P. 1819 (24) CX, 150.

[60]Ibid., 446.

[61]Ibid., 206.

[62]Ibid.

school in Manchester in 1814. The society was open to teachers and students twelve years and older who were in good health and had attended the school for at least three months. Members paid two-pence upon entrance to the club and a penny each Sunday thereafter. If a member became ill or suffered an accident, he or she was visited by a class collector and then received benefits of four shillings a week. If any member died, every other member paid in an additional penny and "a good oak coffin" was provided.[63] In the first year of operation, the society provided relief to sixty-seven persons, two-thirds of whom were factory employees.[64]

At the nearby Bennett Street Sunday school, a sick and funeral society was established in 1812. Here members paid a farthing a week to qualify for sick benefits. Again, entrance to the association depended on good health and regular attendance at the school.[65] Like the St. Clement's and St. Luke's Society, the Bennett Street Sick and Funeral Society was remarkably prosperous: in the period from 1812 to 1830 it took in over £3,700 and paid out over £2,700 in benefits.[66]

The support which young factory workers received through the Sunday school societies was more circumscribed that than available to their adult counterparts. By virtue of being organized through the schools, which were perhaps as much middle-

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[63]"Rules of the Saint Clement's and Saint Luke's Sunday School Sick Society," P.P. 1816 (397) III, 376-378.

[64]"Second Report of the Saint Clement's and Saint Luke's Sunday School Sick Society," P.P. 1816 (397) III, 378-381.

[65]Marjorie Cruikshank, Children and Industry (Manchester: Manchester University Press, 1981), p. 36.

[66]Laqueur, p. 173.

class as working-class institutions, relief was hinged to demands for moral propriety and rectitude.[67] The officers of the St. Clements's and St. Luke's Sick Society, for instance, congratulated themselves that the society tended "to bind both parents and children to the school," thus providing opportunities for "correction, reproof, and instruction in righteousness."[68]

There were other ways, as well, in which the workers in cotton manufacturing towns attended to their health needs. Though there were certainly many who continued to seek assistance from charitable medical institutions, others approached medical practitioners independently. William Simmons, a long-time Manchester surgeon, stated to the 1819 Lords Committee that the operatives in his town frequently resorted to "the lower Practitioners of Medicine."[69] One retired spinner, Samuel Lee, who had five children employed in factories, four of whom were lame, ran the gamut of medical assistance. He received advice from the Manchester Infirmary; he also took his children to the Whitworth doctors, a well-known family of healers resident in the town of Whitworth; as well, he had the children treated by a personal acquaintance, a "Gentleman" by the name of Robinson.[70] Lee's case may have been somewhat unusual: having worked as a nobleman's servant prior to becoming a spinner, he may have had a unique opportunity to gain access to a gentleman practitioner. Nevertheless,

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[67]See note 31 above.

[68]P.P. 1816 (397) III, 378.

[69]P.P. 1819 (24) CX, 300.

[70]Ibid., 233-234; E. Bosdin Leech, "Early Medicine and Quackery in Lancashire," The Liverpool Medico-Chirurgical Journal 46 (1939), pp. 113-119.

as parliamentary testimony revealed, workers very often went to considerable effort and expense to obtain medical advice.[71]

Workers also drew on their own medical knowledge. Peter Manning, a sixteen year old carder from Manchester, told the 1819 Committee members that he had been "very sickly and phthisickly" from the time he had begun to engage in mill work, and had suffered a cough on account of the dust raised in the carding process.[72] Though he received no medical assistance from the factory, he had taken "Herbs and Vomits" on his own advice.[73] According to the testimony of other witnesses, it was very common for workers to have recourse to emetics to rid themselves of the particles of cotton inhaled and swallowed during the course of their labour.[74] A knowledge of herbal medicines was still very much alive among the residents of early nineteenth-century manufacturing communities, and rural areas were close enough that workers had access to the plants and herbs they required.[75] Sometimes a sojourn in the country was in itself sufficient to restore an individual to health. Thomas Worsley, a twenty-five year old Salford spinner, informed the 1819 Committee that he had been very much troubled by "a Stoppage on [his] Breast...on account of the Cotton Flyings"

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[71]P.P. 1819 (24) CX, 82, 88, 133.

[72]Ibid., 188.

[73]Ibid., 190.

[74]P.P. 1816 (397) III, 121; P.P. 1819 (24) CX, 38, 81, 107.

[75]Cruikshank, p. 33. Even in the mid-nineteenth century, Lancashire residents were reputed to have a sound knowledge of herbal medicine, as witnessed by the character of Alice Wilson in Mrs. Gaskell, Mary Barton (1848; rpt. London: Dent, 1967), p. 14.

and that he had not applied to the Infirmary or any doctor, but had gone into the country for three or four weeks, where he recovered "and got [his] Flesh up very fast."[76]

The condition of young factory workers was of particular concern to the residents of manufacturing towns, and the parents of such workers often went to considerable lengths to assist their offspring. If it was in their power, many parents refused to send children to the mill, believing the conditions of factory work to be detrimental to their health.[77] If they had no other option and were forced to consign their offspring to the factory floor, parents were still active in attempting to secure their children's well-being. In some cases, the family unit survived in the factory, with the children being employed as piecers by their fathers.[78] In such instances, fathers often attempted to ease something of the burdensome conditions under which their children laboured. Robert Hyde, a Manchester spinner, who employed two of his own children, testified in 1819 that he showed his children "many indulgences":

> ...sometimes I allow (one is between Nine and Ten, and the other about Twelve) one of them to come at Eight and bring the Breakfast, and in the Evening the other I will let off, and exert myself to make up the Difference, and let them go Home an Hour or an Hour and a Half before their Time. I have often lamented the Case of other Children, because I

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[76]P.P. 1819 (24) CX, 21.

[77]Ibid., 25, 93, 95, 99, 102, 129.

[78]This apparently happened less often than Neil J. Smelser, Social Change in the Industrial Revolution (Chicago: 1959) has claimed. In "N.J. Smelser and the Cotton Factory Family: A Reassessment," in N.B. Harte and K.G. Ponting (eds), Textile History and Economic History (Manchester: Manchester University Press, 1973), pp. 311-315, M.M. Edwards and R. Lloyd-Jones show that in 1816 only 11% of Preston factory children were employed by a family member.

> see it in my own Child...[I] begin to perceive my Girl, who was thriving fast, her Legs being tender, are not able to bear the Weight of her Body; on which account I spare her as much as possible.[79]

Even in cases where parents were not present in the mill, they continued to exercise a protective vigilance over the well-being of their families, and were particularly alert to the possibilities of physical abuse. A witness to the 1816 Select Committee declared that parents were "very tenacious upon that point," and would immediately remove their children if they found them to be mistreated, while a spinner appearing before the 1819 Committee stated that "Grievances very often exist between the Parents of the Children and their Employers, from their ill-using their Children, and punishing them to keep them awake at Night to follow their Employment."[80] Samuel Lee, the father of the five factory children, accommodated his family by always "taking a Place as near their Factory as I can."[81]

The world of Samuel Lee and his family was considerably different from that of factory workers a generation earlier. The introduction of steam-powered machinery, the shift in locale from rural outposts to urban centres, the waning of the system of parish apprenticeship and the growing participation of adult men in the factory labour force produced a milieu in which the domiciliary functions of the mill were eroded and the ideals of village paternalism no longer held sway. In the urban centres, especially, manufacturers lost a sense of benevolent tie to their free labourers and no longer felt

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[79]P.P. 1819 (24) CX, 132-133.

[80]P.P. 1816 (397) III, 367; P.P. 1819 (24) CX, 16.

[81]P.P. 1819 (24) CX, 228.

responsible for their well-being. At the same time, mill workers began to feel a strengthening of common bonds, which was expressed as much in factory sick clubs, as in parliamentary petitions. Both through the abdication of the masters and the capability of their employees, the relief of machine-induced sickness and death increasingly became a worker affair.

CHAPTER SEVEN

THE FACTORY ECLIPSED: DOMESTIC HABITS AND PERSONAL FAILINGS

> There are a few incontrovertible facts, not adverted to perhaps by the secluded political writer, but which those who mingle in the busy world of a vast manufacturing community will scarcely refuse to admit. One of these is, that sedentary and other occupations, which wholly seclude the artisan at all seasons (and from a very early age) from the pure air and the green face of nature, generally give rise to some degree of derangement of the health, manifested primarily in the stomach and bowels, and also render the mind torpid and irritable: further, that this uncomfortable condition of body and mind, existing in almost every individual of great masses of people crowded together in factories, and in the narrow streets and yards where they have their habitations, is apt gradually to increase, and to be aggravated by the very means but too commonly adopted to obtain relief; which are habitual or frequent drunkenness, the stimulus of crude and fantastical politics, the still stronger stimulus of riot and uproar, and not unfrequently, as the recent annals of our county unhappily attest, of savage or malignant crime.[1]

> ...it is impossible to separate the physical welfare of man from his moral well-being; and in considering the effects of the factory system, I cannot but believe that the evils, which are now too justly complained of in respect of the health of those employed, admit only of effectual alleviation, or removal, by attention to their moral causes and conditions.[2]

In the early 1830s, the problem of factory ill-health again came to be at the forefront of public awareness. In the period from 1830 to 1833, when Richard Oastler's declamations on factory slavery initiated a new phase of debate on legislative

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[1]John Roberton, General Remarks on the Health of English Manufacturers (London: James Ridgway, 1831), pp. 13-14.

[2]P.P. 1831-2 (706) XV, 589.

reform that came to a head and then dissipated with the passage of Althorp's Factory Act, the links between factory production and worker health again became a matter of widespread concern. Through mass meetings, legislative enquiries, newspaper reports, tracts and treatises, the attention of the public was redirected to the condition of the industrious classes and the effects of the factory system.

The events of these years, from Oastler's conversion to the short-time cause to the collapse of the factory movement in the wake of the 1833 Act, have been amply documented. The salient points include a swell of popular agitation in Yorkshire and Lancashire; the introduction of a ten hours bill by Michael Thomas Sadler and its referral to a Select Committee in 1832; a number of huge open-air rallies, culminating in the Easter meeting at York, at which twelve thousand operatives showed their support for the bill; the defeat of Sadler in the 1832 general election; the appointment of the Factories Inquiry Commission in 1833; the introduction of a new bill by Lord Althorp that permitted two sets of children to be employed for eight hours each (and thereby allowed adults to be employed for sixteen hours a day); further demonstrations, including an immense gathering on Wibsey Low Moor attended by one hundred to one hundred and fifty thousand people; and finally the passage of the bill, which left no one satisfied, in August, 1833.[3] If the popular struggles and legislative contests have

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[3][Samuel Kydd], The History of the Factory Movement (London: Simpkin, Marshall, & Co., 1857), vol. 1, pp. 88-348, vol. 2, pp. 1-66; B.L. Hutchins and A. Harrison, A History of Factory Legislation, 3rd ed. (1926; rpt. New York: Augustus M. Kelley, 1966), pp. 43-57; Cecil Driver, Tory Radical: The Life of Richard Oastler (New York: Oxford University Press, 1946), pp. 36-268; J.T. Ward, The Factory Movement 1830-1855 (London: Macmillan & Co. Ltd., 1962), pp. 32-120.

attracted considerable attention, so, too, have the ideological disputes of the period. Historians have given detailed consideration to what has been variously termed "the condition of the working-classes controversy," "the machinery question," and "the factory question."[4] While it might seem that the terrain of the early 1830s has been well-traversed, there is one area that has not been sufficiently explored, namely, medical discussion of the health of the manufacturing population.[5]

Although it has been recognized that medical men were active participants in the agitation and debate of the time and that the condition of the urban-industrial poor was a key issue in the contemporary evaluation of machine industry, little heed has been given to professional understanding of worker ill-health. The perceptions and characterizations of worker sickness articulated by medical men had a negligible impact on legislative activity. The 1833 Factory Act was largely the creation of the leading

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[4]Paul Henry Elovitz, "'Airy and Salubrious Factories' or 'Dark Satanic Mills?': Some Early Reactions to the Impact of the Industrial Revolution on the Condition of the English Working Classes" (Ph.D. Diss., Rutgers University, 1969), pp. 36-124; Maxine Berg, The Machinery Question and the Making of Political Economy 1815-1848 (Cambridge: Cambridge University Press, 1980), pp. 253-314; W.G. Carson, "Symbolic and Instrumental Dimensions of Early Factory Legislation: A Case Study in the Social Origins of Criminal Law," in R. Hood (ed), Crime, Criminology and Public Policy (London: Heinemann, 1974), pp. 107-138; Robert Gray, "The Languages of Factory Reform in Britain, *c.* 1830-1860," in Patrick Joyce (ed), The Historical Meanings of Work (Cambridge: Cambridge University Press, 1987), pp. 143-179.

[5]Though John V. Pickstone, "Ferriar's Fever to Kay's Cholera: Disease and Social Structure in Cottonopolis," History of Science 12 (1984), pp. 401-419, makes a valuable foray into the subject, his analysis centres on the discussion of cholera and does not extend to views of factory-related sickness. Robert Gray, "Medical Men, Industrial Labour and the State in Britain, 1830-50," Social History 16 (1991), pp. 19-43, examines medical contributions to the controversy surrounding factory reform, but does not probe medical conceptualization of worker sickness.

member of the Factory Commission's Central Board, Edwin Chadwick, who ignored the opinions not only of provincial and metropolitan spokesmen, but also of the medical commissioners appointed to gather information on behalf of the Board.[6] The conceptualization of factory ill-health that emerged in the early 1830s exerted greatest influence not in the regulation of industrial labour, but in the formation of attitudes and practices among a newly-developing middle class.[7]

The approach to worker sickness adopted by medical men in the 1830s was not entirely novel; in its emphasis on the weakness and chronic ailments experienced by mill workers it bore traces of earlier concerns. But if there are links between the latest stage of medical understanding and that arrived at previously, it is the discontinuities which are more striking. In the industrial and intellectual climate of the early 1830s, the problem of factory ill-health came to be conceived in a significantly different way.

As in the past, the condition of the children, women and men employed in the nation's textile mills was discussed most extensively by members of the local medical community.[8] Physicians and surgeons not only from the cotton towns of Lancashire, but also from the woollen and flax centres of Yorkshire, expressed interest in the state

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[6]S.E. Finer, The Life and Times of Sir Edwin Chadwick (London: Methuen & Co. Ltd., 1952), pp. 50-68; M.W. Flinn, "Introduction," to Edwin Chadwick, Report on the Sanitary Condition of the Labouring Population of Great Britain (1842; rpt. Edinburgh: Edinburgh University Press, 1965), pp. 36-37; Driver, p. 227. See, for example, P.P. 1833 (519) XXI, 5-6.

[7]My findings support those of Gray, "Medical Men."

[8]This chapter concentrates on the arguments of provincial medical men who expounded their views through published writings and in some cases parliamentary testimony and platform rhetoric. It gives less attention to evidence submitted by metropolitan practitioners to the Select Committee of 1832.

of the manufacturing population and actively sought to make their opinions known. Less reticent than their counterparts a generation earlier, they were also less divided. Though differing on the issue of legislative restriction, they shared a remarkably similar understanding of the nature and causes of industrial suffering.

While retaining an interest in debility and the overall state of depletion that had preoccupied medical observers in the 1810s, spokesmen in the early 1830s gave greater consideration to specific, local manifestations of ill-health. They were especially concerned with digestive ailments and maintained that these, along with the nervous disorders to which they were allied, constituted the fundamental affliction of the factory population. By focussing attention on digestive dysfunction, however, they opened the way for a major reorientation of thought regarding the factory system, for while debility had been linked to such factors of work as temperature and exertion, affections of the stomach and bowels were overwhelmingly attributed to the diet and domestic habits of workers themselves. By recasting the problem of factory ill-health as a problem of digestive disease, medical authorities provided an opportunity for the responsibility for industrial sickness to be shifted from the place of work to the place of residence, and from the conditions of machine labour to the character of machine labourers.

A similar opportunity was afforded in the discussion of premature sexual development, another instance of dysfunction that was alleged to take place particularly in the female sector of the workforce. Medical theorists had long maintained that exposure to heat hastened the arrival of puberty in women, but as increasing numbers

of adolescent women entered the mills, the matter was scrutinized anew. Despite evidence to the contrary, medical men in the early 1830s held to the view that, in the overheated atmosphere of textile factories, female workers matured at an unusually early age. It was not only the arrival of the menses that was at issue, however; immodest behaviour and sexual proclivity also were a source of concern. In expounding on the precocity of factory women, doctors came to emphasize the determining influence of customs and habits, with the result that the effect of factory conditions was again obscured.

A third health problem, which attracted a certain amount of interest in the medical community, was lung disease. Though in 1831, two prominent investigators, Charles Turner Thackrah and James Phillips Kay, published accounts of dust-induced pulmonary disorders, medical commentators did not dwell on the hazards of factory dust or elaborate on the findings of Thackrah and Kay. Kay himself expressed no further interest in the matter, while Thackrah and other spokesmen downplayed the seriousness of the disorders, and their connection to the factory atmosphere, by emphasizing the primacy of digestive disease and by again directing attention to the powerful effects of customs and habits. Even in an area, then, where the links between occupational conditions and illness had traditionally been recognized, the pernicious influence of the factory was overshadowed by considerations of individual responsibility.

In the early 1830s, medical men took a wide-ranging approach to the problem of factory ill-health. More like observers in the 1780s and 1790s than the 1810s, they

concerned themselves with the physical, moral, and intellectual consequences not merely of machine work, but of the vast and complex "manufacturing system." Though their accounts began by inquiring into the circumstances of labour, they tended to linger on the domestic situation and predilections of workers themselves, so that, ultimately, the factory and its connection with human suffering were lost from view. If the textile mill was portrayed as a house in the late eighteenth century and a place of work at the beginning of the nineteenth century, by the early 1830s it was conceptualized "out of existence."[9]

As doctors grappled with the issue of industrial sickness, their views not only of the factory, but also of factory labourers, changed. By the 1830s, the process of differentiation, whose beginnings were evident a decade and a half earlier, had advanced significantly and the gap between the working and middle classes was perceived in new ways. For the latest generation of medical inquirers, the growing numbers of manufacturing poor were morally, as well as physically, distinct, and were even establishing themselves as a separate race. Fears about increasing social distance and about the explosive potential of a vast and unconnected segment of the social body led to renewed calls for attention and intervention from above, though, as the following chapter will argue, such pleas went largely unheeded.

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[9]Karl Figlio, "Chlorosis and Chronic Disease in Nineteenth-Century Britain: The Social Constitution of Somatic Illness in a Capitalist Society," Social History 3 (1978), p. 184. Figlio's phrase pertains to the nineteenth-century understanding of chlorosis, but is relevant in this context, as well.

I

The resurgence of interest in factory health that characterized the early 1830s took place in an era of continued industrial expansion. For the cotton industry, the 1820s and 1830s were decades of unparalleled growth, with imports of raw cotton increasing at a rate of over five per cent per year.[10] They were also a period of technical advance, with innovations occurring in both the spinning and weaving sectors. Of particular importance were the lengthening of the common spinning mule, the introduction of the self-acting mule, and the adoption of the dressing-frame and power-loom.[11] By 1833, there were an estimated one hundred thousand power-looms in use in Great Britain, along with some ten million spindles.[12] The new technology prompted a visible increase not only in the number of cotton mills (which approximated 1,125 in 1833), but also in their scale.[13] In 1835, Edward Baines noted that during the preceding two or three years "many spinners [had] added power-loom factories to their spinning mills."[14] In the same year, Andrew Ure provided a detailed description of a cotton mill "recently erected at Stockport," which in its internal arrangements for

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[10]Phyllis Deane and W.A. Cole, British Economic Growth (Cambridge: Cambridge University Press, 1962), p. 192.

[11]Edward Baines, History of the Cotton Manufacture in Great Britain (London: H. Fisher, R. Fisher, and P. Jackson, 1835), pp. 235-240; William Lazonick, "Industrial Relations and Technical Change: The Case of the Self-Acting Mule," Cambridge Journal of Economics 3 (1979), pp. 231-262.

[12]Baines, p. 237; Deane and Cole, p. 191.

[13]P.P. 1831-2 (706), XV, 432-433; S.D. Chapman, The Cotton Industry in the Industrial Revolution (London: The Macmillan Press, 1972), pp. 26-27, 70.

[14]Baines, p. 236.

preparing, spinning, and weaving exhibited "an instructive specimen of the *philosophy of manufactures*."[15] Seven stories high, with the main body extending three hundred feet and two additional wings projecting fifty-eight feet, the structure offered imposing evidence of the technical changes that had occurred since the time of Arkwright.

