

Could You Starve to Death in England in 1839? The Chadwick–Farr Controversy and the Loss of the “Social” in Public Health

Christopher Hamlin, PhD

ABSTRACT

The public health field has long been pulled in two directions, either toward a narrower biomedical mission to control infectious disease or toward a broader mission to address the social and economic factors that adversely affect health and wellbeing. This paper explores as an instance of this tension an 1839 controversy between the statistician William Farr and the pioneering sanitary reformer Edwin Chadwick on the role of starvation as a cause of death. Farr thought hunger contributed significantly to many deaths; Chadwick wanted Farr to concentrate on the diseases from which people actually died. The paper then considers what the “constitutional” disease theories, which underlay Farr’s concerns, implied for public health using medical testimony on child labor in industrial revolution factories as an illustration. An exploration of this constitutional medicine may help provide a “useable past” for modern public health workers interested in broadening the scope of public health. (*Am J Public Health*. 1995;85:856–866)

Introduction

For better or worse, no profession can help but feel the dead hand of its history, of choices made for understandable reasons but in circumstances that no longer exist. The following story is about a conflict that occurred during what is often seen as the formative period of modern public health: Great Britain in the 1830s and 1840s. The conflict concerned causes-of-death data, which began to be collected in 1837, and it focused on what kinds of information to collect, what to do with such information once it was collected, what such information indicated about the state of society, and ultimately, how “social” public health should be. The story illustrates the impossibility of reducing complicated and varying sets of circumstances to a single category and the ways in which political, legal, and moral decisions necessarily underlie the very data we choose to gather.

The protagonists were two of the most important public health pioneers. On one side was Edwin Chadwick, at the time chief administrator of the Poor Law Commission, the agency responsible for bringing relief to the poor throughout England and Wales. Within a few years, Chadwick would become champion of the “sanitary idea” of public health through public works, based on the principle that it is a public duty to prevent infectious disease by providing water that is pure and sewers that will safely remove what is dangerous. Chadwick’s “public health” would emphasize specific transmissible diseases; in the controversy, he would insist that the most important fact was the *disease* from which the victim had died. His perspective anticipated the germ theory that would come to dominate public health by the end of the century.

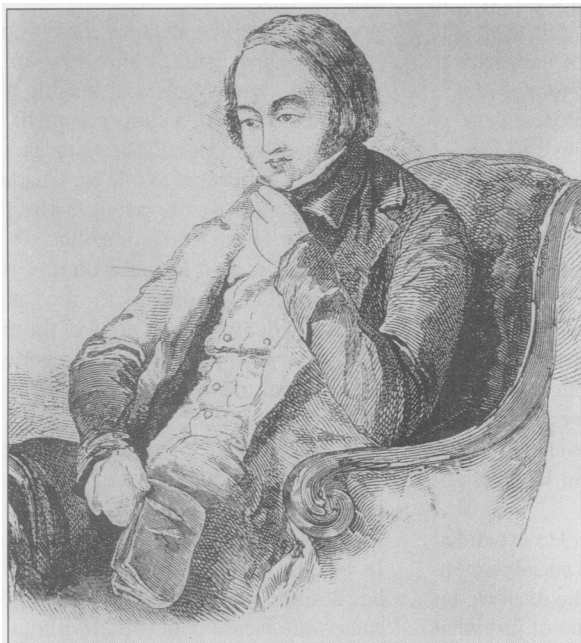
On the other side was the pioneering statistician and epidemiologist William Farr, recently appointed (in part at Chadwick’s urging) statistician in the office of the Registrar General of Births, Deaths, and Marriages. Farr, whose task was to analyze the causes-of-death data, took an interest in *the causes of the disease*, which, in keeping with ancient canons of philosophical medicine, he took to include a broad set of social (and economic) determinants of health and illness, including diet and working conditions. At the time, Chadwick was a well-established bureaucrat, a public figure enforcing the exceedingly controversial poor law policy, while Farr was a little-known physician with an unusual knowledge of statistics, still searching for some career niche.¹ Ironically, Chadwick, the social administrator, took what may seem the more narrowly medical view while Farr, the doctor, emphasized social factors.