By the early 1830s, factories prevailed not only in the cotton towns centred on Manchester, but also in the textile towns of the West Riding of Yorkshire. As Yorkshire's own cotton industry developed, and as the spinning and preparing machines originally designed for cotton were adapted first to the manufacture of linen and worsteds, and then to the production of woollens, the factory system became entrenched on both sides of the Pennines.[16] The mechanization of the older textile trades not only contributed to a growth in the size of the factory population (which by 1835 numbered 338,000), it also enlarged the arena in which the impact of the new machinery was felt and disputed.[17] Though controversy concerning the effects of the factory system had been concentrated in Lancashire, and especially Manchester, since the 1780s, it came to have a new epicentre in the West Riding, particularly in such manufacturing towns as

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[15]Andrew Ure, The Philosophy of Manufactures (1835; rpt. London: Frank Cass & Co. Ltd., 1967), pp. 109-112.

[16]Peter Mathias, The First Industrial Nation: An Economic History of Britain 1700-1914 (London: Methuen & Co. Ltd., 1969), p. 129; D.T. Jenkins, "Early Factory Development in the West Riding of Yorkshire, 1770-1800," in N.B. Harte and K.G. Ponting (eds), Textile History and Economic History (Manchester: Manchester University Press, 1973), pp. 247-280.

[17]B. Mitchell and P. Deane, Abstract of British Historical Statistics (Cambridge: Cambridge University Press, 1962), pp. 188, 199, 204, 211. Of the total number of operatives in 1835, 219,000 were employed in cotton factories, 55,000 in wool factories, 33,000 in flax factories, and 31,000 in silk factories.

Huddersfield, Bradford, and Leeds.

The technological developments of the 1820s and 1830s had significant repercussions on the lives of operatives. Not only were many more people brought within the purview of the mill, in many instances, their existence was made more precarious. In the cotton industry, the mechanical innovations, along with the deepening crisis that accompanied the growth of the industry, pressed particularly severely on the adult male portion of the workforce.[18] For mule spinners, a group that had heretofore enjoyed relatively high earnings and a semi-independent status, the lengthening of the common mule resulted in unemployment, a decline in piece-rates, and the intensification of labour, while the introduction of the self-acting mule threatened to oust the spinners from the mills altogether and to replace their labour with that of women.[19] While the pressures were perhaps most evident in the case of the mule spinners, they extended to other ranks of workers as well. As William Longston, a Stockport operative, explained to the 1832 Select Committee on Factory Labour, "all physical exertion and attention" had been increased by the improvements effected in mill machinery.[20]

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[18]William Lazonick, "Conflict and Control in the Industrial Revolution: Social Relations in the British Cotton Factory," in Robert Weible, Oliver Ford, and Paul Marion (eds), Essays from the Lowell Conference on Industrial History 1980 and 1981 (Lowell, Mass.: 1981), pp. 14-32; John Foster, Class Struggle and the Industrial Revolution (London: Methuen & Co. Ltd., 1974), pp. 80-84.

[19]Though ultimately, as Lazonick, "Conflict," p. 23, argues, tending of the self-actor remained the preserve of men, in the early years of the machine's use, a number of women were employed as minders and even became involved in minders' unions.

[20]P.P. 1831-2 (706) XV, 430-434.

If the technical advances of the period seemed to spell the demise of the adult male spinners, they also contributed to growth in the female segment of the factory workforce. With the multiplication of power-looms, which were typically operated by "girls and young women, from sixteen to twenty-two or twenty-three years of age," there was a massive influx of female workers into the mills.[21] Girls and women became prominent not only in weaving, but also in other parts of the manufacturing process. In 1828, a Scottish doctor, Charles Ritchie, revealed that under the new system of in-door bleaching, "the services of women are found to be infinitely more efficient than those of men" and that in the cotton mills in his parish, proprietors were "resorting to female, in preference to male spinners."[22] In 1838, the Mancunian activist, John Doherty, observed that "stretching, which was formerly performed by men, is now almost entirely done by women; card-rooms also are more occupied by women," and piecing, especially, had become a female occupation.[23] The rise in the relative numbers of female workers was not restricted to the cotton industry. According to the 1832 Select Committee, "the same effect is taking place in silk mills as in others, that the labour of women supplants the labour of men."[24] In 1836, the

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[21]P. Gaskell, Artisans and Machinery (1836; rpt. New York: Augustus M. Kelley, 1968), p. 143. See also P.P. 1831-2 (706) XV, 433. According to Baines, pp. 235-237, in the period from 1820 to 1833, the number of power-looms employed in Britain increased more than seven times, from 14,000 to 100,000.

[22]Charles Ritchie, "Remarks on the Medical Topography of the Parish of Neilston," Glasgow Medical Journal 1 (1828), p. 293.

[23]P.P. 1837-8 (646) VIII, 259.

[24]P.P. 1831-2 (706) XV, 536.

Stockport surgeon, Peter Gaskell, noted that "nearly the whole of the hands employed in the silk factories are females, as well as in the Scotch flax, cotton, and woollen mills."[25] Although women and children had always constituted the majority of the industrial workforce, in the 1820s and 1830s the proportion of females employed in the nation's mills increased significantly.[26]

II

In the early 1830s, medical men in Britain's northern manufacturing regions again pursued the problem of factory ill-health. Through pamphlets and treatises, parliamentary testimony and public addresses, doctors from the cotton manufacturing centres of Lancashire as well as the more recently-industrialized textile towns of Yorkshire inquired into the state of the industrious classes and sought to disentangle the still-contentious links between factory production and human suffering. The discourse that ensued, however, was substantially different from that which had arisen earlier. Though only a decade and a half had elapsed since the matter had last been broached, discussion of factory ill-health in the early 1830s displayed evidence of new concerns and was characterized by a new alignment of opinion.

Unlike medical men of the previous generation, whose attention had been

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[25]Gaskell, p. 143.

[26]While the overall proportion of female operatives rose in the period, the ratio of female to male workers varied according to region and industry. As the actuary, James Mitchell, reported in P.P. 1834 (167) XIX, 37-38, in the Lancashire cotton mills, the ratio of females to males was 102 to 100; in the Leeds flax mills, it was 147 to 100; in the Scottish cotton mills, 160 to 100; and in the Scottish flax mills, 280 to 100. According to Mitchell, the bulk of female workers, particularly in the cotton industry, were aged between sixteen and twenty-one years.

restricted to the controversial connection between the physical afflictions of machine labourers and particular attributes of the labour process, spokesmen in the early 1830s conceived of the problem in its broadest possible terms. They focussed not just on the physical state of operatives, but on the physical, moral and mental condition of the entire manufacturing population, and attempted to understand this not just in relation to the specific realities of labour, but in conjunction with the industrial, social, and domestic changes that had been wrought by the growth of the manufacturing system. Reminiscent of late eighteenth-century investigations of fever, their inquiries extended from disease to licentiousness, and from the character of machine workers to the "social constitution" of manufacturing towns.[27]

Alarmed by what they perceived as the physical and moral degradation of a large and valuable portion of the social body, medical spokesmen in the early 1830s felt compelled to explicate the sources of the degradation, in order that appropriate remedies might be devised and instituted. The central issue, to their minds, was how the condition of the manufacturing poor was to be reconciled with the establishment and extension of an industrial system that was so awe-inspiring and so obviously productive of wealth and power. The task they set themselves was an accurate determination of the effects of such a system on physical and moral well-being. As the Leeds surgeon, Charles Turner Thackrah, explained in 1832:

If we look immediately at home, we observe the wonders which science

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[27]James Phillips Kay, The Moral and Physical Condition of the Working Classes Employed in the Cotton Manufacture in Manchester, 2nd ed. (1832; rpt. New York: Augustus M. Kelley, 1970), p. 112.

> and art have effected. We see large buildings, manufactures of almost every kind, and substances so changed, re-formed, and combined, that nature could scarcely know her own productions. We admire the inventions of science, alike in their minuteness and their size, their accuracy, and their extent of operation. We see wool converted into cloth, in establishments so numerous and extensive as almost to supply the civilized world: we see the slight blue-flowered product of the field formed into the thread which passes through the eye of the needle, and into the canvass which bears our ships to every region of the globe....These, and works like these, are assuredly wonderful. But while we admire, let us examine. What are the effects of these surprising works—effects, I mean physical and moral? I say nothing of the wealth they produce or have produced, for wealth is good or evil according to its application: I refer to the health of the millions who spend their lives in manufactories or live by trade, civic arts, and professions. I ask if these millions enjoy that vigour of the body which is ever a direct good, and without which all other advantages are comparatively worthless? I ask if they attain the age of agricultural labourers?...Assuredly an examination of our civic states and employments has long been demanded, alike by humanity and by science.[28]

While it is no doubt true, as one reviewer of Thackrah's work observed, that "the force of events"—most notably, Reform bill agitation, short-time protests, and the incursion of cholera—was instrumental in directing "the attention of all men to the condition of the working classes," the focus of that attention and the form that it assumed within the medical community were also influenced by intellectual developments, particularly within the newly-developing discipline of political economy.[29]

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[28]C. Turner Thackrah, The Effects of Arts, Trades, and Professions, and of Civic States and Habits of Living on Health and Longevity: with Suggestions for the Removal of many of the Agents which produce Disease, and Shorten and Duration of Life, 2nd ed., biographical intro. by A. Meiklejohn (1832; rpt. Edinburgh: E. & S. Livingstone Ltd., 1957), pp. 2-6, passim.

[29]Review of The Effects of Arts, Trades, and Professions, by C. Turner Thackrah, Medico-Chirurgical Review 18 (1833), p. 101.

Confronted by the seemingly pessimistic conclusions of Ricardo, as well as expressions of working-class hostility, political economists of the 1820s and 1830s were intent on defending the progressive nature of the industrial system.[30] In 1827, a year after the outbreak of anti-machinery riots in Lancashire, John Ramsay McCulloch provided a strongly optimistic assessment of the effects of industrial growth in "An Essay on the Rise, Progress, Present State, and Prospects, of the Cotton Manufacture."[31] In the essay, McCulloch traced the rapid progress of the cotton industry and acclaimed the tremendous increase in productivity that had been of benefit throughout the world and had been of particular value to Britain in her recent struggles with France. Responding to critics who lamented the destruction of a "golden age," McCulloch argued that "the Health, Morals, and Intelligence" of the manufacturing population had all improved with the growth of the factory system.[32] In support of his claim, he turned to the evidence of number and fact. He used mortality statistics to demonstrate the "increase in healthiness," and while acknowledging the difficulty of obtaining statistical information on morality, pointed to a decrease in violent crime and an increase in sobriety and cleanliness as evidence of a similar degree of improvement in morals.[33] As for the mental state of operatives, McCulloch adverted to the "*fact*,

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[30]Berg, 75-144; Gay Weber, "Degeneration and Progress in early C19th Social Theory," unpublished paper, pp. 2-5.

[31][John Ramsay McCulloch], An Essay on the Rise, Progress, Present State, and Prospects of the Cotton Manufacture (rpt. from the Edinburgh Review, no. 91, 1827); Elovitz, pp. 28-35.

[32][McCulloch], p. 32-33.

[33]Ibid., pp. 33-36.

that the intelligence of the workmen employed in manufactures" had increased in proportion to their increase in numbers and the division of their employments.[34]

McCulloch's arguments were in part a retort to "the diatribes of the Laureate," Robert Southey, who for some years had been advancing a pessimistic view of the effect of manufactures in the pages of the Quarterly Review.[35] In 1829, Southey launched a counterattack in his novel, Colloquies on the Progress and Prospects of Society.[36] In the work, he rebutted McCulloch's sanguine view of industrial growth, referring to the manufacturing system as "a wen, a fungous excrescence from the body politic," and arguing that it was "unprofitable to the mind" and that "the moral atmosphere wherein [factory workers] live and move and have their being, is as noxious to the soul, as the foul and tainted air which they inhale is to their bodily constitution."[37] The following year, the Colloquies themselves were subjected to the savage criticism of the historian and economic commentator, Thomas Babington Macaulay.[38]

The collision between political economy and poetry served as a springboard for some of the socio-medical writers who addressed themselves to the problem of factory

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[34]Ibid., p. 36.

[35]Ibid., p. 33; Elovitz, p. 32.

[36]Robert Southey, Sir Thomas More: or, Colloquies on the Progress and Prospects of Society (London: John Murray, 1829), vol. 1, pp. 148-199.

[37]Ibid., pp. 170- 171, 166.

[38][Thomas Babington Macaulay], "Southey's Colloquies on Society," Edinburgh Review 50 (January, 1830), pp. 528-565.

ill-health in the early 1830s. Provoked by what he regarded as the mishandling of mortality statistics by political authors, John Roberton, for instance, published his own views on the health of the factory population in 1831.[39] In the same year, William Rathbone Greg announced his intention to take up the question of the "effects of manufactures on the health and morals of those engaged in them," and to deal with it more fairly and objectively than either Southey or McCulloch had done.[40] More generally, the framing of the dispute in the late 1820s—particularly the importance attached to statistical evidence, the consideration given not only to the physical, but also to the mental and moral well-being of the factory population, and the connections drawn between the state of the industrial workforce and the condition of the larger social and economic order—set the stage for the discourse that developed the following decade.

If the discussion of factory ill-health that took place in the early 1830s was animated by a new set of concerns, it was also sustained by a new configuration of views. Medical men who expressed interest in the subject in the years from 1830 to

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[39]Roberton. The first portion of Roberton's pamphlet originally appeared in the Manchester Guardian (18 June 1831), as "Remarks on the Axiom of Political Economists, that a General Improvement in the Duration of Life, indicates a Corresponding Improvement in Public Health." In both the pamphlet and newspaper article, Roberton was particularly critical of the conclusions drawn by Nassau Senior in his Three Lectures on the Rate of Wages, 2nd ed., (1831; rpt. New York: Augustus M. Kelley, 1966), pp. 15-16.

[40][William Rathbone Greg], An Enquiry into the State of the Manufacturing Population, and the Causes and Cures of the Evils therein Existing (London: James Ridgway, 1831), p. 2.

1833 still differed on the question of legislative restriction.[41] Some spokesmen, such as Charles Turner Thackrah, actively supported the movement for factory reform. A general practitioner who had apprenticed in Leeds and attended Guy's Hospital in London, Thackrah was distinguished by his researches into the nature of blood, his role in the founding of the Leeds Medical School, and his publication of The Effects of the Principal Arts, Trades and Professions, a study of occupational health which referred particularly to the effects of the local flax industry.[42] Early in 1831, Thackrah sent Richard Oastler a copy of the treatise, which the short-time leader made use of in a letter to the Leeds Mercury, and the two men quickly became good friends.[43] According to Oastler, Thackrah "had sometimes felt so much interest in the matter as to stop his carriage and get out to ask how he (Mr. O.) was going on with the factory question."[44] The following year, Thackrah, along with Samuel Smith, who was Senior Surgeon at the Leeds Infirmary and a co-founder of the Medical School, expressed support for the ten hours bill at a public meeting in Leeds and later both men

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[41]For a wider examination of medical opinion on factory reform in the 1830s and 1840s, see Gray, "Medical Men," pp. 21-27.

[42]A. Meiklejohn, "The Life, Work and Times of Charles Turner Thackrah," biographical intro. to Thackrah; George Rosen, "Charles Turner Thackrah in the Agitation for Factory Reform," British Journal of Industrial Medicine 10 (1953), pp. 285-287; C. Turner Thackrah, The Effects of the Principal Arts, Trades, and Professions, of Civic States and Habits of Living, on Health and Longevity: with a particular Reference to the Trades and Manufactures of Leeds (Leeds: J. Baines & Co., 1831). This was the first edition of the work cited in note 28. Except where indicated, I will refer to the second edition.

[43]Richard Oastler, Exposition of the Factory System: Mr. Oastler versus the Leeds Mercury (Leeds: 1831), p. 2; Driver, pp. 73-74.

[44]Oastler, p. 2.

gave evidence before Sadler's Select Committee.[45] Support for factory reform was not restricted to Yorkshire practitioners. Manchester's John Roberton also championed the cause. An Edinburgh graduate, who had intended to become a ship's surgeon but ended up practicing among the female poor as a surgeon to Manchester's Lying-In Charity, Roberton devoted considerable time to the campaign to shorten factory hours.[46]

Not all those who took up the problem of factory ill-health in the early 1830s were convinced of the necessity of regulating mill work, however. In the latest phase of discussion, a new group of spokesmen, who espoused the values of liberal Dissent and who combined "a defence of the factory system...with a sharp dissociation from any panglossian optimism" came to prominence.[47] While accepting the political economists' claim as to the inherent progressiveness of industrial development, the new commentators also expressed profound concern with the misery and suffering that prevailed in the industrial workforce. They sought to alleviate such distress through social investigation, founding the Manchester Statistical Society for the purpose in

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[45]The Justice, Humanity, and Policy, of Restricting the Hours of Children and Young Persons in the Mills and Factories of the United Kingdom (Leeds: 1833), pp. 54-55; P.P. 1831-2 (706) XV, 496-517.

[46]Frederic Boase, Modern English Biography (Truro: 1901), vol. 3, p. 191; [J. Roberton], "Obituary Notice," British Medical Journal 2 (1876), p. 385, quoted in J.M. Tanner, A History of the Study of Human Growth (Cambridge: Cambridge University Press, 1981), p. 287.

[47]Gray, "Medical Men," p. 22. See also Gray, "Languages," pp. 160-162; Elovitz, pp. 37-76; Weber, pp. 5-7; Berg, pp. 294-314.

1833.[48] The Society, whose members consisted of a closely-linked circle of bankers, industrialists, and professional men, aimed to promote "the progress of social improvement in the manufacturing population by which they [were] surrounded."[49] It attempted to do so not so much by enumerating and quantifying, as by conducting surveys of various aspects of working-class life, such as crime, education, religion, and housing.[50] Its key purpose was to make the poor known to their social betters and so assist in the project of reform.[51]

One of the most notable figures in the group was the Manchester physician, James Phillips Kay.[52] The son of a Unitarian cotton manufacturer, Kay was educated at Edinburgh University where he gained considerable experience working with the poor. In 1827 he settled in Manchester, and though denied a position at the Infirmary, was elected Senior Physician to the Ardwick and Ancoats Dispensary which served a predominantly working-class district. In 1831, in the face of a threatened outbreak of

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[48]T.S. Ashton, Economic and Social Investigations in Manchester, 1833-1933 (Brighton: The Harvester Press, 1977); M.J. Cullen, The Statistical Movement in Early Victorian Britain (New York: Barnes and Noble, 1975).

[49]Manchester Statistical Society, "First Annual Report," quoted in Ashton, p. 13.

[50]Though, as Ian Hacking, The Taming of Chance (Cambridge: Cambridge University Press, 1990), reveals, the early nineteenth century saw a swell of interest in the amassing of numerical information, the early output of the Manchester Statistical Society was more qualitative than quantitative. The Society was the first of its type to come into existence in Britain and was established at a time when, as Cullen, p. 112, suggests, the definition of statistics was looser than at present.

[51]Kay, pp. 18-19; Berg, p. 304.

[52]Frank Smith, The Life and Work of Sir James Kay-Shuttleworth (London: John Murray, 1923), pp. 1-34.

cholera, Kay was appointed secretary to the Board of Health and as a result of investigations undertaken on behalf of the Board published his well-known account, The Moral and Physical Condition of the Working Classes Employed in the Cotton Manufacture in Manchester.[53] In the pamphlet (which is credited with directing the early efforts of Manchester's Statistical Society), Kay adverted to the demoralizing effects of "prolonged and exhausting labour" but maintained that "in the present state of trade," factory hours could not be reduced without serious commercial consequences.[54]

A similar view was expressed by a friend of Kay's, William Rathbone Greg. Also a member of a Unitarian cotton manufacturing family and a former student at Edinburgh, Greg managed a mill at Bury for his father, Samuel Greg. His interests, however, ran more to literature than business. In 1831, he wrote an anonymous tract, An Enquiry into the State of the Manufacturing Population, which drew on the researches of Kay, as well as the Bury practitioner and ten hours supporter, Matthew Fletcher.[55] Like Kay, Greg underscored the perniciousness of "severe and unremitting labour."[56] He stopped short, however, of expressing unqualified support for legislative restriction of factory hours by considering the measure in the context of the "shackles and drawbacks to which the Cotton Manufacture is subjected" and by

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[53]Kay. Two editions of the work appeared in 1832. I will refer to the second edition.

[54]Ibid., pp. 22, 15; Ashton, p. 6.

[55][Greg]; Elovitz, pp. 62-64.

[56][Greg], pp. 12-13.

proposing that it not be introduced unless it was linked with the removal of manufacturing taxes and duties.[57]

A third member of the Dissenting liberal network, Peter Gaskell, also backed away from the ten hours proposal.[58] A Stockport surgeon, who like his associates had attended Edinburgh University, Gaskell published a treatise on the condition of The Manufacturing Population of England in 1833.[59] In the work, he referred to the lengthy and sustained exertion of factory operatives but refrained from advocating the regulation of factory hours, arguing that the nonobservance of laws against the truck system (the payment of workers in goods rather than cash) "sufficiently proved" the difficulty of interference between masters and workmen.[60]

Although the spokesmen who contributed to the discussion of factory ill-health in the early 1830s reached different conclusions concerning the imposition of constraints on factory operation, their divergence was not as great as that of the preceding generation of commentators. The views of liberal reformers such as Kay and Greg were sufficiently ambivalent that their writings were actually used by Oastler and other

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[57]Ibid., pp. 29-30.

[58]The main source of information on Gaskell, about whom not a great deal is known, is W.O. Henderson and W.H. Chaloner, "Introduction," in F. Engels, The Condition of the Working Class in England (Stanford: Stanford University Press, 1958), pp. xiii-xiv, note 3. See also, however, Weber, p. 5; Elovitz, p. 41; Gray, "Medical Men," p. 40, note 100.

[59]P. Gaskell, The Manufacturing Population of England, its Moral, Social, and Physical Conditions, and the Changes which have arisen from the Use of Steam Machinery; with an Examination of Infant Labour (London: Baldwin and Cradock, 1833). A revised version appeared in 1836 as Artisans and Machinery.

[60]Gaskell, Manufacturing, pp. 23, 342.

short-time promoters to further the ten hours cause.[61] The differences of opinion that distinguished the latest group of proponents were largely differences of emphasis and were overridden by a common body of attitudes and ideas to which both supporters and opponents of legislative restriction subscribed.

Unlike their counterparts in the 1810s, medical investigators in the early 1830s took the initiative in examining and directing public attention to the relationship between manufactures and well-being. They shared an enthusiasm for the matter, believing it to be a new one that had received little previous consideration. As William Greg observed:

> ...it is wonderful how little curiosity has been excited respecting the moral and physical condition of... our fellow countrymen, and how lamentable and pernicious an ignorance prevails on these subjects in almost every part of the kingdom. The effects of manufactures on the health and morals of those engaged in them, are scarcely known or thought of, even amongst those who live in the very heart of the districts where they abound...[62]

Medical men agreed not only on the novelty of the subject, but also on its

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[61][Henry Ashworth], Letter to the Right Hon. Lord Ashley, on the Cotton Factory Question (Manchester: H. Smith, 1833); Gray, "Languages," p. 161.

[62][Greg], p. 2. In later years, Greg became considerably more conservative. In response to queries by the factory commissioners in 1833, he advised against further limitation of factory hours and in an analysis of the Commission evidence prepared for the Manchester Statistical Society the following year, he declared that "the principal charges alleged against the factory system" had been "most triumphantly refuted." See P.P. 1834 (167) XX, D.1., 146-147; Analysis of the Evidence taken before the Factory Commissioners (Manchester: Bancks and Company, 1834), p. 31. As Elovitz, pp. 64-65 reveals, by the 1840s Greg had become a leading spokesman for the manufacturing interest and in the 1850s, as head of the National Association of Factory Occupiers (characterized by Charles Dickens as the "National Association for the Protection of the Right to Mangle Operatives"), he was a leading opponent of legislative restriction.

importance. Various writers drew attention to the vast numbers of persons engaged in industrial production and to the threat that their condition presented to the stability of the social order. Peter Gaskell, for instance, described the state of factory labourers as a "slumbering volcano, which may at any time shatter the whole fabric to atoms, and involve in one common ruin, themselves, the master, and the manufacture."[63] Despite the perilousness of the situation, medical observers were confident of their abilities to offer an accurate assessment and to devise appropriate solutions. They regarded the manufacturing system as still in its infancy—in the words of John Roberton, it was "an experiment, the results of which are not yet determined"—and they maintained that much might be done to alleviate the physical, moral, and social ills that had grown up alongside it.[64]

In the early 1830s, medical spokesmen cohered not just in their concern and self-assurance, but also in their understanding of substantive issues. As succeeding sections of the chapter will reveal, they held similar views on the forms that ill-health had come to assume in the manufacturing community and the agencies that were responsible for the prevalence of "suffering and corruption." They participated in a shared discourse, often employing the same terminology and frequently referring to one another's theories and findings. In 1836, Peter Gaskell commented on the conformity of his ideas with those of other inquirers, maintaining that the validity of his statements was "amply corroborated by the evidence of every resident observer, who has been

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[63]Gaskell, Manufacturing, p. 11.

[64]Roberton, p. 24; [Greg], pp. 2-3; Thackrah, pp. 7-8; Kay, pp. 14-16.

placed under circumstances to make his evidence valuable," and that he, "Dr. Kay," "Mr. Roberton," and other investigators "one and all speak the same language."[65] If the opinions of medical observers converged, however, they increasingly diverged from the conceptions of workers themselves. In the latest stage of consideration of the problem of factory ill-health, professional and lay understanding differed significantly.

III

In the 1820s and 1830s, mill workers resumed the struggle for effective factory legislation. They launched massive campaigns in support of a ten hours bill and continued to voice their sentiments through the drafting of petitions, the submission of parliamentary evidence, and the printing and distribution of thousands of broadsides, tracts, and pamphlets.[66] Though they entered into the discourse on physical and moral well-being, the language they employed was their own.[67] In contrast to the tension and ambiguity that sometimes characterized medical accounts, the speech of workers was direct and forthright. As Stephen Binns, an overlooker from Leeds, commented to

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[65]Gaskell, Artisans, pp. ix-x. It was not only the most outspoken of local observers who shared the same views. Commenting on his survey of medical opinion in Lancashire, Cheshire, and Derbyshire, the factory commissioner, Dr. Hawkins, P.P. 1833 (519) XXI, D.3., 4, noted that although there was "some conflict of opinion" on the peculiar diseases of the factory workforce, "on all sides it is admitted that indigestion, hypochondriasis, and languor affect this class of the population very widely."

[66]R.G. Kirby and A.E. Musson, The Voice of the People: John Doherty, 1789-1854 (Manchester: Manchester University Press, 1975), pp. 349-364; Driver, pp. 81-163; Ward, pp. 40-55.

[67]For a more extensive examination of the language of factory workers in the 1830s, see Gray, "Languages," pp. 148-156.

Sadler's Select Committee:

> ...the labouring classes are straightforward people; they are not political economists; they are determined to support the Ten Hours' Bill upon the score of humanity; they consider that it is sufficient for children to labour ten hours a day, and object to any more. That is the language of all those whom I have conversed with on the subject.[68]

The voice of operatives was also vivid and concrete. In their detailed rendering of personal histories, witnesses to the Select Committee brought general claims about ill-health to the level of the individual sufferer and endowed them with a quality of indelibility and authenticity. On June 2, for instance, Binns recounted to Committee members how work in the carding room of Marshall's flax mills had affected his health:

> I was so poorly that I thought I was going to die; it was upon my lungs; I was three weeks so ill, that I thought I should have to give it up every day, but it left such a weakness upon my lungs that I feel it now when I catch cold; but I believe that if I had stopped there I should not have lived many years...[69]

One of Binns' children had also been employed at the Marshall factory and had died from the effects of the dust. The health of another child was at risk, as well. Binns related his wife's conviction that they could not continue to send the boy "to the same place any longer, if we do, he will soon be dead."[70]

As in the past, factory workers commented on a wide variety of factory-related ailments. They lamented the fatigue, weakness, lack of appetite, "delicacy,"

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[68]P.P. 1831-2 (706) XV, 186.

[69]Ibid., 178.

[70]Ibid., 177, 186.

deformity, "exquisite pain," coughs, colds, "asthma," eye affections, shortness of stature, and premature death that afflicted themselves and their companions and argued that these were directly attributable to the conditions of factory labour. They pointed, in particular, to the long hours of confinement, the temperature of the factory rooms, the dust that filled the air, the harsh light of the gas, the continuous standing, the excessive exertion, and the repetitive motions demanded by the machinery as sources of suffering and death.[71] In the view of Daniel Kenworthy, a thirty-eight year old cotton operative who had been troubled with asthma for many years, labour in cotton mills was "a very smothering, unhealthy job altogether."[72] His perception of the perniciousness of factory labour was shared by that of a seventeen-year old worsted worker, Eliza Marshall, who had become so lame that she had been unable to walk home at the end of a day's employment and finally had to give up factory work altogether. In her opinion, "working the late hours, and standing all the day, and stopping the spindle with my knee, it would ruin the strongest girl in England."[73]

Though such views had once been endorsed by at least a portion of the medical community, they were now received with considerable scepticism. Doctors in the 1830s expressed reservations about the capability of workers to discern their situation and portrayed themselves as more knowledgeable and perceptive observers. Peter Gaskell, for instance, remarked that operatives "cannot be supposed to judge fairly of

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[71]Ibid., 5-479, passim; P.P. 1833 (519) XXI, passim.

[72]P.P. 1831-2 (706) XV, 81.

[73]Ibid., 153.

their condition," while Charles Thackrah asserted that although mill workers might describe their health in a certain way, "*the medical eye*" was able to make a more accurate determination.[74] Spokesmen such as Gaskell and Thackrah not only criticized lay accounts of factory sickness, they also offered an alternative understanding of the nature and causes of industrial ill-health.

IV

While the views that medical men expressed in the early 1830s were substantially new, they echoed some of the concerns and ideas of the past. The concept of debility, in particular, continued to figure in medical commentary. The Leeds surgeon, Samuel Smith, testified in 1832 that factory workers typically endured:

> ...extreme debility and lassitude, so that although the body is not reduced to a state of actual disease, and although there may not be any decided organic change in any principal viscera of the body, yet still it is in a very different state from that of health. I do not know that I can give a more proper illustration of the state that the body is then reduced to, than by describing it as a jockey would, that of being "out of condition;" although when the body is reduced to that state, there is no actual disease present, yet there is a continual tendency to disease. There is a diminished power in the body of resisting the attack of disease, and when disease does invade the body, it is always, under such circumstances, attended with greater facility.[75]

References to a debilitated state occurred most often in refutation of the argument that the improvement in mortality that had accompanied the growth of manufactures indicated an improvement in public health. James Kay, for instance,

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[74]Gaskell, Artisans, p. ix; Justice, p. 55. See also P.P. 1834 (167) XIX, D.3., 214.

[75]P.P. 1831-2 (706) XV, 498.

insisted that:

> ...from the mortality of towns...their comparative health cannot be invariably deduced. There is a state of physical depression which does not terminate in fatal organic changes, which, however, converts existence into a prolonged disease, and is not only compatible with life, but is proverbially protracted to an advanced senility.[76]

Charles Thackrah similarly maintained that mill workers frequently suffered from "impaired health," and "lingering ailments," and that "no reflecting man":

> ...asserts that mills in general, directly and rapidly destroy life. It is the injury to health we deplore, the diminution of vital power, and the induction of physical states which ultimately lead directly or indirectly to fatal disease.[77]

Although the concept of debility was still useful in the early 1830s, it came to be employed in new ways. Whereas in the past it had referred to a state of physical weakness, it now came to have moral significance as well. Medical observers drew attention not only to the "physical depression" of mill operatives, but to their lack of "moral elasticity" and their "torpid mind," asserting that such qualities encouraged the use of stimulants and led to "habits of irregularity and intemperance."[78] Arguments about bad habits ran in both directions: not only were they seen to result from debility, they were also regarded as a source of debility and as the critical factor by which debility degenerated into actual disease.[79]

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[76]Kay, p. 73.

[77]Thackrah, pp. 203-206. See also P.P. 1831-2 (706) XV, 513.

[78][Greg], p. 30; Roberton, p. 24; review of The Effects of Arts, Trades, and Professions, by C. Turner Thackrah, London Medical and Surgical Journal 68 (1832), p. 233.

[79]Ibid.; Gaskell, Manufacturing, pp. 245-246.

While the notion of debility took on new connotations, it also lost importance as medical attention increasingly shifted to specific, local forms of ill-health suffered by factory workers. Chief among these were digestive disorders. Digestive impairment had long been associated with debility, and had been regarded as one of the means by which debility gave way to chronic afflictions. In the early 1830s, however, digestive disease itself came to be viewed as the foremost health problem of the industrial poor.

A detailed account of the digestive ailments of cotton workers in the Ardwick and Ancoats district of Manchester was contained in a report by its resident physician, James Kay, who stated:

> No diseases present themselves more frequently in the practice of this district, than those accompanied by a morbid sensibility of the stomach and intestinal canal....Before the patients present themselves at the Dispensary, the preliminary symptoms have generally disappeared, and the disease has assumed a decided form. The features express either a gloomy hypochondriacism, or a morbid restless irritability. The tongue is generally deeply furred in the centre, and especially towards the root, and red at the tip and edges. The mouth is filled with a clammy mucus—emits a disagreeable odour—and the breath is hot, and loaded with vapour. The patient complains of headach [sic], clouded vision, giddiness, a sense of want and feebleness, sometimes approaching to syncope. The bowels are generally, though not always, constipated....The patient complains of pain in the region of the stomach, generally described as a constant gnawing sensation, increased by pressure. The occurrence of a violent paroxysm is often accompanied by a collapse of the features, clammy perspiration, a small and feeble pulse, and retraction of the abdominal muscles....The appetite is generally destroyed; food excites nausea or vomiting....The bowels are torpid, and the character of the secretions poured into the intestinal canal is often much impaired. The evacuations become of a dark-green colour, or even of an inky blackness, and are extremely fetid....Whilst this state continues, the patients lose flesh; the features are sharpened; the skin becomes pale, leaden colored, or of the yellow hue which is observed in those who have suffered from the influence of tropical climates. The strength fails; all the capacities of physical enjoyment are destroyed; and the paroxysms of corporeal suffering are aggravated by the horrors of a

> disordered imagination; till, in the case of the poor, they lead to gloomy apprehension, to the deepest depression, and almost to despair....[80]

In the report, Kay emphasized the prevalence of such disorders, which he termed "gastralgia and enteralgia," along with dyspepsia, among the working poor of the district, noting that although the same diseases occurred in the higher ranks of society, they derived from different causes and benefitted from different remedies.[81] He commented, too, on the close relationship that pertained between digestive and nervous maladies, explaining that when the "chylopoietic viscera" suffered increased sensibility and irritation, it was transmitted to the nervous system, where it stimulated or aggravated the development of illnesses such as neuralgia, hysteria, or chorea.[82]

Other doctors made similar observations. Peter Gaskell, for instance, stated that digestive afflictions were "in advance of all other affections preying upon the manufacturing population."[83] He produced a table listing cases attended by a practitioner at the Manchester Infirmary from 1826 to 1830 and pointed out that "cases of dyspepsia, constipation, and other affections dependent on derangement of the digestive apparatus" constituted more than one-third of the total number.[84] This was the more remarkable, in his opinion, since such cases did not generally warrant

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[80]James Phillips Kay, "Physical Condition of the Poor. 1. Diet. Gastralgia and Enteralgia, or Morbid Sensibility of the Stomach and Bowels," North of England Medical and Surgical Journal 1 (Nov. 1830), pp. 220-222.

[81]Ibid., pp. 220-221.

[82]Ibid., pp. 228-229.

[83]Gaskell, Manufacturing, p. 261.

[84]Ibid., pp. 228-229.

professional attention, and must, therefore, have been "extreme."[85] Like Kay, Gaskell remarked on the similarity between the digestive diseases of the lower and higher orders, declaring that it was "indeed a new feature in the history of medicine, to find the two extremes of the social confederacy labouring under the same maladies."[86] He also maintained that the effects of digestive dysfunction were not limited to the stomach and bowels. "Beyond their own immediate seat of disease or derangement," he observed, "they call into play a crowd of painful feelings, in all parts of the body, and are the originators of many of those anomalous diseases classed under the general term—nervous."[87]

In specifying the causes of digestive disease, spokesmen occasionally cited factors that had previously been implicated as sources of industrial ill-health. Quoting from Cabanis' Rapports du Physique and du Moral de l'Homme, William Greg asserted that "few things have so specific and injurious an action on the digestive organs, as the inhalation of impure air; and this fact alone would be almost sufficient to account for the prevalence of stomachic complaints in districts where manufactories abound."[88] A former junior member of the Manchester Infirmary staff, John Malyn, similarly argued that dyspepsia and liver disease resulted from the lengthy hours and high temperatures

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[85]Ibid., p. 229.

[86]Ibid., p. 264.

[87]Ibid., p. 263.

[88][Greg], p. 15.

of factory employment.[89] He reasoned that the short time allowed for meals forced operatives to swallow their food without properly chewing it, and that the heat of the mills interfered with the digestive process by preventing the requisite congestion of blood around the stomach and impeding the removal of bile from the blood. Left to circulate in the body, the bile was carried to the outer extremes, where it tinged the skin and accounted for the sallow, "tropical" appearance of the workforce.[90] Malyn maintained that under the current conditions of employment it was impossible for workers to obtain "the healthy material which nature intended for the restoration of the parts, and to make up for the exhaustion which the body is undergoing at every instant of time."[91]

In general, however, theories of digestive disease did not adhere to the findings of the past. In the years from 1830 to 1833, attention to aspects of the factory environment, such as polluted air and excessive heat, was supplemented and indeed superseded by consideration of a different set of causes. The new explanation of factory ill-health centred on the diet and habits of workers themselves. Kay's report on the condition of the manufacturing populace in the Ardwick and Ancoats district explicitly concerned itself with the influence of domestic habits. It revealed that the diet, especially of the "lower grades" of operatives was thin and "innutritious," consisting of "tea or coffee, with a little bread" in the morning; boiled potatoes, with

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[89]P.P. 1831-2 (706) XV, 523-533. Malyn had been educated at the Infirmary by an outspoken factory critic of the 1810s, William Simmons.

[90]Ibid., 528.

[91]Ibid., 529.

perhaps a little bacon or meat, consumed with "an animal eagerness" at dinner; and "tea, often mingled with spirits, accompanied by a little bread," in the evening.[92] It held that the effects of such a diet were aggravated by "immoderate abuse of ale and spirits," as well as other features of working-class life, noting that:

> ...the population nourished upon this aliment is crowded into one dense mass, in cottages separated by narrow and almost pestilential streets, in an atmosphere loaded with the smoke and exhalations of a large manufacturing city. The operatives are congregated in rooms and workshops during twelve hours in the day, and engaged in an employment which absorbs their attention, and unremittingly employs their physical energies.[93]

The report concluded that under such circumstances, "meagre food" could not fail to disorder the digestive process and give rise to dyspepsia, gastralgia, and enteralgia.[94]

Other accounts offered a similar interpretation. Gaskell's study of The Manufacturing Population attributed the digestive disorders of mill workers to "innutritious and badly cooked" food, "dram-drinking," and "undrained houses and streets."[95] It noted that such maladies were of "recent origin," and that "so long as the lower orders were engaged in active out-door occupations, and were supported by a simple and nutritious diet, there is no reason to suppose they were subject to these morbid conditions of the bowels."[96] While Gaskell believed that the mode of life of

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[92]Kay, "Physical Condition," pp. 220, 225-226.

[93]Ibid., pp. 226-227. The report's description of cotton workers' domestic habits reappeared two years later in Kay, Moral and Physical Condition, pp. 23-25.

[94]Ibid.

[95]Gaskell, Manufacturing p. 261.

[96]Ibid., p. 264.

the factory population had been brought about by the introduction of steam into the manufacturing process, he did not hold the factory system fundamentally responsible for worker ill-health. "The real evil," he declared, "lies in the habits of the people themselves—habits, it is very true, generated by the system of factory labour, but decidedly not of necessity dependent upon it."[97]

Greg's Enquiry also emphasized the power of habits. Though it referred to impure air and sustained exertion as important causes of industrial ill-health, it gave primary consideration to the effects of diet and argued that the unwholesomeness and inadequacy of factory workers' food was due not to "any actual distress," but to "bad management and bad habits."[98] It pointed out that milk was cheaper than tea and would afford operatives "double the nourishment at half the price," but lamented that "on all these points they are sadly ignorant."[99] The Enquiry regretted the tendency of mill workers to spend "a portion of their leisure, after working hours...in besotting themselves with ale and beer; and, still oftener, with the more efficient stimulus of gin," and criticized, as well, at their indulgence in opium.[100]

As medical interest shifted from debility to digestive disease, scrutiny was increasingly directed at the circumstances of domestic life rather than the conditions of factory labour. Though certain aspects of the labour process continued to be identified

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[97]Ibid., p. 211.