The Nature of the Controversy

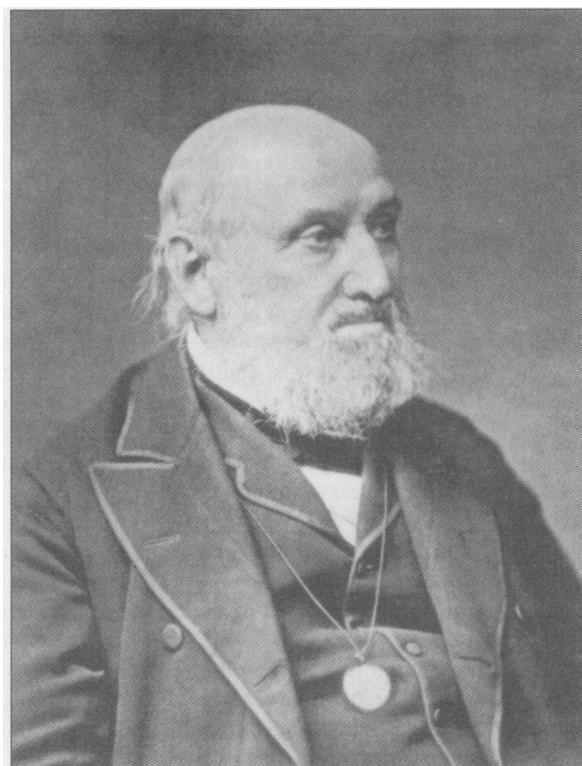
In a formal sense, the controversy exists in a set of official letters exchanged between Chadwick and Farr from September 1839 to March 1840. Ostensibly, the letters are on technical issues Farr was encountering in classifying causes of death, on the philosophical issue of what kind or level of explanation is appropriate in such an inquiry, and on the factual issue of whether hunger and deprivation actually “caused” or contributed significantly to mortality in England and Wales. A great

The author is with the Department of History and the Reilly Center for Science, Technology, and Values, University of Notre Dame, Notre Dame, Ind.

Requests for reprints should be sent to Christopher Hamlin, PhD, Department of History, University of Notre Dame, Notre Dame, IN 46556.



Edwin Chadwick, age 48. Reprinted with permission from the Illustrated London News Picture Library, London.



William Farr in later years. Reprinted from Humphreys.⁴⁷

deal more was at stake, however: the principles of social welfare policy (the term is anachronistic yet apt), the place of medicine within it, and, ultimately, what constitutes the minimally acceptable conditions of human life in an industrializing society. The controversy took place amid a political crisis. Britain was in the middle of a depression; it seemed also on the verge of revolution. There were calls for greater democracy, regulation of working conditions, and abolition of tariffs on imported food. Many of these social questions could be, and often were, framed as questions of health, disease, and wrongful death, and many of the complaints came to roost at Chadwick's doorstep.

In 1834 Parliament had enacted a Poor Law Amendment Act (commonly called the "new poor law"). Based on a report largely written by Chadwick and framed along principles Chadwick had articulated, this new law discouraged claims for public relief by offering the claimant life in a workhouse (and a workhouse diet). The workhouse was simultaneously to be a real "safety net" and yet an option significantly less attractive to the poor than the miserable accommodations and scanty diet they could procure on their own. As secretary

to the Poor Law Commission, Chadwick was, if not the final arbiter of policy, centrally and visibly involved in executing it.

The new poor law outraged the poor, agricultural laborers, and factory workers alike. It denied them the right of living together as a family unit, and it seemed a means of feeding low-wage labor into the mills of industrial Lancashire and Yorkshire or even of warding off a Malthusian population crisis by perpetrating a modest genocide among the working class. The key word in the vast stream of attacks on Chadwick and his associates was "starvation." On page after page of *The Book of the Bastiles*, G. R. W. Baxter's 1841 catalogue of the law's abuses, one finds statements of mothers who would choose to starve rather than accept "the offer of the house," mixed with accounts of workhouse inmates who succumbed to progressive debility and neglect. Even the establishment press, like the *London Times*, labeled it "the starvation act."² Although Chadwick claimed that workhouse diets (the outcome of experiments on prison diets) were sufficient for health, workhouse mortality was in fact remarkably

high, even when corrections were made for the age distribution of the inmate population and for the many who were diseased when they came to the workhouse.³ And while medical men were not in the vanguard of the act's critics, many, especially those employed as medical officers to the new poor law unions, found themselves frustrated in trying to cure diseases that were fundamentally the result of poverty. It did seem that public policy was causing premature death.

Accordingly, starvation was a touchy subject for Chadwick in the fall of 1839. At the time, he was just launching the inquiry that would culminate 3 years later in his famous *Report on the Sanitary Condition of the Labouring Population*. Farr's first analysis of causes of death in England and Wales had just appeared. On September 30, Chadwick wrote to Registrar General T. H. Lister, Farr's supervisor, to query the 63 deaths Farr attributed to starvation and Farr's comment on them—that "hunger destroys a much higher proportion than is indicated by the registers in this and in every other country, but its effects, like the effects of excess, are generally manifested indi-

rectly, in the production of diseases of various kinds."⁴ Even though these 63 deaths represented a tiny fraction of the 148 000 deaths reported, Chadwick took the report as a serious threat to the political viability of the new poor law. Because the workhouse was to be both safety net and deterrent, there should be no starvation. If people were starving, there was something about the policy that did not work. He demanded an explanation for the deaths and for Farr's claim that the diet of agricultural laborers (Farr's own background) was inadequate.⁵