[98][Greg], pp. 9-16.

[99]Ibid., p. 10.

[100]Ibid., pp. 11-12.

as harmful, their perniciousness counted for little amid the sea of references to the noxious diet and bad habits of factory operatives.[101] In expounding on the digestive ailments of the industrial population, medical men diverted attention from the mill to those who laboured inside it. They criticized working-class "modes of living," judging them to be immoral, as well as unhealthy, and in so far as they regarded domestic life as the sphere of women, they attributed ultimate responsibility for ill-health to the female portion of the workforce.[102]

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With the large numbers of women entering the mills in the 1830s, the condition and conduct of female operatives became a matter of special concern.[103] Medical investigators were particularly attentive to the domestic habits of factory women and expressed interest as well in their physiology, observing that they were liable not only to digestive disorders, but also to premature sexual development.[104]

In the early 1830s, medical men believed that females were "naturally" weaker

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[101]In a somewhat different context, Figlio, p. 186, refers to the way nineteenth-century medical men "liberalized" the understanding of worker ill-health, by introducing so many factors that effective criticism became impossible. In a study of nineteenth-century French investigation of worker ill-health, Harvey Mitchell, "The Limits of Empirical Enquiry: Changes in the Study of French Occupational Disease 1815-1848," unpublished paper, p. 9, similarly observes a shift in medical thought, whereby "the occupational origins of a disease were lost in clouds of moral condemnation."

[102]Gaskell, Manufacturing, p. 113; Gay Weber, "Human Science and the Role of Women in Industrial Society," unpublished paper, pp. 5-6.

[103]Gray, "Languages," pp. 150-151, makes a similar observation.

[104]Kay, "Physical Condition," pp. 225-226; [Greg], p. 10.

and more "delicately formed" than males, and thus more vulnerable to the influences of the factory environment.[105] One aspect of the environment that was singled out in this regard was temperature, which had long been held responsible for the onset of puberty. In the eighteenth and early nineteenth centuries, medical authorities and travellers had agreed that climate had a powerful effect on the development of the female constitution, just as it did on the maturation of fruits, and that the hotter the prevailing temperatures, the earlier puberty and the menses would appear.[106] According to Albrecht von Haller, "in the warm regions of Asia, the menses appear from the eighth to the tenth year; in Switzerland, Britain, and other equally temperate regions, at the age of twelve or thirteen; and later the further we ascend towards the north."[107]

Although the supposed connection between heat and early menstruation was questioned by the Manchester surgeon, John Roberton, in 1830-1831 and 1832, and although practitioners in the manufacturing districts admitted to having observed instances of late, as well as early, puberty among factory women, the idea that heat hastened the arrival of puberty maintained a stronghold.[108] Almost all the medical

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[105]P.P. 1831-2 (706) XV, 503, 533.

[106]John Roberton, "An Inquiry respecting the Period of Puberty in Women," North of England Medical and Surgical Journal 1 (1830-1831), pp. 70-71. See also Tanner, pp. 79, 94-95, 286-290.

[107]Cited in Roberton, p. 70.

[108]Ibid., pp. 69-85, 179-181; John Roberton, "An Inquiry into the Natural History of the Menstrual Function," Edinburgh Medical and Surgical Journal 38 (1832), pp. 227-254; P.P. 1831-2 (706) XV, 505, 524; P.P. 1833 (519) XXI, C.3., 10. As Gray, "Medical Men," p. 38 notes, the view that female factory operatives

witnesses who appeared before Sadler's Select Committee agreed that the high temperatures associated with manufacturing processes contributed to the "unnaturally early development of the powers" of female workers' bodies.[109]

Medical observers expressed concern not merely with the onset of the menses however, but also with the much more visible display of morals and manners. They were appalled by what they regarded as the unbridled licentiousness of the factory population, and though they believed that the behaviour of male workers was as delinquent as that of females, they were particularly critical of the conduct of young female labourers. They argued that the mill environment contributed to an uneven development of proclivities and sentiments in factory girls. The Bolton physician, Thomas Young, for instance, maintained that "animal propensities are early developed in the mills, and very frequently before the development of those moral feelings which would restrain their indulgence."[110] Moral checks were seen to be lacking not only within the individual, but also within the family and community. Peter Gaskell lamented the absence of paternal attention in the home and factory, as well as the extent to which "the restraints of law and decency" went unheeded in manufacturing towns.[111]

In their discussion of female workers' health, medical commentators directed

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experienced early puberty also found its way into physiology texts of the period.

[109]P.P. 1831-2 (706) XV, 496-607, passim.

[110]Ibid., 523.

[111]Gaskell, Manufacturing, pp. 71-78.

more attention to outward behaviour than to the inner workings of the body. While they had relatively little to say about early menstruation, beyond acquiescing to its occurrence, they elaborated at length on the consequences of licentious activity. They warned that precocious and promiscuous intercourse resulted in sterility and they argued that the evils of such activity would spread throughout the manufacturing community and descend from one generation to the next.[112] It seems likely that it was anxiety at the increased presence of women in the industrial workplace and consternation at their allegedly corrupt behaviour that sustained medical belief in early puberty, even in the face of conflicting evidence.

As in the discussion of digestive disease, preoccupation with worker conduct prevented the elaboration of a critical perspective on factory labour. In the early 1830s, the mores of factory workers were regarded not only as the most visible sign of premature physical development, but also as a factor that contributed to such development. In considering the causes of early puberty, medical authorities referred not just to the influence of the physical environment, but also to elements of the moral environment, such as "lewd practices, lewd scenes and conversation."[113] Peter Gaskell, who devoted an entire chapter of his book to the early puberty issue, argued that "customs, habits, and modes of life" played a very powerful role in arousing sexual desire and stimulating maturation.[114] It was unnecessary, in his view, "to

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[112]P.P. 1831-12 (706) XV, 506, 532, 545, 563, 588; Gaskell, Manufacturing, pp. 73-75; Kay, Moral and Physical Condition, p. 62.

[113]Roberton, "Inquiry respecting Puberty," p. 190.

[114]Gaskell, Manufacturing, pp. 76-77.

enter into any argument to prove—that whatever excites the generative organs will have a tendency to develop their specific functions."[115] In the perspective of observers such as Gaskell, early puberty, like digestive disease, was overwhelmingly a problem of habits and thus attributable to the workforce, rather than the workplace.

VI

In addition to digestive disease and early puberty, medical men gave some consideration to the lung disease of factory workers. Operatives themselves had long been aware of the respiratory hazards of factory work and in 1831 Charles Thackrah also expressed interest in the subject. In the first edition of his "Arts, Trades, and Professions," which pertained especially "to the trades and manufactures of Leeds," Thackrah directed attention to the effects of dust on flax workers.[116] He found that persons employed in flax mills were "generally unhealthy" and liable to "chronic inflammation of the bronchial membrane, inflammation of the lungs, and pulmonary consumption."[117] He reasoned that the dust produced by the various mill processes, especially heckling, irritated the "air-tube" and lungs of the workers, commenting that:

> The early stage of the malady which attacks flax-men varies from that of ordinary bronchitis. The cough and difficulty of breathing are not cotemporary: one precedes the other, sometimes by months, more frequently by years. The cough is harsh; its invasion is generally confined to the morning and evening, and more to the latter than the former. In the early stage there is no mucous, pituitous or puriform expectoration, and little even for years of cough....Symptoms of pleuritic

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[115]Ibid.

[116]Thackrah, first edition.

[117]Thackrah, p. 71.

> or pneumonic inflammation often attend or succeed....As the cases advance, we find the ordinary character of chronic bronchitis, emphysema of the lungs, or pulmonary consumption.[118]

In the same year as Thackrah presented his findings on flax hecklers, James Kay published an article on the dust-induced disorders of cotton workers.[119] Continuing an investigation into diseases of the chest that he had begun as a student in Edinburgh, Kay described the pulmonary afflictions he had encountered at the Ardwick and Ancoats Dispensary:

> A chronic inflammation of the mucous membrane of the bronchi, is a common disease amongst those employed in the most dusty rooms of cotton mills....In many cases which have presented themselves at the...Dispensary, the disease induced has appeared to me to differ from ordinary chronic bronchitis. In the commencement of the complaint, the patient suffers a distressing pulmonary irritation from the dust and filaments which he inhales. Entrance into the atmosphere of the mill immediately occasions a short dry cough, which harasses him considerably in the day, but ceases immediately after he leaves the mill, and inspires an atmosphere free from foreign molecules. These symptoms become gradually more severe....In this stage he seeks medical aid. He is harassed with a frequent cough, which is often excited by speaking, by slight exertion, or a change of temperature. The patient sometimes expectorates a little, but the cough is often dry and short, and recurs incessantly. He experiences a diffused and obscure sensation of uneasiness beneath the sternum. On sudden exertion a pectoral oppression ensues, arising, as it were, from an inability to dilate the chest fully in the ordinary inspirations. The whole respiratory system evinces a great and easily excited irritability....The patient is easily affected with acute bronchitis on exposure to its exciting causes, and this disease often succeeds the previous complaints.[120]

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[118]Ibid., pp. 71-72.

[119]James Phillips Kay, "Observations and Experiments concerning Molecular Irritation of the Lungs as one source of Tubercular Consumption; and on Spinners' Phthisis," North of England Medical and Surgical Journal 1 (1830-1831), pp. 348-363.

[120]Ibid., p. 360; Smith, p. 11.

Kay maintained that cases of chronic and acute bronchitis sometimes developed into the more deadly phthisis, or tubercular consumption. Though he was unsure to what degree "spinners' phthisis" differed in symptoms and progress from "ordinary phthisis," he was sufficiently acquainted with the disease to be able to locate its "source" in the dusty atmosphere of a cotton spinning mill.[121]

The findings of Thackrah and Kay could have formed the basis for fashioning a solid link between the conditions of factory labour and an identifiable mill workers' disease. Both men suggested that the respiratory disorders of flax and cotton operatives were somehow specific to the labour they performed (the initial bronchitis differing from the usual form of the disease) and both pointed to dust and flue as the prime cause of the afflictions. Kay went further. In the article on phthisis, he reported on experiments he had conducted as an intern in Edinburgh, and again as an instructor at the Ardwick and Ancoats Dispensary, in which he had injected mercury into the trachea of a number of rabbits. In every case, the lungs of the animals developed tubercles and Kay was led to conclude, in opposition to those who stressed the importance of a hereditary predisposition to consumption, that external agents, in the form of irritating "foreign molecules," were sufficient to induce the disease.[122]

Medical men had long been aware of the occupational hazards of dust. Early in the eighteenth century, Bernardino Ramazzini had described the injurious effects of the

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[121]Kay, "Observations," p. 363.

[122]Ibid., 348-357.

minute particles that clouded the atmosphere of mines and workshops.[123] Later commentators reiterated his views and in 1822, Philibert Patissier added his own observations on the condition of French cotton workers, stating that:

> Ces ouvriers inspirent continuellement un air chargé de débris cotonneux très-ténus qui excitent les bronches, provoquent la toux, et entretiennent dans les poumons une irritation perpétuelle. Ils sont souvent obligés de changer de profession pour prévenir la phthisie.[124]

Late eighteenth and early nineteenth-century investigators of pulmonary and scrophulous disease were similarly conscious of the deleterious effects of mineral and vegetable dust. William Cullen, Thomas Beddoes, Charles Hastings, William Alison, and John Forbes all regarded the inhalation of dust as a prevalent source of lung disease among artisans such as stone masons, needle grinders, flax dressers, leather dressers, millers, and miners.[125]

Other observers, such as James Johnstone of Worcester and John Darwall of Birmingham, had devoted particular attention to the maladies of workers in their area

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[123]Bernardino Ramazzini, Diseases of Workers, trans. Wilmer Cave Wright (New York: Hafner Publishing Co., 1964).

[124]Philippe Hecquet, La Medécine, la Chirurgie et la Pharmacie des Pauvres (Paris: 1740, 1780); Philibert Patissier, Traité des Maladies des Artisans...d'après Ramazzini (Paris: Baillière, 1822), p. 245.

[125]William Cullen First Lines of the Practice of Physic (Edinburgh: W. Creech, 1778-1779); Thomas Beddoes, Essay on the Causes, Early Signs, and Prevention of Pulmonary Consumption for the Use of Parents and Preceptors (Bristol: T.N. Longman and O. Rees, 1799); Charles Hastings, A Treatise on Inflammation of the Mucous Membrane of the Lungs (London: T.&G. Underwood, 1820); W.P. Alison, "Observations on the Pathology of Scrofulous Diseases, with a View to their Prevention," Transactions of the Edinburgh Medico-Chirurgical Society, 1 (1821-1823, 1824), pp. 365-438; Réné-Theophile-Hyacinthe Laennec, A Treatise on the Diseases of the Chest and on Mediate Auscultation, 2nd ed., trans. John Forbes (London: T.&G. Underwood, 1827), p. 137.

and had found dust to be an irritating and exciting factor in the development of respiratory disease.[126] In 1830, a Sheffield physician, Arnold Knight, took a similar view of "grinders' asthma."[127] "Grinders' asthma" was a term used by grinders themselves to describe an affection of the chest that commonly afflicted persons engaged in the manufacture of cutlery goods. In his account, Knight attributed the prevalence of the disease—which, to his way of thinking, was not asthma at all, but a form of the much more serious consumption—to the conditions of labour in the grinding industry. He pointed out that with the division of labour, grinders were forced to spend all their time at the grinding wheel and with the application of steam to the industry, they were crowded into low, confined quarters, with greater numbers of stones and fewer opportunities for relaxation. Though he lacked the evidence that might have been provided by post-mortem examinations, Knight was convinced of a close connection between the conditions of employment in Sheffield's leading industry and the disease that left so many workers prostrate or dead.[128]

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[126]James Johnstone, "Some Account of a Species of Phthisis Pulmonalis, peculiar to Persons employed in Pointing Needles in the Needle Manufacture," Memoirs of the Medical Society of London 5 (1799), pp. 89-93; John Darwall, "Diseases of Artisans with particular reference to the Inhabitants of Birmingham," (1821), rpt. in A. Meiklejohn, "John Darwall, M.D. (1796-1833) and 'Diseases of Artisans'," British Journal of Industrial Medicine 13 (1956), pp. 143-151.

[127]Arnold Knight, "On the Grinders' Asthma," North of England Medical and Surgical Journal 1 (1830-1831), pp. 85-91, 167-179. Knight's article appeared in the same journal as Kay's gastralgia and phthisis articles.

[128]According to Knight, pp. 87-88, of the 2500 grinders in the area in 1822, not thirty-five had reached the age of fifty, and of the over eighty fork grinders (who worked in the most hazardous manner, on dry grindstones), not one had reached the age of thirty-six.

Doctors in the textile manufacturing regions failed to perceive such a relationship. Despite the promising leads made by Thackrah and Kay, local commentators did not dwell on the hazards of factory dust or advance theories linking the presence of dust to the incidence of respiratory afflictions. Kay himself made no mention of spinners' phthisis in The Moral and Physical Condition of the Working Classes published the following year.[129] Other observers acknowledged the presence of dust in mills, but qualified their remarks in such a way as to rob the issue of significance. The tendency is observable even in Thackrah's work. In the second, expanded edition of his study, which contained a wider treatment of the textile trades, Thackrah continued to elaborate on the problems of dust only in the context of the flax factory, focussing specifically on the hazards encountered in the heckling department.[130] Though he was familiar with Kay's work on phthisis, he did not believe that dust was a concern in the cotton industry.[131] Nor did he view it as a difficulty in the woollen industry, arguing that any fine particles that might be produced in the manufacturing process would be absorbed by the oil contained in the fibres of the wool.[132] The distinctions incident to each trade allowed the threat of dust to be reduced to a problem affecting only a relatively small number of individuals: those working with the coarsest fibres or engaged in the preparatory departments of the

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[129]Kay, Moral and Physical Condition.

[130]Thackrah, pp. 70-84.

[131]Ibid., pp. 147-148.

[132]Ibid., p. 125.

worst-ventilated mills.[133]

The significance of dust-induced disease was also reduced by being made secondary to the pre-existing and more fundamental impairment of the digestive and nervous systems. Thackrah maintained that lung disease was a "superadded evil" and that the major effects of confinement and labour in a factory environment were "disorder of the digestive organs" and reduction of "nervous power."[134] He asserted, too, that the irritating qualities of dust were slow in taking effect, that although a person entering a dusty workplace would experience minor symptoms at first, these would soon subside, and it would not be until much later that serious respiratory disease would result from the continued action of the dust, in combination with "the action of morbid states of other organs."[135] One of Thackrah's colleagues at the Leeds Medical School, James Williamson, argued in a similar fashion that:

> The pulmonary ailments with which individuals working in the dusty rooms are usually attacked come on at a more advanced period of life, and, in a great proportion of instances, are preceded by stomach derangement, the result either of improper or innutricious diet, or of inebriety. The internal membrane of the stomach being morbidly excited, sympathetic irritation is often propagated to the lungs, which *then* become more susceptible to the noxious influence of a dusty atmosphere.[136]

The possibility of linking the respiratory afflictions of textile employees to the conditions of their work was also diminished by contemporary emphasis on personal

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[133]See, for example, Gaskell, Manufacturing, p. 249.

[134]P.P. 1831-2 (706) XV, 516.

[135]Thackrah, pp. 200-201.

[136]P.P. 1833 (519) XXI, C.3., 9.

culpability. In a hardening of attitude detectable in the second edition of his work, Thackrah identified two factors that affected the development of lung disease "in kind and degree": "native constitution, as in the example of scrophula," and "habits, as temperate or the reverse."[137]

The view that pulmonary disease was constitutionally based, that it developed in individuals who bore an inherent predisposition, or "tuberculous cachexia," was widespread. In 1835, for instance, James Clark argued that "mechanical irritants" could only give rise to consumption in individuals "already constitutionally predisposed."[138] Very often such predisposition was seen to be inherited. As Clark declared, "that pulmonary consumption is a hereditary disease,—in other words, that the tuberculous constitution is transmitted from parent to child, is a fact not to be controverted; indeed, I regard it as one of the best established points in the etiology of the disease."[139] Clark perhaps carried the concept of hereditary transmission further than most, arguing (in a manner that again underscored the importance attributed to digestive disorders) that "a state of tuberculous cachexia is not the only morbid condition of the parent which entails the tuberculous predisposition on the children; there are several diseases which have this effect," the most notable of which was

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[137]Thackrah, p. 201. In the second edition, Thackrah gave greater attention to the role of intemperance and constitutional predisposition than he had previously. See his comments on flax workers, pp. 72-74, and machine makers, pp. 97-98.

[138]James Clark, A Treatise on Pulmonary Consumption Comprehending an Inquiry into the Causes Nature Prevention and Treatment of Tuberculous and Scrophulous Diseases in General (London: Sherwood, Gilbert and Piper, 1835), p. 220; see also P.P. 1834 (167) XIX, D.3., 238, 244.

[139]Clark, pp. 220-221.

dyspepsia.[140]

Where it was not inherited, the predisposition to lung disease was seen to develop in individuals through the influence of external means. Clark pointed to "improper diet, impure air, deficient exercise, imperfect clothing, inattention to cleanliness, abuse of spirituous liquors, and affections of the mind," as the most powerful such agents.[141] Even Kay, whose rabbit experiments seemed to demonstrate the sufficiency of the irritation of foreign particles in causing consumption, believed that, in the case of Manchester's cotton workers, such irritation was aided by "that peculiar cachexia" which was induced by factors such as "imperfect nutrition" and "irregular and dissolute habits."[142]

In discussing the causes of respiratory disease, as in accounting for digestive disorders and early puberty, commentators in the early 1830s dwelt on the domestic and personal circumstances of working-class life: on dietary practices, proclivity to drink, and physical and moral weaknesses. Their inquiries lent credence to the belief that the development of the manufacturing system was inherently beneficial and that any negative repercussions that might ensue were merely "accidental" consequences, capable of amelioration.[143]

The view that "the evils afflicting the working classes...appertain to their

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[140]Ibid., pp. 222-223.

[141]Ibid., pp. 229-237.

[142]Kay, "Observations," p. 363.

[143]Kay, Moral and Physical Condition, p. 15.

domestic rather than to their *industrial* relations," was amplified in the later 1830s and 1840s.[144] In 1842, Edwin Chadwick stated that a decade earlier he and his colleagues on the Central Board of the Factory Commission had been fully aware of the potentially adverse effects exerted by "domestic circumstances" on the lives of factory workers, but that the short time allowed for the Commission's enquiry had prevented such conditions being examined "as we desired, a circumstance, that, for the sake of the workpeople, is much to be regretted."[145] By 1842 Chadwick had seized the opportunity to rectify the omission; in his Report of the Sanitary Condition of the Population of Great Britain he devoted lengthy consideration to the hazards of defective drains, unpaved streets, and substandard housing.[146] The Report set in motion a vociferous campaign for sanitary reform, premised on the belief that the dangers to public health resided in the "great-town" rather than the "factory-system."[147]

VII

In the early 1830s, the factory escaped critical attention. Though in the past it had been seen as pernicious, either by the crowding of its inhabitants or the labour they

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[144]"Review. Thackrah, Ure, Villermé, Chadwick, Taylor, on the Influence of Manufactures on Health," The British and Foreign Medical Review 15 (1843), p. 313.

[145]"Extracts from the Sanitary Report showing that the Causes of the General Depression of the Health of the Factory Population is Defective Ventilation, Bad Dwellings, and other Preventable Circumstances not Essential to the Labour itself." British Library: BM MSS 40403 ff. 320, 321.

[146]Edwin Chadwick, Report on the Sanitary Condition of the Labouring Population of Gt. Britain, ed. and intro. by M.W. Flinn (1842; rpt. Edinburgh: University Press, 1965).

[147]"Review," p. 303.

performed, it was now regarded as essentially benign and as having little effect on the lives of those confined within it.

A more extreme view also emerged. In the opinion of a few observers, the factory exerted not merely a neutral, but a positive influence on health. In contrast to late eighteenth-century investigators who had maintained that factory conditions were as deleterious as those of any other dwelling place, they argued that the factory acted as a preserve from the effects of the home. Peter Gaskell asserted in general terms that children were "to some extent better situated when engaged in light labour" in the mill, than when left unattended in the depraved and brutal surroundings of their homes.[148] The claim was also made more specifically, in relation to the generation and spread of cholera, a disease that provoked as much fear and anxiety in the 1830s, as typhus had in the 1780s and 1790s.[149]

In the Origin and Progress of the Malignant Cholera in Manchester, Henry Gaulter, a physician at the Chorlton-upon-Medlock Dispensary, drew attention to the fact that cotton workers had been particularly exempt from the cholera epidemic that visited Manchester in 1832, and that this had been the case for factory workers in other textile towns, as well.[150] Gaulter attributed the apparent immunity of the workers to:

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[148]Gaskell, Manufacturing, pp. 195-209.

[149]R.J. Morris, Cholera 1832: Social Response to an Epidemic (London: Croom Helm, 1976).

[150]Henry Gaulter, The Origin and Progress of the Malignant Cholera in Manchester (London: Longman, Rees, Orme, etc., 1833), pp. 119-121. See also Samuel Gaskell, "Remarks on the Malignant Cholera as it appeared in Manchester," Edinburgh Medical and Surgical Journal 40 (1833), p. 52; James Black, "A Medico-Topographical, Geological, and Statistical Sketch of Bolton and its Neighbourhood,"

> ...the vast superiority of the factories over their own wretched dwelling-houses, in the comparative spaciousness, light, airiness, uniformity of temperature, and ventilation of the rooms, and in the distance at which the work people, especially those employed in the upper rooms are placed, during the day, from the sources of malaria, which infect the confined courts and the narrow streets, without naming the crowded and filthy beds, in which they pass their nights.[151]

An anti-contagionist, who emphasized the role of filth in the production of cholera, Gaulter asserted that contagionist predictions had been turned around and that "instead of diffusing the disease by the congregation of large numbers in one place," cotton mills had limited its spread "by rescuing the people employed in them from the long continued action of those generating causes, which exist in such pernicious profusion both around and within their miserable homes."[152] In the accounts of doctors such as Gaulter, the factory was portrayed as a haven for workers, rather than the source of their sickness and suffering.[153] His was only an exaggerated version of contemporary medical understanding.

VIII

Continued investigation of industrial ill-health resulted not only in new

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Transactions of the Provincial Medical and Surgical Association 5 (1837), p. 200.

[151]Gaulter, pp. 121-122.

[152]Ibid., pp. 122-123.

[153]For a similar view, see the letter from Dr. Edward Carbutt, an opponent of factory legislation in 1818, to the factory commissioners, P.P. 1834 (167) XIX, D.3., 281-282, in which he argued that factories provided the "means of cure" for scrophula. See also V. Royle, The Factory System Defended (Manchester: 1833) and [Vernon Royle], Mr. Sadler, M.P., His Factory Time Bill, and His Party, Examined (London: J. Ridgway, 1832).

assessments of the factory, but also in a new perception of factory workers. While commentators in the past had drawn attention to the physical distinctness of machine operatives, spokesmen now elaborated on both their physical and moral separateness, with the result that the factory population came to be seen as wholly "other."

In his account of the Manufacturing Population, Peter Gaskell expounded at length on the physical peculiarities of industrial workers, maintaining that they exhibited "great inferiority in figure and personal proportion."[154] He referred to their "sallow, pallid complexion," small stature, slender and bowed legs, "flat feet," "thin and straight" hair, "soft and flabby" flesh, and "spiritless and dejected air," and noted that although Lancashire had long been known for the bewitching quality of its women, "factory girls" were particularly lacking in beauty and elegance.[155] He characterized female operatives as having a rough-timbred voice (brought on by premature sexual excitement), a "bony framework," badly-moulded limbs, a "peculiar gait," and "soft, flaccid, pendulous" breasts.[156]

If the physical features of factory workers set them apart from the higher orders, so, too, did their moral character. While many observers lamented the depravity of the manufacturing population, James Kay discussed the matter in a particularly revealing way. In the opening passage of his pamphlet on the condition of Manchester's working classes, he described the operative population as a region of the social body that lacked

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[154]Gaskell, Manufacturing, p. 157.

[155]Ibid., pp. 162-164.

[156]Ibid., p. 164.

nervous connections to the higher orders and that could be diseased without recognition from above.[157] As John Pickstone remarks, "in that image there is not only distance, but lack of mutuality....The connection with the high orders had to be established because the higher capacities of the poor themselves were inoperative. The poor were de-moralized, by subtraction merely carnal."[158]

In the early 1830s, commentators expressed fear that the physical and moral inferiority of the factory population would extend in a cumulative fashion from one generation to the next. Gaskell, for instance, cautioned that although characteristics such as ugliness were not transmitted, a "worn down and debilitated" body was not able to provide "the necessary pabulum for the production of a vigorous offspring, endowed with active vitality."[159] Kay was similarly apprehensive of the "progress of barbarous habits," warning that:

> Want of cleanliness, of forethought, and economy, are found in almost invariable alliance with dissipation, reckless habits, and disease. The population becomes gradually less efficient as the producers of wealth—morally so from idleness—politically *worthless* as having few desires to satisfy, and *noxious* as dissipators of capital accumulated. Were such manners to prevail, the horrors of pauperism would accumulate. A debilitated race would be rapidly multipled....A dense mass, impotent alike of great moral or physical efforts, would accumulate...[160]

For Kay, one of the chief sources of "barbarous habits" were the Irish immigrants who

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[157]Kay, Moral and Physical Condition, pp. 17-18.

[158]Pickstone, "Ferriar's Fever," pp. 411, 413.

[159]Gaskell, Manufacturing, p. 169.

[160]Kay, Moral and Physical Condition, p. 81.

had "colonized" England's manufacturing districts.[161] He regarded the Irish as an "uncivilized race," whose ignorance, paucity of wants and debased way of life were demoralizing native inhabitants and having "effects on civilization as fatal as those which have marked the progress of the sand flood over the fertile plains of Egypt."[162] In his view, English labourers were rapidly succumbing to the "contagious example" of the Irish and losing both their national and human identity as they merged with the foreign workers in a bestial "mass."[163]

In the opinion of some spokesmen, the manufacturing population had already established itself as a separate species. The Leeds practitioner, Samuel Smith, described Yorkshire operatives as "an inferior race of beings," arguing that the operation of the factory system had led to their diminution and degeneration.[164] The short-time leader, Michael Sadler, also characterized factory workers as "a weak, stunted, and degenerate race."[165] The perception of workers as a new breed seems to have been shared in some instances even by those it was meant to encompass. In a submission to Sadler's Committee, a fifty-three year old card grinder named Charles Aberdeen stated:

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[161]Ibid., pp. 80-84.

[162]Ibid., p. 21.

[163]Ibid. pp. 21, 82; Mary Poovey "Curing the 'Social Body' in 1832: James Phillips Kay and the Irish in Manchester," Gender and History 5 (1993), pp. 196-211.

[164]P.P. 1831-2 (706) XV, 502. On early nineteenth-century understanding of the concept of degeneration see Weber, "Degeneration."

[165]Quoted in [Kydd], vol. 1, p. 192.

> I have seen men and women that have worked in a factory all their lives, like myself, and that get married; and I have seen the race become diminutive and small; I have myself had seven children, not one of which survived six weeks; my wife is an emaciated person, like myself, a little woman, and she worked during her childhood, younger than myself, in a factory.[166]

Anxious about the physical and moral degradation of the factory population and the increasingly perceptible division between the lower and higher orders, medical observers urged the need for "the minute personal interference of the higher ranks."[167] Kay stressed the need for "general and cordial association," arguing that

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[166]P.P. 1831-2 (706) XV, 442-443. The view of factory workers as "diminutive" unquestionably had some basis in fact. In 1833, a Bolton physician, J. Black, published some "Remarks on the Influence of Physical Habits and Employment on the Size of Different Classes of Men," London Medical Gazette 12 (1833), pp. 143-148, which compared the heights and chest measurements of 300 cotton spinners, bleachers, and soldiers. Black's research showed that the average height of the spinners was 2.11 inches less than that of the bleachers and 3.23 inches less than that of the soldiers, and that their average chest circumference was 1.57 inches less than that of the bleachers and 2.13 inches less than that of the soldiers. In the same year, a district commissioner, J.W. Cowell, submitted evidence to the Factories Inquiry Commission concerning the weights and heights of 1,933 factory and non-factory children, ages 9 to 18, who attended the Bennett Street and Saint Augustine's Sunday schools in Manchester, and the Stockport Sunday school and National Day school. The evidence, contained in P.P. 1833 (450) XX, D.1., 86-90, was tabulated by a Samuel Stanway and revealed that the average weight of factory boys was 3.5 lbs. less than that of non-factory boys and that the average weight of factory girls was .3 lbs. less than that of non-factory girls. The evidence showed that factory children were not only lighter but also shorter than their non-factory counterparts. It revealed that the average height of factory boys was .3 inches less than that of non-factory boys and the average height of factory girls .03 inches less than that of non-factory girls. Stanway's statistical procedures have been recently criticized by Tanner, pp. 150-151, who calculates that the mean height of both male and female factory children was .25 inches less than that of non-factory children. The studies reported by Black and Cowell are good examples of the nineteenth-century interest in measuring and collecting of numerical data discussed by Hacking.

[167]Kay, Moral and Physical Condition, p. 11.

by personal visits middle-class spokesmen would acquire "the right of inquiring into" the domestic circumstances of the poor and "of instructing them in domestic economy—of recommending sobriety, cleanliness, forethought, and method."[168] In a complementary vein, William Greg observed that there was "nothing which exercises such a powerful influence over the feelings and manners of the lower orders, as opportunities of associating with their superiors."[169] Greg, Kay, and other theorists argued that manufacturers had an especially important role to play in influencing and directing the lives of mill workers. While recognizing that such endeavours were more easily undertaken in a rural, than an urban situation, they nevertheless insisted that "a master can, a master ought to interfere."[170] As Charles Thackrah declared, it was "not only a call of humanity, but a direct duty" for factory owners to attend to the health and to inquire into the habits of those they employed.[171]

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[168]Ibid., p. 99.

[169][Greg], p. 38. See also [W.R. Greg], An Address to the Higher Classes, on the present State of Public Feeling among the Working Classes (London: 1830), cited in Elovitz, p. 54.

[170]Thackrah, p. 215.

[171]Ibid., pp. 215, 220.

CHAPTER EIGHT

THE BROKEN BOND

> The sickly sentimentality which could not tolerate a close consideration of the vices and wretchedness of the poor is chased away by the necessity of the case, and the question of relief becomes more urgent, and yet more difficult, in each succeeding year. There is a canker in the very core of England, and human wisdom does not know how deeply it may eat.[1]

> The bond of attachment is broken, there is no longer on the one part the generous bounty...which calls forth on the other a grateful, and honest, and confiding dependence.[2]

By the early 1830s, paternalistic attention to the ill-health of factory workers was a thing of the past. Despite the urging of medical spokesmen, mill owners in both rural and urban settings took little interest in the well-being of their employees. Though they occasionally hired factory surgeons or contributed to charitable institutions, their actions were governed by concerns for expediency and economy. Within the manufacturing community as a whole, support for relief of the manufacturing poor declined.

While medical observers lamented the destruction of the "invisible chain of sympathy" that had once linked the higher and lower orders, they themselves

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[1]Review of The Effects of Arts, Trades, and Professions, by C. Turner Thackrah, Medico-Chirurgical Review 18 (1833), p. 101.

[2]Robert Southey, Sir Thomas More: or, Colloquies on the Progress and Prospects of Society (London: John Murray, 1829), vol. 2, pp. 224-225.

questioned the value of charitable provision and argued that the condition of factory workers would be better served by exertions of self-help. Such views derived not only from theories of the nature and causes of worker ill-health, but also from frustration with charitable institutions that no longer served the purposes for which they had been designed.

If the charitable system of medical assistance was problematic for the dispensers of relief, it also proved troublesome for the recipients. Ailing workers experienced difficulty gaining access to institutions such as infirmaries and frequently found the remedies provided at such establishments to be of little benefit. In the face of limited charitable aid, as well as restricted and grudgingly-dispensed statutory relief, operatives were left to their own resources. Though they continued to rely on strategies they had employed in the past, the growth of the factory system, as well as the intensification of the labour process and the increased dependence on the most poorly-paid and vulnerable sections of the population, meant that industrial ill-health remained a problem of massive and tragic dimensions.

I

In 1833, on behalf of the Factories Inquiry Commission, Sir David Barry conducted a tour through the textile manufacturing districts of Scotland. Reporting on his findings to the Commission's Central Board, he expressed approval of the health-care measures undertaken at the first factory he visited, a small flax mill in the village of Preston Holme, ten miles from Edinburgh. Barry noted that the proprietor, Mr. Craig, maintained a sick fund for his employees, assumed the cost of medical treatment

for those injured at work, and continued to pay the wages of accident victims. Though impressed with "the parental attention of Mr. and Mrs. Craig to the health and education of the children," Barry remarked that this was "a specimen of factory life which I fear we shall find to be very superior to the general average."[3] His fear was borne out during the rest of his tour, where he discovered that even at mills traditionally known for their paternal regime little provision was made for the health of the workers. He found that at New Lanark, no improvements had been made since 1820 and that at the cotton works at Blantyre, nothing had been done to secure worker well-being since 1786.[4]

Barry's view that attention to worker health had become rare in the rural districts of Scotland was shared by Charles Ritchie, a "country surgeon" in the parish of Neilston. In an article in the Glasgow Medical Journal, Ritchie observed that in manufacturing regions such as his own "the situation of the medical practitioner is a burdensome one, as regards the sick poor."[5] He noted that the claims of local cotton workers on their masters were "seldom so strong as to entitle them to having more than the mere means of subsistence, a few cordials, or articles of clothing bestowed on them," and grumbled that "what else is requisite for the restoration to health must be yielded by the medical attendant."[6]

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[3]P.P. 1833 (519) XXI, A.3., 1-2.

[4]Ibid., 53.

[5]Charles Ritchie, "Remarks on the Medical Topography of the Parish of Neilston," Glasgow Medical Journal 1 (1828), p. 298.

[6]Ibid.

The indifference of factory owners towards matters of health was observed not only by medical spokesmen, but also by mill workers. In submissions to the 1832 Select Committee on Factory Labour, operatives throughout the textile regions testified to their employers' lack of concern with disease and disability. Isaac Openshaw, a former piecener at a small, rural mill at Sharples, near Bolton, told the Committee members that he had had to give up mill work because of the deformity, emaciation, pain, cough, and blood-spitting he experienced. Though his master was wealthy, he had rendered Openshaw no assistance and the twenty-three-year-old man had been forced to rely on the generosity of his workmates.[7]

James Carpenter, a Leeds operative who had worked in mills since the age of seven, informed the Committee that when individuals left factory work because of ill-health, they received no compensation from their employers and had "to find their own doctor and their own medicine."[8] In such situations, Carpenter disclosed, the master "completely loses sight of his hands....they are, he considers, entirely out of his care."[9]

Another Leeds resident, David Brook, revealed that manufacturers were very often aware of the deleterious consequences of mill work. He explained that in cloth dressing mills:

> ...it very frequently happens that more men are kept about a place than are actually necessary, to fill up the places of those who may be taken

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[7]P.P. 1831-2 (706) XV, 397-398.

[8]Ibid., 189.

[9]Ibid.

> from the machinery by illness. Men are employed by hand that can work at machinery, and when these persons are working at machinery at the long hours, the hand-labourers that are working short hours are kept for the purpose of supplying the machinery, that it may not stand still when any man falls sick; they put some one into the place of a sick man until he gets better.[10]

Such awareness, however, was not a spur to benevolent action. Brook asserted that he "never knew of any case where a person was supported in sickness by their employers."[11]

Joseph Sadler, a dresser of cotton yarn from Stockport, maintained that "the number of hands in a mill is so great, and the concerns under one employer so extensive, that he himself hardly knows the number of hands he employs, much more the condition or the state of health enjoyed by the hands in his employ."[12] Sadler revealed that factory owners did not keep track of sick employees and that the usual procedure, when a worker was ill, was:

> ...for him to send word, and another person is called to work for him; or if they leave altogether, to get a new hand; it is not inquired of them where they are gone, what has become of them, whether they are recovered, or whether they are dead; it is an inquiry seldom set on foot by the proprietors or authorities of the mill.[13]

The testimony of lower, as well as middle and upper-class witnesses, indicates that the shift in health-care provision discernible at the beginning of the nineteenth century had advanced by the early 1830s and that employer disinterest in worker health

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[10]Ibid., 63.

[11]Ibid.

[12]Ibid., 282.

[13]Ibid.

had become general in both rural and urban settings. While health-promoting measures were still instituted by some factory owners, their actions seem to have derived more from self-interest than concern for the well-being of their employees.[14] In 1832, for instance, the Leeds manufacturers, Messrs. Hinds and Derham, hired Robert Baker, a parish and district surgeon, who later went on to become a prominent factory inspector.[15] As Baker later recounted, the hiring was due to anxiety about negative publicity. Baker recalled that Robert Derham had approached him, complaining "of what he called the 'hard sayings of the public on account of the number of cripples that were made by manufacturers working little children long hours, and often night and day', and asking a remedy."[16] Baker suggested "the propriety of placing a medical man over his establishment...for the purpose of watching the effect of labour on the constitution of each young worker," and was accordingly employed as a surgeon at the mill.[17] Derham's worries about self-image were evidently shared by fellow

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[14]The actions of the Bradford worsted spinner and short-time proponent, John Wood, appear to constitute an exception. According to P.P. 1831-2 (706) XV, 114-115, 300, Wood provided warm and cold baths for his workers, employed a well-liked local surgeon to visit the mill and treat cases of illness, sent ailing employees to watering places such as Buxton, and maintained shorter hours and hired proportionately more children per machine than was usual in the business. As Robert Gray, "The Languages of Factory Reform in Britain, *c.* 1830-1860," in Patrick Joyce (ed) The Historical Meanings of Work (Cambridge: Cambridge University Press), p. 159, remarks, however, even underlying Wood's humane practices "one can discern...a strategy of higher productivity from a stabilized labour-force."

[15]W.R. Lee, "Robert Baker: The First Doctor in the Factory Department. Part I. 1803-1858," British Journal of Industrial Medicine 21 (1964), p. 86; P.P. 1833 (519) XXI, C.3., 14.

[16]Quoted in Lee, p. 86.

[17]Ibid.

employers, for within a few weeks, Baker had "forty of the largest mills in Leeds and the neighbourhood" in his charge.[18]

Sometimes, instead of hiring a medical attendant, factory owners subscribed to a medical charity. Evidence suggests that manufacturers in the major textile centres were most likely to do so. In a survey of the health conditions at eleven mills in Derbyshire and Lancashire, one of the Factories Inquiry Commissioners, Bisset Hawkins, noted that only three of the seven Derbyshire mill owners supported local charities, while each of the four Lancashire industrialists did so.[19] More recently, in a study of medical provision in the West Riding, Hilary Marland has found that while manufacturers in the rapidly-growing textile town of Huddersfield accounted for forty-one per cent of subscriptions to the town's Dispensary and Infirmary in the early 1830s, their counterparts in the more traditional market town of Wakefield contributed only thirteen per cent of subscriptions to the local Dispensary.[20] Marland argues that the charitable support of the Huddersfield factory owners should not be seen as an expression of paternalism; many of the contributors to the Infirmary were "exploitative employers" and staunch opponents of factory legislation.[21] Rather, she asserts, the motive of entrepreneurial support was economy: "for a subscription of just a few guineas per annum" a mill owner could make provision for ill-health and accidents, "a

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[18]Ibid. As Lee reveals, Baker's term of employment lasted only three or four years.

[19]P.P. 1834 (167) XIX, 255-270.

[20]Hilary Marland, Medicine and Society in Wakefield and Huddersfield 1780-1870 (Cambridge: Cambridge University Press, 1987), pp. 133-134.

[21]Ibid., pp. 154-155.

cheaper alternative to providing adequate safety precautions, employing a factory surgeon, or paying for the medical treatment of employees on an individual basis."[22]

Contemporary accounts confirm Marland's view. In 1833, James Phillips Kay deplored the weakening of the ties between masters and workmen that had once ensured the effective provision of medical aid. He pointed out that mill owners eschewed personal interest in employee health and that "having little direct interest in ascertaining the actual condition of their workmen, or in inquiring concerning the progress of their illness," they dealt with health matters at a distance, appointing "a subordinate agent" to hand out recommendations for charitable relief.[23] In 1838, a Manchester surgeon, P.H. Holland, charged that textile employers subscribed to charities as a way of holding down wages. He offered the example of a cotton manufacturer who supported "the existence of a dispensary, where the work-people could get 'doctoring' for nothing, as an argument why there was less occasion for raising wages."[24]

In cases where manufacturers did contribute to medical charities, their support was generally meagre. Like Marland, John Pickstone reveals that it typically consisted

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[22]Ibid., p. 134.

[23]James Phillips Kay, Defects in the Constitution of Dispensaries (London: James Ridgway and Son, 1834), p. 22. The paper was read before the Manchester Statistical Society in 1833 and published the following year.

[24]P.H. Holland, Self-Providence v. Dependence upon Charity. An Essay on Dispensaries (Manchester: Love and Barton, 1838), p. 8. See also the undated, probably earlier, P.H. Holland, On the Relative Utility of Charitable and Self-Supporting Dispensaries (Manchester: T. Forrest), p. 5. The case described by Holland was not unique. In 1832, as John V. Pickstone, Medicine and Industrial Society (Manchester: Manchester University Press, 1985), p. 60, notes, the Poor Man's Guardian castigated a Salford fustian manufacturer, Mr. Rostron, who contributed £20 to a cholera relief fund, but at the same time cut employee wages.

of only "one or two guineas *per year.*"[25] The paucity of entrepreneurial support for charitable assistance is exemplified by the difficulties that the promoters of dispensaries and infirmaries encountered as they attempted to maintain or expand the services of their institutions. In Stockport, for instance, concern over increasing numbers of severe factory accidents unable to be treated at the town's Dispensary resulted in a plan to establish in-patient surgical wards in 1816.[26] Nothing came of the proposal that year, and in 1821, when the governing Committee launched another subscription drive in honour of the coronation of George IV, it was again disappointed. Over the next ten years, the Committee struggled to expand the facilities of the charity, but was impeded by mounting debt and declining public interest. Though emphasizing the value of the charity to local industrialists, the Committee failed to attract significant manufacturing support. In 1828, a local magistrate pointed out that of the £344.2.0 recently collected for the Dispensary at a fancy dress ball, only £30 had come from the town's mill owners. The magistrate queried whether it was "not lamentable in the extreme to see the want of philanthropy and public spirit on those, for whose exclusive benefit, the Institution was established and is continued."[27] It was not until 1832, through the intervention of Francis Phillips, a conservative land-owning member of a textile family and a brother of J.L. Phillips, who had been active in the Manchester Infirmary, that

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[25]Pickstone, p. 56.

[26]My account of the Stockport Infirmary is based on Annual Reports of the Stockport Dispensary and Infirmary; G.M Jackson, "The House of Mercy: a History of the Stockport Dispensary and House of Recovery 1792-1833," (Diss. Elizabeth Gaskell College of Education, 1967), pp. 24-63; Pickstone, pp. 68-69.

[27]Stockport Advertiser, 25 April 1828, quoted in Jackson, p. 27.

the difficulties of the governors were overcome and in-patient facilities were established in a new Infirmary.

Similar stories could be told for the Dispensary and Infirmary at Huddersfield, the Infirmary at Manchester, and Dispensary at Bolton.[28] In these towns, the pressures of growing population and the increasing numbers of sick and injured workers led governing committees to press for the expansion of the charitable institutions.[29] Their proposals were hampered, however, by lack of public concern, particularly from the manufacturing sector. As John Pickstone comments, "the will to charity declined" in manufacturing towns in the 1820s and 1830s, even "as the social consequences of industrialisation became more serious."[30]

II

In the view of contemporary observers, the withering of the charitable impulse and the disintegration of social bonds "beyond those of pecuniary service" were sources

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[28]Marland, pp. 128-130; J.K. Walker, Observations on the Expediency of Establishing Hospitals, for the Admission of a Limited Number of In-patients in Manufacturing Districts, addressed to the Governors of the Huddersfield Dispensary (Huddersfield: William Moore, 1828); Pickstone, pp. 49-50, 71-72.

[29]In Huddersfield, as Marland, p. 105, indicates, the number of residents who applied for outpatient relief rose more than fifty per cent in fifteen years, from 1,074 in 1816 to 1,667 in 1831. In Manchester, as Kay, p. 19, observed, demand for charitable assistance more than doubled in ten years. The number of patients admitted to the Royal Infirmary and Dispensaries increased from 12,900 in 1821 to 30,162 in 1831.

[30]Pickstone, p. 68.

of regret.[31] According to John Roberton it was:

> ...a misfortune for a family to form part of a congregation of operatives, amounting perhaps to *eight hundred* or *one thousand*, all employed in the same factory, and by a single employer. A certain regular gradation of rank in society in unquestionably natural. If the master acknowledges no common bond as existing between him and his labourers; if he does not even know their names and faces; if he avowedly or practically (which is the same thing) disclaims all regard to their conduct, except *as manufacturers*; if, in fine, he keeps wholly aloof from them, (and under present circumstances it is not easy to conceive how he can act otherwise,) then it is clear that some of the best feelings of our nature—I mean a sense of dependence and gratitude—can never be called into exercise in the breasts of operatives: hence must originate a condition of mind at once low, conceited, and insolently disposed—a very hot-bed for turbulence and crime.[32]

Although medical spokesmen mourned the "disruption of natural ties" and the creation of "a wide gulf between the higher and lower orders of the community," they also expressed reservations about the provision of charitable aid.[33] In 1830, Edmund Lyon, Physician to Manchester's Infirmary, queried the value of the town's Lying-in Charity arguing that assistance at the time of childbirth destroyed "the inducement to forethought and frugality" and led to the degradation of the Charity's recipients.[34] Over the next few months, a dispute arose concerning the degree to which the

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[31][William Rathbone Greg], An Enquiry into the State of the Manufacturing Population, and the Causes and Cures of the Evils therein Existing (London: James Ridgway, 1831), p. 38.

[32]John Roberton, General Remarks on the Health of English Manufacturers (London: James Ridgway, 1831), p. 23.

[33]James Phillips Kay, The Moral and Physical Condition of the Working Classes Employed in the Cotton Manufacture in Manchester, 2nd ed. (1832; rpt. New York: Augustus M. Kelley, 1970), pp. 48-49.

[34]Edmund Lyon, "Sketch of the Medical Topography and Statistics of Manchester," North of England Medical and Surgical Journal 1 (1830-1831), pp. 147-148.

institution was abused and the extent to which its beneficiaries "might and ought to have provided for the necessities of these periods, without recourse to public charity."[35] The dispute over the Lying-in Charity served as a prelude to the criticisms that were launched several years later concerning the operation and effects of dispensaries.

In 1833, James Phillips Kay addressed a series of remarks to the manufacturer and President of the Ardwick and Ancoats Dispensary, George Murray. He began by directing Murray's attention to the influence of "medical charities on the habits and social condition of the poor."[36] He asserted that the universal availability of aid undermined the independence of the poor and created "a reliance on assistance, and a craving for support" that would eventually overwhelm the resources of organized benevolence.[37] In support of his claim, he referred to the records of local charities, which showed significant increases over time in both the numbers of patients relieved and the expenses incurred. Kay maintained that "the demand for gratuitous medical aid" had grown more rapidly than the increase of population and that "increased reliance on charity" had been "directly fostered" by the existence of charitable institutions, particularly by the creation of new dispensaries, such as the Ardwick and

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[35]Manchester Guardian, 5 February 1831; quoted in Pickstone, p. 80.

[36]Kay, Defects, p. 3.

[37]Ibid., p. 6.

Ancoats.[38] In place of the current system of gratuitous aid, he advocated a plan of "self-supporting" dispensaries, already introduced in the Midlands, whereby "free" or "independent" patients paid for medical assistance through weekly subscriptions.[39] He insisted that such institutions would encourage "frugality and forethought" and concluded that the best way to remedy the condition of the poor was to "teach them to help themselves."[40]

Kay's critique of medical charity did not extend to all charitable establishments. He exempted Manchester's Royal Infirmary from censure on the grounds that it was the recipient of severe medical cases, "requiring the sedulous and constant care of the physician," as well as urgent surgical cases, "especially the severe injuries inflicted by machinery in factories."[41] Kay evidently regarded factory accidents in a different light from disorders such as gastralgia and enteralgia that presented themselves at the Dispensary. In his estimate, accidents alone merited charitable attention.

Kay's was part of a larger view that distinguished between the machine injuries

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[38]Ibid., p. 20. As Kay, Defects, p. 19, pointed out, the Ardwick and Ancoats Dispensary was only one of several recently-established dispensaries in Manchester. Its founding in 1828 was preceded by that of the Chorlton-upon-Medlock Dispensary in 1825 and the Salford and Pendleton Dispensary in 1826 and succeeded by the establishment of the Hulme Dispensary in 1830.

[39]Ibid., pp. 25-33.

[40]Ibid., pp. 27, 35-36. The fate of Kay's proposals at the Ardwick and Ancoats Dispensary is unknown. At the nearby Chorlton-upon-Medlock Dispensary, however, as the Eighth and Ninth Annual Reports (1834, 1835) reveal, the self-supporting plan was instituted in 1834, but was found to be fraught with difficulty and was soon abandoned.

[41]Kay, Defects, p. 14.

and the chronic illnesses experienced by factory workers. [42] In 1828, as part of the campaign to expand the Huddersfield Dispensary, J.K. Walker, a medical officer at the Dispensary, published a pamphlet "on the Expediency of Establishing Hospitals, for the Admission of a limited Number of In-patients in Manufacturing Districts." He maintained that in-patient wards were necessary in Huddersfield because of the number of woollen factories in the area and "the frequency of serious accidents from the increased use of the machinery."[43] He discounted the argument, however, that such wards were also necessary because of the sickness conferred by factory labour. While admitting that, at one time, factories had been "nurseries of disease," he asserted that great improvements had taken place in ventilation and general hygiene and that the "degree of unhealthiness" was now minimal.[44]

Discussion of the provision of medical assistance to the manufacturing poor fit closely with prevailing theories of industrial ill-health. In the minds of medical authorities, if the factory no longer bred disease, then the sickness of factory workers

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[42]Because of their unpredictable, momentary occurrence, machine injuries constituted a different type of risk than long-term chronic illnesses, and might be seen to bear a less intrinsic relationship to the system of factory production. As Maxine Berg, The Machinery Question and the Making of Political Economy 1815-1848 (Cambridge: Cambridge University Press, 1980), p. 312, argues with respect to the poverty of handloom weavers, factory accidents could be construed as "an anomaly" of the industrial process and therefore be deemed worthy of special provision.

[43]Walker, p. 6.

[44]Ibid., p. 8. The Factories Inquiry Commission also distinguished between factory accidents and factory ill-health. As the First Report of its Central Board, P.P. 1833 (450) XX, 1-74, indicates, it recommended no action, beyond a reduction of hours, with respect to factory disease, but put forward a strong case for financial compensation in the case of factory accidents, recommending that mill owners assume the cost of medical treatment of injured workers and also pay half-wages until such individuals had been cured.

was no longer an appropriate object of charitable concern, and if such illness as did exist was attributable to the diet and modes of living of workers themselves, then the responsibility for obtaining relief was best assumed by the workers through institutions such as self-supporting dispensaries. In their determination of both the causes of factory ill-health and its remedies, medical men were overwhelmingly concerned with the habits and character of the factory population. Believing that the sickness of the manufacturing poor was primarily a problem of morals, their remedial efforts aimed at remoralization. In the words of Kay, "they, who would rescue [the poor] from their condition, must depend not alone on elevating them physically, but must seek to produce a strong and permanent moral impression."[45]

Kay's zeal to effect moral improvement received a boost in 1833 with the creation of the District Provident Society. Established by the same group of liberal reformers that was responsible for the founding of the Manchester Statistical Society, the District Provident Society aimed to inculcate the virtues of saving and thrift. It employed agents who visited the poor in their homes, encouraging them to make regular monetary deposits and thus provide for the expenses of domestic life.[46] Kay perceived a close association between the work of the Provident Society and the operation of a self-supporting dispensary. He pointed out that Society Visitors had

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[45]Kay, Moral and Physical Condition, p. 6.

[46]T.S. Ashton, Economic and Social Investigations in Manchester, 1833-1933 (Brighton: The Harvester Press, 1977), pp. 1-12; Gary Messinger, "Visions of Manchester: A Study of the Role of Urban Imagery in History, 1780-1878" (Ph.D. Diss., Harvard University, 1971), pp. 175-179.

already done much to make "the nature and the relations of public charity...better understood" in the Ardwick and Ancoats district, and maintained that if the self-supporting system was established, the Visitors would use their influence "to induce the majority of the working classes to adopt the plan."[47] In Kay's view, a self-supporting dispensary would produce the same sort of beneficial impression already being made by the Provident Society.

If medical discussion of charity in the early 1830s is explicable in terms of theoretical and practical interest in the condition of workers, it can also be understood as a reaction to the deteriorating situation of doctors. In his examination of the "constitution of dispensaries," Kay claimed that, in its current form, the charitable system worked to the disadvantage not only of the poor, but also of their medical advisors. He argued that at one time, operatives received professional attention gratefully and medical men "derived considerable satisfaction from their intercourse with the poor."[48] At present, however, when relations between workers and their employers had become attenuated and the provision of charitable assistance had become depersonalized, workers viewed medical attendance "*more as a right* than *as a boon*" and doctors received little respect or recognition of their endeavours.[49] For practitioners such as Kay, dispensaries "were not the social instruments which

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[47]Kay, Defects, pp. 33-34.

[48]Ibid., p. 22.

[49]Ibid., pp. 22-23.

eighteenth-century philanthropists had intended."[50] They no longer served as arenas for patronage, professional advancement, or personal contact between rich and poor. In an era in which the cash nexus was replacing all other forms of social connection, dispensaries "were increasingly anomalous" and no longer fulfilled the needs of any of the parties that had once benefitted from their establishment.[51]

The reluctance of medical authorities in northern textile towns to extend charitable assistance to ailing workers can also be viewed as a manifestation on a local scale of a broader set of attitudes concerning the poor. The early decades of the nineteenth century in Britain were marked by a growing harshness in perceptions and treatment of poverty that can be said to have culminated in the 1832 Anatomy Act, which degraded the poor by permitting the unclaimed bodies of those who died in workhouses or hospitals to be used for dissection (a fate previously reserved for hanged criminals) and the 1834 Poor Law Amendment Act, which robbed the poor of their traditional right to outdoor relief and tyrannized them through instituting the policy of "less eligibility" in the workhouse.[52] The influence of wider currents of thought is particular evident in the work of Kay, who employed concepts derived from Thomas Malthus, the major intellectual influence in the creation of the New Poor Law, in his paper on dispensaries and who dedicated the second edition of The Moral and Physical

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[50]Pickstone, p. 83.

[51]Ibid.

[52]On the Anatomy Act, see Ruth Richardson, Death, Dissection and the Destitute (London: Routledge & Kegan Paul, 1987). Among the many works on the reform of the poor laws, see Gertrude Himmelfarb, The Idea of Poverty: England in the Early Industrial Age (New York: Alfred A. Knopf, 1984).

Condition of the Working Classes to the Rev. Thomas Chalmers, a committed Malthusian and proponent of poor law reform.[53] So caught up with issues of poverty was Kay, that in 1835, after failing for a second time to obtain a position at Manchester's Infirmary and experiencing a breakdown in health, he gave up medical practice and left Manchester to assume the position of Assistant Poor Law Commissioner for the eastern counties[54].

III

Medical men were not alone in regarding the contemporary system of medical charity as deficient. Factory workers also saw it as inadequate owing to the limited relief available at times of sickness. As the case of a Huddersfield youth, Joseph Hebergam, illustrates, operatives whose health suffered as a result of their labour often had trouble gaining access to charitable treatment.[55] Hebergam began work in a worsted mill at the age of seven. After a decade of attendance on throstle machines and steam looms, he experienced such pain, weakness, and deformity he left the mill and sought medical help. His mother managed to obtain a recommendation for him to the newly-opened Huddersfield Infirmary, but he was only able to be seen as an out-patient because the twenty beds in use were full. As he later explained to Sadler's Select Committee, "they could only take in twenty at once, because there are not

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[53]Kay, Defects, pp. 6-7, 16, 35-36; Kay, Moral and Physical Condition, pp. 3-16.

[54]Frank Smith, The Life and Work of Sir James Kay-Shuttleworth (London: John Murray, 1923), pp. 30-31.

[55]P.P. 1831-2 (706) XV, 157-164.

subscribers enough to enable them to take in more, and there are so many accidents that they are obliged to take in."[56] Though eventually he secured a place as an in-patient at the Leeds Infirmary, it was only through the fortunate circumstance of having been assisted by the short-time leader, Richard Oastler.

Hebergam's experience in being refused admission as an infirmary in-patient was not uncommon. Because cases of machine injury, as opposed to sickness, were received without recommendation, and because accidents occurred so frequently in manufacturing towns, very often the in-patient facilities of hospitals were filled with patients requiring immediate surgical attention, and those with more chronic conditions were forced to go elsewhere for help.[57] In June 1832, William Turnbull, a physician to the Huddersfield Infirmary, noted that in the previous year, "few medical cases" had been accepted as in-patients at the Infirmary "in consequence of the accidents and cases requiring operations occupying the limited number of beds."[58]

Not only was the aid available through the charitable system sometimes difficult to obtain, it also frequently proved inefficacious. Hebergam himself received little benefit from the leg irons prescribed at the Huddersfield Infirmary or the week and a half spent at the Leeds Infirmary; he still suffered severe pain and was too weak to

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[56]Ibid., 162.

[57]Pickstone, pp. 49-50, makes this point in his examination of the expansion of the Manchester Infirmary. Marland, pp. 130-133, discusses it with respect to the Huddersfield and Wakefield Infirmaries.

[58]William Turnbull, "Medico-Chirurgical Report of the Huddersfield Infirmary, from June 29, 1831 to June 29, 1832," Edinburgh Medical and Surgical Journal 39 (1833), p. 104.

work.[59] Other workers, too, experienced little improvement after undergoing charitable treatment. William Hebden, a twenty-year-old operative who had become nearly blind from the gas used to light the mill at which he worked, spend seven weeks in the Leeds Infirmary. He left uncured and unable to resume factory employment.[60] Eliza Marshall, a young worsted worker who endured pain and deformity similar to that experienced by Hebergam, was an out-patient at the Leeds Infirmary for twelve months. Though she was given "stuff" to rub on her joints, the remedy "did no good."[61] The daughter of Stephen Binns, who had been employed with her father at a flax mill and become progressively more afflicted by phthisis and shortness of breath, was taken by her parents to the Leeds Dispensary, where she, too, was given some sort of "stuff."[62] In her case, as well, the remedy did "very little good."[63]

The futility of much of the aid offered through the charitable system was recognized by doctors, as well as patients. In his account of dispensaries, Kay observed that because of the numbers of poor attending the charities, medical attendants were able to devote only a few minutes to each case, their thoughts were often distracted by the crowding and clamour, and they were unable to treat patients with the

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[59]P.P. 1831-2 (706) XV, 164.

[60]Ibid., 234.

[61]Ibid., 149.

[62]Ibid., 177.

[63]Ibid.

degree of care and attention possible in private practice.[64] Other doctors were similarly aware of the limited benefits that dispensaries and infirmaries could confer. When the Bradford surgeon, Mr. Brackey, was approached by a young piecener, Benjamin Gummersall, he informed the boy that he could do nothing for his deformity and limb pain, that the Dispensary "had called a committee for a boy like [him] before, but they could not do him any good."[65] After his encounter with Brackey, Gummersall went to see another practitioner, Dr. Beaumont, who was equally pessimistic about the possibility of gaining a cure at the Leeds Infirmary.[66] According to the surgeon, Samuel Smith, the course of treatment for factory children at the Leeds Infirmary generally consisted of little more than rest and good diet.[67]

Medical and lay views of the efficacy of charitable relief did not always coincide, however. As the following cases indicate, doctors and patients sometimes arrived at different conclusions concerning the outcome of charitable treatment. On July 16, 1823, J.B.V., a nine-year-old factory girl, was admitted as an in-patient at the Leeds Infirmary after getting her hand caught in moving machinery. The fingers were much fractured and lacerated and all except the little one were amputated. J.B.V. remained in the hospital until August 29, when she was made an out-patient. On October 1, she was said to be "cured," with the attending surgeon noting that "the little

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[64]Kay, Defects, pp. 24-25.

[65]P.P. 1831-2 (706) XV, 113.

[66]Ibid.

[67]Ibid., 509-510.

Finger, the only one left seemed as if it would grow very useful in lifting etc."[68] In 1832, a fourteen-year-old piecer, James Hayes, was taken to the Ardwick and Ancoats Dispensary following a similar accident. His thumb was amputated at the Dispensary and he was then sent on to the Royal Infirmary, where three more fingers were removed. He remained in the Infirmary for six and a half weeks and, like J.B.V., was discharged with only the little finger intact. In contrast to J.B.V.'s attending surgeon, Hayes found the remaining digit to be of no use.[69]

IV

In the face of disinterest on the part of manufacturers and restricted and often ineffective charitable assistance, factory workers sought other forms of relief for the ill-health and incapacity that resulted from their labour. One source to which they had little recourse was the parish. As in previous decades, the number of applicants for parochial aid in the northern manufacturing districts was small, due not only to the continuing swell of immigrants without settlement claims, but also to the unsympathetic attitudes and policies of poor law authorities.[70] In 1832, two officials, Gillet Sharpe, who had served as an assistant overseer of the poor at Keighley, and William Osburne, a former overseer and workhouse trustee at Leeds, provided evidence of the unwillingness of parochial officers to assist workers who wished to alleviate or avoid

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[68]S.T. Anning, "The Practice of Surgery in Leeds 1823-1824," Medical History 23 (1979), p. 62.

[69]P.P. 1833 (519) XXI, D.3., 12.

[70]P.P. 1831-2 (706) XV, 318-319; P.P. 1834 (167) XIX, 40-41.

the pernicious effects of factory employment.[71] They emphasized that relief was granted only in cases of "positive sickness" or injury.[72] (In Leeds, the verifying evidence of a surgeon's report was also required.) Persons who applied for aid on the grounds that their health, or that of their children, had begun to suffer and that they feared further deterioration were refused outright. In the words of Sharpe:

> It has been a maxim, I suppose, invariably acted upon, that if people could work at all, they must work; if they were able to go at all, they must go, either all or part of the time; as to making an excuse, and saying my children worked fourteen hours a day, or as long as they are able to stand, I am afraid they will be cripples and lose their health, or diminish their growth; I wish to take them away, but I cannot maintain them, I shall therefore come to the parish for relief; they would instantly tell him, "You shall do no such thing."[73]

He stated that in many instances individuals were forced to continue working, even though their health declined to the degree that they had to be carried to the mills on the backs of others.

Even in cases of positively-identified illness, relief was circumscribed. According to a Poor Law Commission Report of 1840, the medical relief disbursed by parishes in Lancashire and the West Riding of Yorkshire prior to 1834 "bore an extremely small proportion to the population, and to the general expenditure on the poor"; in 1844, it was determined that the sum amounted to only one-sixth of that spent

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[71]P.P. 1831-2 (706) XV, 208-214; 463-464.

[72]Ibid., 464.

[73]Ibid., 212.

in counties to the south.[74] In her study of the provision of health care in northern manufacturing communities, Hilary Marland indicates that medical assistance was sometimes provided in the workhouse, but was more often given out-of-doors through the payment of medical bills.[75] The testimony of witnesses to Sadler's Select Committee reveals that, in whatever manner it was dispensed, aid was sparing. John Dawson, a Leeds flax worker, related that when sent to the workhouse suffering limb pain and deformity, he was first attended by a medical gentleman at the workhouse and then sent on to the Infirmary. Though the Infirmary surgeon recommended that he have "machines" for his legs, the parish officers, apparently beleaguered by requests of a similar kind, refused to provide them.[76] Gillet Sharpe informed the Committee that when the sick poor of Keighley applied for assistance, he was not at liberty to send them to a doctor, except in certain instances. When he did so, he was subjected to extensive complaints from members of the select vestry who objected to the "very heavy" expenses incurred.[77]

V

With the widespread reluctance of employers and rate-payers to extend aid at times of distress, the relief of factory ill-health fell to workers, who resorted more than

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[74]P.P. 1840 (253) XVIII, App. 13, No. 6, III, 164-164; P.P. 1844 (531) IX, 8; cited in Marland, pp. 57-58.

[75]Marland, pp. 58-59.

[76]P.P. 1831-2 (706) XV, 228.

[77]Ibid., 211.

ever to practices of self-help. According to contemporary witnesses, mill workers frequently obtained medical advice and assistance independently. Sometimes they approached a young physician or surgeon for gratuitous aid. In 1833, Peter Gaskell estimated that this occurred not less two thousand times annually in Manchester.[78] More typically, they patronized one of the many fringe practitioners who flourished in the northern manufacturing towns. As Marland argues, not only did the traditional practitioners of folk medicine, such as wise women, continue to thrive in the early nineteenth century, new "para-medical groups," such as chemists and druggists also attracted popular support.[79] In 1833, a Manchester chemist, Mr. M'Williams, reported that his shop was "very much frequented by the factory classes," who purchased not only the "strengthening remedies" recommended by physicians, but also large quantities of purgative medicines.[80] According to Gaskell, Manchester boasted seventy-six "druggists and apothecaries," as well as "a host of quacks" and "sellers of patent medicine to a great amount annually."[81]

Fringe medicine held numerous attractions for the manufacturing population. One significant inducement was cost: the fees charged by practitioners were generally low and the remedies they offered were usually also inexpensive. As well, fringe

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[78]P. Gaskell, The Manufacturing Population of England, its Moral, Social, and Physical Conditions, and the Changes which have arisen from the Use of Steam Machinery (London: Baldwin and Cradock, 1833), p. 230.

[79]Marland, pp. 205-251.

[80]P.P. 1834 (167) XIX, D.3., 285.

[81]P. Gaskell, p. 230. By comparison, the town had twenty-six physicians and one hundred and thirty-three surgeons.

doctors frequently specialized in the relief of ailments which particularly plagued industrial workers, such as chest disorders, chronic sicknesses, deformity, "sore legs," and fractured limbs.[82] For the treatment of the last of these, factory workers often turned to bone-setters, the most famous of whom were the Taylor family of Lancashire.[83] In 1837, the Bolton physician, James Black, complained that "though the Prince of these osteologists resides in Manchester, where he has acquired a fortune equal to that of the first cotton spinners, yet in almost every town in the south of Lancashire, there reside two or more collateral branches from the parent stock."[84]

Factory workers also continued to treat themselves and their families with home remedies. According to a Leeds operative, Joshua Drake, it was the general custom of parents of children employed in flax mills to dose their offspring once a week with a "vomit of salts," in order to relieve them of the effects of dust in the mill air.[85] In Manchester, both John Roberton and Peter Gaskell remarked on the widespread practice of domestic medicine, while the results of survey published in the Lancet in 1841

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[82]Marland, pp. 250-251.

[83]John L. West, The Taylors of Lancashire, Bone-Setters and Doctors, 1750-1890 (Walkden, Worsley: H. Duffy, 1977); Marjorie Cruikshank, Children and Industry: Child Health and Welfare in North-West Textile Towns during the Nineteenth Century (Manchester: Manchester University Press, 1981), p. 71. On the practice of bone-setting see Roger Cooter, "Bones of Contention? Orthodox Medicine and the Mystery of the Bone-Setter's Craft," in W.F. Bynum and Roy Porter (eds), Medical Fringe and Medical Orthodoxy 1750-1850 (London: Croom Helm, 1987), pp. 158-173.

[84]James Black, "A Medico-Topographical, Geological, and Statistical Sketch of Bolton and its Neighbourhood," Transactions of the Provincial Medical and Surgical Association 5 (1837), p. 210.

[85]P.P. 1831-2 (706) XV, 38, 42.

showed that half of the town's school children were treated by parental administrations of herbs and salts when ill, and that only a small fraction had ever been seen at the Infirmary.[86]

In providing for periods of sickness and suffering, mill workers relied not only on individual exertions, but also on cooperative ventures. Adult males continued to join forces in friendly societies. In 1830, Edmund Lyon remarked on "the many associations for mutual support" that existed in the town, while in 1834, the Supplementary Report of the Factories Inquiry Commission commented that "nearly all the respectable and independent portion of the working classes are united into societies which form a fund for mutual relief in times of sickness."[87]

The most important way that friendly societies assisted ailing members was through the payment of sickness benefits. The benefits, which were generally in the order of ten shillings a week, could continue indefinitely if a member remained ill or incapacitated, though they were usually reduced after six months, and again after a year. As Marland points out, this form of provision was particularly well-suited to the needs of chronically-ill workers, whose lengthy sicknesses subjected them to extensive unemployment and often prevented them from obtaining charitable relief.[88]

Some societies, especially the larger affiliated orders, also offered the services of a club doctor. Hired on a contract basis, the doctor provided advice and sometimes

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[86]Roberton, p. 13; P. Gaskell, p. 230; Lancet (11 December 1841), p. 391.

[87]Lyon, p. 21; P.P. 1834 (167) XIX, 47.

[88]Marland, pp. 188-189, 203-204.

medicines, though not specialized medical or surgical treatment. Just coming into existence in the 1830s, the system did not operate very successfully. Members complained of the inadequacy of the attention they received, while medical men were unhappy with the generally low rate of remuneration and the undercutting practices it promoted.[89] In Bolton, for instance, doctors became so opposed to the "ruinous and unprofessional competition" engendered by the system, they resolved "to relinquish all connection" with the town's societies.[90]

Textile workers assisted one another not only through friendly societies, but also through factory-based clubs. Such clubs were generally found in the larger factories, with various occupational groups, such as spinners and dressers, often having separate organizations that provided financial aid at times of sickness or death.[91] Factory clubs could be of particular benefit to women. At the Ashton works at Hyde, young female weavers had their own funeral club, funded by contributions of fourpence per member.[92]

Factory workers also banded together to obtain medical assistance. The 1827 Annual Report of the Chorlton-upon-Medlock Dispensary commended the workers at three of Chorlton's mills for "the amounts which they have contributed to the Funds [of

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[89]P.H.J.H. Gosden, The Friendly Societies in England 1815-1875 (Manchester: Manchester University Press, 1961), pp. 138-149; Marland, pp. 192-193.

[90]Black, p. 209.

[91]P.P. 1831-2 (706) XV, 172, 447; P. Gaskell, p. 288.

[92]Kay, Moral and Physical Condition, p. 103.

the Dispensary] of their own free will, uninfluenced by any authority whatever."[93] By subscribing to an institution such as a dispensary, operatives not only were assured of receiving help themselves, they also gained the advantage of being able to recommend relatives and friends for relief.[94] Even in areas which lacked a hospital, workers could club together to obtain aid. In the rural parish of Neilston, for instance, the employees at a number of factories made weekly contributions to a "surgeon's fund."[95]

While friendly societies and factory clubs operated primarily for the benefit of adult operatives, Sunday school sick and funeral societies still offered assistance to younger workers. At Manchester's Bennett Street school, 836 students (half of whom were employed in mills) belonged to the Sick Society in 1832, while 1,093 students subscribed to the Funeral Society.[96] Like the friendly societies, Sunday school sick societies provided for extensive illness. At the Bennett Street Sick Society, 214 children, or one-quarter of the members, came on the sick list in 1832 and received relief for an average of four and a half weeks.[97] Sunday school sick societies also demonstrated flexibility in their arrangements. At the Parish Church Sunday School Sick Society in Bolton, members were provided with two to four shillings a week in

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[93]The Second Annual Report of the Chorlton-upon-Medlock Dispensary (1827), pp. 4-5.

[94]P.P. 1833 (519) XXI, 16.

[95]Ritchie, p. 298.

[96]P.P. 1834 (167) XIX, D.3., 276.

[97]Ibid., 276-277.

times of sickness, or until the benefits totalled 7*l.* 6*s.* If the member was an orphan, however, and the society possessed sufficient funds, the relief was "continued at the discretion of the officers."[98]

As in the past, factory workers also assisted one another less formally. At times of sickness or injury, they frequently took up collections or extended other forms of aid to their workmates. When Isaac Openshaw, the Sharples piecer, had to give up mill work because of ill-health, his associates gathered 1*l.* 8*s.* to use in purchasing an ass, in order that Openshaw might support himself through carrying coal.[99] Similarly, when the Manchester piecer, James Hayes, had his hand lacerated by factory machinery, one of the spinners went round the mill collecting pennies and two-pence from the workers. As a result, Hayes was provided with four shillings in the week after the accident and two shillings a week for five weeks after his discharge from the Infirmary.[100] Operatives also helped one another on the factory floor, doing what they could to ease the burden of those unable to bear the strain of the work. Spinners frequently chose to sustain a personal loss, rather than abuse the children who worked under them, and even the youngest members of the workforce often assisted one another in their tasks.[101]

In the early 1830s, the degree of unhealthiness that prevailed in Britain's

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[98]Ibid., 309.

[99]P.P. 1831-2 (706) XV, 396.

[100]P.P. 1833 (519) XXI, D.3., 12.

[101]P.P. 1831-2 (706) XV, 38, 210, 237, 255, 452.

northern manufacturing communities attracted considerable attention. In 1831, the surgeon, John Roberton, estimated that "three-fourths of the inhabitants of Manchester" were sufficiently unwell to seek out medical treatment each year.[102] In 1832, a Keighley woolsorter, Abraham Wildman, observed that at least "one out of ten" local factory children was deformed.[103] In 1833, the former apprentice, Robert Blincoe, remarked that "there is plenty about Stockport that is going about now with one arm; they cannot work in the mills, but they go about with jackasses and such like."[104] As the scale and pace of industrial production expanded in the early years of the nineteenth century, and as textile mills increasingly depended on the labour of young and poorly-paid women and children, the health needs of the manufacturing population increased. At the same time, the willingness of mill owners and medical men to attend to such needs declined. By 1833, the bonds of sympathy and gratitude that had once ensured the provision of relief had ruptured and responsibility for providing care and assistance had devolved to those whose habits and modes of living marked them as "other." Though mill workers and their families employed a variety of means to secure well-being and to alleviate suffering, the presence of disease, disability and death continued to loom large in the manufacturing world.

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[102]Roberton, p. 13. This amounted to some 170,000 persons.

[103]P.P. 1831-2 (706) XV, 155-156.

[104]P.P. 1833 (519) XXI, D.3., 18.

CONCLUSION

The ill-health of the early factory labour force has not attracted a great deal of attention from twentieth-century historians. For observers in the late eighteenth and early nineteenth centuries, however, the sickness and incapacity of the ever-increasing number of persons who laboured in Britain's early textile mills was a recurrent and contentious matter of public concern. From the time that workers at the Radcliffe mill first fell ill, it was evident that the technical triumphs and astonishing progress of the textile industry had a darker underside and that the development of the factory system was accompanied by a growing incidence of pain, suffering, and death. While the troubling and sometimes terrifying sickness of mill workers was apparent to those both inside and outside the confines of factory gates, the nature of the sickness, its causes, and the most appropriate means of dealing with it were not as clear. Over the next fifty years, the questions aroused by the afflictions of the industrial workforce provoked and preoccupied a widening constituency of medical men, labour advocates, industrial spokesmen, social reformers and political authorities. They contributed to a discourse on factory health that waned intermittently, but failed to achieve definitive answers.

It is possible to detect a certain continuity to the illness experienced by the first generations of factory labourers. Certainly workers themselves spoke of their condition, and its relationship to the circumstances of their employment, in very similar ways. Throughout the early years of the nineteenth century they drew attention to a range of symptoms and ailments—from paleness, fatigue, and lack of appetite to limb

pain, deformity, sore eyes, coughs, and consumption—which, in their perception, were directly attributable to the intense exertion, long hours, overwhelming heat, and suffocating dust associated with their employment. Though there is less evidence concerning the understanding of operatives in the late eighteenth century, it is apparent that they, too, suffered extensively and that they traced the origin of their illness to their labour. It is not only the testimony of lay commentators, however, that suggests that factory ill-health remained relatively constant. Even the views of medical men seem to reveal an enduring quality to worker sickness. Doctors' repeated observations of the dull eyes, weak pulse, spiritlessness, and languor of mill workers, and their recurrent theorizing about feebleness, loss of tone, relaxed fibres, and reduction of nervous power signify that, whatever other forms their suffering may have assumed, those whose labour fuelled the first half-century of industrial expansion experienced severe and unremitting exhaustion and depletion of strength and energy.[1]

What is remarkable, however, is how differently this ill-health was conceptualized by medical investigators in the period from 1784 to 1833. As previous chapters have detailed, the sickness of factory workers was initially determined by physicians to be typhus, or low nervous fever, an acute contagious disease thought to be caused by the breathing in of air contaminated by human effluvia and organic decay. Though this depiction and explanation was willingly received by late eighteenth-century

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[1]Anthony S. Wohl, Endangered Lives: Public Health in Victorian Britain (London: J.M. Dent & Sons Ltd., 1983), pp. 77-78, suggests that this continued to be the condition of the urban poor in the latter half of the nineteenth century. See also Wally Seccombe, Weathering the Storm: Working-Class Families from the Industrial Revolution to the Fertility Decline (London: Verso, 1993), pp. 71-80.

authorities and served to animate practices and policies for a generation, it did not endure. By the second decade of the nineteenth century, fever had largely disappeared from the lexicon of factory health and the sickness of factory workers was characterized, by at least a portion of the medical community, as debility. An ill-defined state of constitutional weakness, hovering between health and disease but frequently degenerating into some sort of localized chronic disorder, debility was seen to arise not from the confinement of human bodies in factory buildings, but from the conditions of labour such bodies endured. This understanding also did not last, as the views of medical men in the early 1830s attest. Though continuing to theorize that the manufacturing population experienced general impairment and susceptibility to chronic disease, the latest generation of professional inquirers concentrated attention on specific areas of pathology. They maintained that the ill-health of operatives, which now went under such names as gastralgia, enteralgia, and dyspepsia, manifested itself primarily in the digestive organs and was the outcome of an aggregate of causes within which detrimental circumstances of mill work counted for far less than the perniciousness of workers' diet and domestic habits.

The successive frames of factory ill-health that emerged in the course of fifty years of investigation and discussion seem, at first glance, to be disparate and unrelated. My dissertation has tried to show, however, that concepts of digestive disease, debility, and fever took root out of one another, and that despite marked differences in form and meaning, they were linked by threads of continuity. At each stage in the discourse on factories and health medical men drew on elements of past

understanding, incorporating and reconfiguring them in a new arrangement.

The extent to which older notions could continue to resonate in medical thinking is particularly well exemplified in a statement by a London surgeon, Joseph Henry Green, to the 1832 Select Committee on Factory Labour. Although the overall tenor of Green's opinions regarding the origins of industrial ill-health conformed to those of contemporary spokesmen, his testimony included a grab-bag of references to earlier concerns:

> Take, for instance, a healthy child from an agricultural district in the bloom of health, animated, cheerful, lively, strong, active and free-limbed, and place it in a factory; let it work for twelve hours a day in the stifling heat of some of the work-rooms, confined in the impure air breathed by a hundred of others, without any provision for ventilation; let it learn to drink ardent spirits to support its enfeebled frame and depressed feelings under over-labour and harassing tasks, with a proportionate disrelish for wholesome food; let it then be turned out of this heated factory on a damp, foggy November evening, to rest its fevered and debilitated frame in some dank and close cellar of an over-peopled manufacturing town, and shall we be surprised, is it not rather a certain consequence, that the unfortunate child becomes the victim of disease?[2]

While perhaps extreme in its mention of impure air, ventilation, close cellars, long hours, over-labour, excessive heat, transitions of temperature, fever, and debility—as well as over-peopled manufacturing towns, drinking of spirits, and disrelish for wholesome food—Green's remarks serve to indicate how older ideas of worker sickness could resurface and acquire new significance, and how the process of reconceptualization involved both persistence and alteration.

My dissertation has been primarily concerned with explicating how medical

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[2]P.P. 1831-2 (706) XV, 585.

understanding of factory ill-health shifted but it has not ignored the question of why such shifts occurred. At a material level, late eighteenth and early nineteenth-century consideration of the afflictions of factory workers was informed by changing techniques of production—particularly the transition to steam power, the growth of fine spinning, the lengthening of the common mule, and the adoption of the power loom—which resulted in the increased visibility of industrial activity, in the deterioration of conditions within the mill, and in the entry of new groups into the workforce and new voices into the debate on worker well-being. The force of these developments was intensified by the rapid expansion of the textile industry, which yielded mounting evidence of distress, disability, and death and which extended the arena in which the relationships between machine production and human suffering were discussed and debated. The dramatic technical and economic advances of the period were accompanied by equally striking changes in the social relations of production. The growing cohesiveness and strength of factory workers, particularly apparent in the years immediately preceding Peterloo, and their struggles to resist the baneful effects of mill employment and to restrict and regulate the conditions of factory operation played a role in the fashioning of medical ideas. So, too, did the reflections of poets, political economists, and other social commentators concerning the impact and desirability of industrial growth and the necessity and legitimacy of limiting manufacturing endeavour. Medical understanding of worker ill-health was also molded by the institutional practices of doctors themselves and by their interest in such matters as hygienic reform, urban growth, and the state and management of the poor. Of significance, too, were

wider shifts in medical thinking, such as the reorientation of fever therapy and theory. The complex interaction of these and other developments constituted the milieux within which the malaise of early factory workers was observed, named, and explained.[3]

As Charles Rosenberg has remarked, perceptions of illness are not only "context-specific," but "context-determining," and if the evolving frames of factory ill-health emerged out of particular configurations of historical circumstances, they also helped shape those circumstances through the social roles they performed.[4] The concepts of typhus, debility, and gastralgia and its related disorders played a number of roles in late eighteenth and early nineteenth-century Britain. Perhaps most significantly, they served as foci in the ongoing debate on the consequences of industrialization, offering differing views of the condition of those who bore the brunt of the new modes of production and helping to structure opinion regarding the attribution of responsibility and the formulation of policy. As my dissertation has

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[3]It may be questioned to what degree biological factors figured in the shifting understanding of worker ill-health. While it would seem that the conceptual transition to debility in the early nineteenth century was partly due to a decline in the incidence of the acute disorder known as "fever," and while it is certainly possible that the biological character of worker sickness changed over time, it is difficult to know how such change could be identified or traced. The links between the physical phenomena and conceptual frameworks of illness are not simple and direct. In the 1830s, the residents of manufacturing towns were evidently afflicted by another acute contagious disorder known as "cholera," but curiously, although the illness attracted a great deal of attention from contemporaries, it did not occupy a significant place in the understanding of worker ill-health.

[4]Charles E. Rosenberg, "Introduction. Framing Disease: Illness, Society, and History," in Charles E. Rosenberg and Janet Golden (eds), Framing Disease: Studies in Cultural History (New Brunswick, N.J.: Rutgers University Press, 1992), p. xx. In the introduction, pp. xviii-xxii, Rosenberg discusses how "once articulated and accepted, disease entities become 'actors' in a complex network of social negotiations."

shown, at no time in the early decades of industrial growth did medical theory provide undisputed evidence of the perniciousness of machine labour or the need for legislative constraints on factory operation. Though the concept of fever implicated the atmosphere of the newly-established spinning mills, its explanation of illness revealed a blindness to the new forms of labour being performed there. Restricting consideration to the domiciliary features of the mills, fever theory aimed merely at the regulation of domestic space through practices such as ventilation and cleanliness. The concept of debility afforded a fresh perspective on the matter and opened up the possibility of forging a link between factory work and human suffering through recognizing and directing attention to specific attributes of the labour process. The concept remained vague, however, and failed to win the support of the entire medical community and the possibility remained unfulfilled. Notions of debility were superseded by those of digestive disease, premature sexual development, and, to some extent, lung disease. In the latest stage of theorizing, which concerned itself overwhelmingly with the domestic environment and the power of customs and habits, the burden of responsibility for illness was shifted onto workers themselves, while reforming impulses were directed to the moralization of the manufacturing population. The views that prevailed in the 1830s underscored more emphatically than ever the essential innocuity of industrial development.

The successive forms of understanding of factory sickness exerted influence not only in the evaluation of machine industry, but also in the discussion and provision of health care. Though not providing much in the way of therapeutic gain—throughout the

period institutional treatment of ailing operatives consisted of little more than rest and good diet—they did afford different rationales for the extension of aid. The theory of fever strongly promoted the giving of assistance. Not only did its notion of the transmittability of disease through contagion emphasize the urgency of attending to the needs of the labouring poor, its view of the interconnectedness of individuals, as well as social orders, and of the importance of circulation and redistribution in the prevention of disease stressed the need for ongoing support. While clearly not the only spur to action, the concept of fever seems to have played some part in inspiring and fashioning the attempts of late eighteenth-century physicians, manufacturers and local authorities to prevent and relieve the sickness of industrial workers. With the redesignation of the illness as debility, the perceived threat to the well-being of the higher orders, as well as the holistic understanding of the origins of worker ill-health declined. So, too, did the interest of urban mill owners in caring for their employees. With the further shift from debility to digestive disease, theoretical justification for the provision of aid became even more attenuated. While charitable assistance was still deemed appropriate for the victims of machine accidents, the belief that the afflictions of factory workers were unrelated to those of the middle and upper classes and that such disorders arose from the errors of workers themselves supported the position, adhered to by medical men and manufacturers alike, that suffering factory workers should help themselves.

The concepts of fever, debility, and digestive disease played another role, as well. Through yielding varying accounts of the physical and moral characteristics of

factory labourers, they gave expression to and helped strengthen concerns regarding the distinctiveness of the industrial workforce and the disintegration of the social body. In the late eighteenth century, such concerns had not advanced very far. The focus of medical discussion was the "industrious poor," persons whose moral stature was considerable, even if their understanding was flawed. In drawing attention to the part played by moral factors in the onset of sickness, the concept of fever portrayed mill workers as possessing a nature little different from that of the higher ranks. In addition, through revealing the ease with which sickness could spread from the bodies of the poor to those of the rich, the concept underscored the cohesiveness of the social order. Yet, in the figure of the "stranger" one can discern incipient attributions of "otherness." In the early years of the nineteenth century, such attributions grew stronger. The concept of debility embodied a view of mill workers as physically distinct and as closer in nature to the machines they tended than the masters they served. As the century progressed, the belief in the inherent difference of the factory population developed even further. In the theory of digestive disease, mill workers were conceived to be morally, as well as physically, distinct and to possess a nature that was essentially savage. Their divergence and separation from the higher orders was seen to constitute a serious threat to social stability.

If the understanding of worker ill-health that emerged in the early 1830s transmitted fears concerning the factory population as a whole, it conveyed particular anxiety with respect to the female portion of the workforce. The idea of premature sexual development, which maintained currency even in the face of conflicting

evidence, served to channel and give force to apprehension regarding the presence of large numbers of young and unsupervised women in the workplace. It acted as well to reinforce beliefs in the peculiar delicacy and vulnerability of women. In the early industrial era, concepts of worker ill-health helped to legitimate distinctions not only of class, but also of gender.

In drawing attention to the interactive relationship between historical contexts and medical concepts, my work militates against the traditional view of medical knowledge as an autonomous asocial domain advancing ever closer to the truth.[5] It has sought to portray the successive frames of factory ill-health as "generation-specific efforts" to identify and explain the apparent malaise of a significant and rapidly increasing portion of the population.[6] My study does not, however, support a "democracy among hypothetical etiologies" by suggesting that such efforts were equally good.[7] The basis upon which they could best be evaluated, I believe, lies in their closeness to the endeavours of the industrial workforce itself to name and account for its suffering.

The discourse on factory health that took place in the early industrial era developed in an unpredictable fashion, revealing congruences between the initial and

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[5]On the traditional view of medical knowledge which held sway until the 1970s, see Peter Wright and Andrew Treacher, "Introduction," in Peter Wright and Andrew Treacher (eds), The Problem of Medical Knowledge: Examining the Social Construction of Medicine (Edinburgh: Edinburgh University Press, 1982), pp. 3-5.

[6]The phrase is taken from Charles E. Rosenberg, "Explaining Epidemics," in Charles E. Rosenberg, Explaining Epidemics and Other Studies in the History of Medicine (Cambridge: Cambridge University Press, 1992), p. 294.

[7]Ibid.

later stages of discussion. In both the closing decades of the eighteenth century and the opening years of the 1830s, the discourse was dominated by a cohesive and self-confident group of professional spokesmen who proclaimed the superiority of their perception and understanding over that of the afflicted. In both periods medical consideration of the problem of ill-health ranged widely, taking into account not only the physical, but also the moral state of factory workers and directing particular scrutiny at the circumstances of domestic life. Though the ensuing analyses varied in content, they took shape in curiously similar ways. Whereas in the first stage of discussion—when the well-being of the child apprentice was thought to be especially important—the factory was conceived as a house, in the third stage of the discourse—when the presence of the adolescent female became a focus of concern—attention devolved from the factory to the home.

By contrast, in the period from 1815 to 1819, medical men displayed much greater disunity and their claims to knowledge faltered. Interestingly, although both groups of doctors who participated in the dispute over worker well-being appealed to empirical evidence, it was only the professional opponents of legislative restriction who clung to the supposed preeminence of their perspective. Legislative supporters insisted that the manifestations of suffering were so obvious the discernment of an expert eye was not required. Medical men who believed in the necessity of limiting factory operation listened to and respected the opinions of workers, articulating a conception of ill-health that had much in common with theirs. They concerned themselves less with conditions of living and more with aspects of working than either the generation that

preceded them or the one that followed. Perhaps ironically, it was in a period of dissension and uncertainty that medical spokesmen came closest to formulating an occupational account of industrial ill-health, one that was not imbued with moral censure and that directed critical attention at the labour process rather than the labour force. Unhappily, though, their identification of the malaise of operatives remained imprecise and unconvincing.

My dissertation not only indicates the value of dialogue, and of the acceptance and incorporation of other viewpoints in crafting explanatory frameworks of illness, it also reveals that the historical separation of professional and lay medical knowledge was not always smooth or straightforward. Following N.D. Jewson's studies of the rise of hospital medicine and the "disappearance of the sick man," as well as Roy Porter's exploration of the patient's point of view and participation in the diagnostic act, historians of medicine have generally agreed that sometime between the mid-eighteenth and mid-nineteenth centuries the power relations between practitioners and patients shifted in favour of the professionals, and that this involved the narrowing of a previously shared field of discourse and the removal from lay persons of the opportunity and ability to name their own ills.[8] My study, however, shows that while

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[8]N.D. Jewson, "Medical Knowledge and the Patronage System in Eighteenth-Century England," Sociology 8 (1974), pp. 369-85; N.D. Jewson, "The Disappearance of the Sick Man from Medical Cosmology, 1770-1870," Sociology 10 (1976), pp. 225-244; Roy Porter (ed), Patients and Practitioners: Lay Perceptions of Medicine in Pre-Industrial Society (Cambridge: Cambridge University Press, 1985); Roy Porter and Dorothy Porter, In Sickness and in Health: The British Experience 1650-1850 (London: Fourth Estate, 1988); Roy Porter and Dorothy Porter, Patient's Progress: Doctors and Doctoring in Eighteenth-Century England (Stanford: Stanford University Press, 1989). For a local exploration of this theme see Mary E. Fissel, Patients,

such a process may have occurred across the broad spectrum of medical knowledge, understanding of particular issues could take a different course. It reveals that, in the case of the sickness of mill workers, the conceptions of physicians and patients initially shared some ground; then converged, at least to a degree; and then decisively diverged.[9]

While my dissertation concerns itself with the shifting disjunction between professional and lay notions of worker ill-health, it also focusses attention on lay ideas themselves. It suggests that the first generations of factory labourers were well aware of the pernicious consequences of industrial production and that they held and expressed coherent views of the nature and causes of their suffering. Although not resorting to a specific terminology, mill workers discussed their condition in distinctive ways. Their accounts of pain and affliction were graphic, vivid, detailed, and direct. Arising out of the immediacy of daily experience, they evinced passionate concern not only for

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Power, and the Poor in Eighteenth-Century Bristol (Cambridge: Cambridge University Press, 1991). These works are discussed in Christopher Lawrence, "The Meaning of Histories," Bulletin of the History of Medicine 66 (1992), pp. 638-645. Also relevant is Karl Figlio, "The Historiography of Scientific Medicine: An Invitation to the Human Sciences," Comparative Studies in Society and History 19 (1977), pp. 262-286.

[9]It appears that in the area of occupational health lay people continued to exert influence in the definition of their condition for a considerable period of time. Studies such as David Rosner and Gerald Markowitz, Deadly Dust: Silicosis and the Politics of Occupational Disease in Twentieth-Century America (Princeton: Princeton University Press, 1991); Karl Figlio, "How does Illness Mediate Social Relations? Workmen's Compensation and Medico-Legal Practices, 1890-1940," in Wright and Treacher, pp. 174-224; and Daniel M. Fox and Judith M. Stone, "Black Lung: Miners' Militancy and Medical Uncertainty, 1968-1972," Bulletin of the History of Medicine 54 (1980), pp. 43-63, indicate that diagnoses of miners' ill-health remained contested and negotiated well into the twentieth century.

personal well-being, but also for the situation of family members and workmates. Operatives' descriptions of their malaise demonstrate a vitality that is apparent in their practices of health care and mutual assistance, as well. From the organized efforts of adult spinners to make provision for incapacity and death, to the tenacious endeavours of parents to shelter and protect their offspring, to the determined resistance of young piecers, those who laboured in textile mills displayed a capacity for action that belies the "received view" of workers as passive "victims" of industrial capitalist development.[10]

The varying ways in which manifestations of ill-health were regarded, designated, and responded to in the early decades of factory production offer evidence of a profound transformation in Britain's textile manufacturing regions. One way to characterize the change is in terms of a "making and breaking of connections."[11] In the late eighteenth century, the inhabitants of manufacturing communities were still enmeshed in a network of face-to-face relations. Factory workers were employed as "servants" by "masters," who not only profited by their labour, but frequently fed, clothed, and housed them as well.[12] When such workers fell ill, their sickness was

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[10]P.W.J. Bartrip, "Accidents and Ill-Health: The Hidden Wages of the Workplace," Social History of Medicine 3 (1990), p. 296.

[11]Bruce Mazlish, A New Science: The Breakdown of Connections and the Birth of Sociology (New York and Oxford: Oxford University Press, 1989), p. 12.

[12]The language of "master" and "servant" continued to be employed for some time. See, for example, A Short Essay written for the Service of the Proprietors of Cotton-Mills, and the Persons Employed in Them (Manchester: C. Wheeler, 1784), p. 17; as well as the wording of the 1802 Health and Morals of Apprentices Act, 42 Geo. III c. 73.

attributed to defects in social arrangements. Leading citizens felt an obligation to assist the manufacturing poor and did so particularly through the establishment of voluntary committees. As is apparent, however, both by the urging of medical spokesmen that the prosperous extend their benevolence further, and by the initiatives of mill workers themselves, the connections between the higher and lower orders were beginning to fray.

By the early years of the nineteenth century, the process of dissolution had advanced significantly. With the growth of the textile industry, ties between employers and employees extended no further than "the existing week."[13] The distress of the factory workforce was no longer understood in relation to other parts of the social body, nor was it met with much interest or charitable inclination on the part of the well-to-do. In place of the old bonds, a new configuration of affinities and antagonisms was taking shape. As medical men and manufacturers drew away from factory labourers, theorizing their difference and objectifying them to the degree that sympathetic apprehension became difficult, they contributed to a sense of their own cohesion. At the same time, as operatives gathered to voice concerns about their suffering, to resist the imposition of new labour processes, or to support one another through cooperative ventures, they gained an awareness of their common interests and identity. The intellectual and practical responses to factory ill-health that emerged in the period from 1784 to 1833 provide a revealing window on the social and cultural change that distinguished the early industrial era.

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[13]P.P. 1818 (90) XCVI, 168.

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Appendix I: Contributions of Selected Manchester Medical Men to the 1815-1819 Debate on the Factory Question

Name	Provided N. Gould with Report	Signed 1818 Petition	Visited Mills at Request of Cotton Spinners Committee	Testified before 1818 Lords Committee	Testified before 1819 Lords Committee	Signed 1819 Declaration	Changed Views during Debate
S.A. Bardsley, physician	*	*				*	
John Hull, physician		*					
W. Winstanley, physician	*	*			*		
Michael Ward, physician	*	*			*	*	
John Mitchell, physician	*	*	*			*	
Robert Agnew, physician	*	*					
Edmund Lyon, physician		*	*		*		*
Thomas Jarrold, physician		*			*	*	
R. Skyring, physician		*	*				*
Edward Holme, physician				*			
Henry Hardie, physician				*			
Edward Carbutt, physician				*			
William Simmons, surgeon	*	*			*	*	
Gavin Hamilton, surgeon		*	*	*			*

Name	Provided N. Gould with Report	Signed 1818 Petition	Visited Mills at Request of Cotton Spinners Committee	Testified before 1818 Lords Committee	Testified before 1819 Lords Committee	Signed 1819 Declaration	Changed Views during Debate
Robert Killer, surgeon		*	*				*
John Thorpe, surgeon		*					
Robert Thorpe, surgeon		*	*				*
John J. Boutflower, surgeon	*	*			*	*	
Thomas Bellot, surgeon	*	*			*	*	
William Wood, surgeon	*	*				*	
Henry Dadley, surgeon	*	*			*	*	
John Windsor, surgeon	*	*					
William James Wilson, surgeon		*	*	*			*
Mr. Flint, surgeon		*					
George Tomlinson, surgeon		*					
Mr. Hudson, surgeon		*					
Thomas Radford, surgeon		*					
R. Tomlinson, surgeon		*					

Name	Provided N. Gould with Report	Signed 1818 Petition	Visited Mills at Request of Cotton Spinners Committee	Testified before 1818 Lords Committee	Testified before 1819 Lords Committee	Signed 1819 Declaration	Changed Views during Debate
Mr. Lowe, surgeon		*					
Mr. Basnett, surgeon		*					
Mr. Stewart, surgeon		*					
J.H. Stein, surgeon		*					
George Haigh, surgeon		*					
James Ainsworth, surgeon				*			
William R. Whatton, surgeon				*			
Thomas Turner, surgeon				*			
Samuel Barton, surgeon				*			

Sources: [Nathaniel Gould], Information Concerning the State of Children employed in Cotton Factories (Manchester: J. Gleave, 1818), passim; "To the Honourable the Commons of the United Kingdom of Great Britain and Ireland in Parliament assembled," in Answers to Certain Objections made to Sir Robert Peel's Bill (Manchester: R. and W. Dean, 1819), pp. 66-68; P.P. 1818 (90) XCVI, passim; P.P. 1819 (24) CX, passim; An Examination of the Cotton Factory Question with Remarks upon Two Pamphlets (London: Longman and Co., 1819), pp. 38-39; E.M. Brockbank, Sketches of the Lives and Work of the Honorary Medical Staff of the Manchester Infirmary (Manchester: Manchester University Press, 1984), passim.