In his reply at the end of November 1839, Farr included registration data on the 63 starvation deaths and on 16 others involving various forms of privation. He took starvation in a broader sense than hunger; it was to "imply death by privation, the want of warmth, and of proper food at all ages." He explained that while "few die from the absolute want of food, . . . many die, or drag on a miserable existence upon insufficient, innutritious diet." Relying on contemporary chemists who were beginning to translate human nutritional requirements into quantities of carbonaceous and nitrogenous foods, Farr showed that the workhouse diet provided only about three quarters the minimum requirement while that of East Anglian agricultural laborers provided slightly more than half.⁶

Having reviewed the registration data, Chadwick responded at length in February 1840. He held that Farr was inconsistent in his use of the word *starvation* and that the term misled. Of the 63 deaths so classified, 36 were infant deaths, many from lack of breast milk and some owing to the death of the mother. In such cases, Farr's representation of starvation as an economic phenomenon—"want of food implies a want of everything else, except water; as firing, clothing, every convenience, every necessary of life, is abandoned at the imperious bidding of hunger"—was hardly candid. Other infant deaths, Chadwick held, reflected ignorance of infant feeding rather than deprivation. Among the adult cases, several people had succumbed to cold—another of Farr's senses of "starvation"—often when very drunk. There were a few homicides by starvation. Some starved adults had refused relief; in only one case had it been denied to them. Chadwick invited Farr to investigate starvation reports more fully to improve the quality of his tables, and he asked for copies of the original returns for any deaths attributed

to "indigence." He argued that Farr had no business speculating about widespread malnutrition; his job was simply to classify registered deaths. In effect, Chadwick was accusing Farr of being both too faithful to the data (in allowing infant deaths to be listed under the misleading heading of starvation) and not faithful enough (in claiming that malnutrition accounted for more mortality than was apparent). Whatever chemists might say, people did live on such diets, Chadwick asserted; what was more, they saved excess income (or wasted it in drink).⁷ Hence, there could not be a vast hunger problem. The excuse of hunger must be disallowed; it encouraged begging and capricious charity, problems the new poor law had been established to solve.

Farr replied in March. He expanded the issue by bringing in the social circumstances of the deaths, and he narrowed it by raising the technical issue of just what heading in a nosology best described such deaths. During the period covered by his nosological table, there had been nearly 72 000 infant deaths, he noted; many infants died because their mothers could not nurse them or because the mothers themselves were too weak to provide good milk. The 36 infant deaths, and probably many more, were then starvations in the full sense of privation; infants "starved in the cold nights of winter, and on the coarse, innutritious, inadequate subsistence of impoverished parents." He argued, contra Chadwick, that medical men saw cases of starvation regularly, and he held that the correlation of excess deaths with unusual cold could be best understood in terms of a broad concept of starvation. Even the best medical examination might not distinguish the specific effects of food deprivation from the totality of depressing conditions, yet Farr found it beyond question that "if the quantity of provisions and the supply of food to the great mass of the population could be augmented, the mortality would be reduced."⁸ Many deaths in which starvation played a role would not be listed under that heading, and many that were listed as starvations might involve additional factors as well.

There were also "technical" reasons why the distinctions Chadwick urged could not be made. Causes-of-death tables could not possibly take into account all the "remote, incidental, or accessory circumstances in which the direct cause of death originated." Doing so would be too messy; "want of breast milk" might not be "a disease, but it is a cause of death. It is,

in the strictest scientific sense, 'starvation.'" Farr denied attacking the new poor law,⁹ denied making starvation an "all-pervading cause," and accused the poor law commissioners of making more of the matter than a short comment in a long report warranted. The latter point is especially important. While for Chadwick any starvation was a public embarrassment, for Farr starvation had to be considered in part because there was no other way of dealing with the untidy residue of deaths that fit none of the more straightforward pathological categories in the nosological system he was developing. Starvation, together with even more obscure terms like "debility," "intemperance," and "sudden deaths," were subheadings of the larger category of "sporadic diseases" of "uncertain seat." In a sense, he had to report starvations because the local registrars who compiled causes-of-disease data (often without any significant medical examination) reported them to him.¹⁰ Yet at the same time he was convinced, as were many contemporary medical men, that hunger and other "predisposing causes" bore some considerable responsibility for many deaths among the poor.

There the public controversy ended although the issues continued to be highly sensitive for the next few years.¹¹ Chadwick, in introducing Farr's response, effectively had the last word, accusing Farr of speculation.¹² With regard to the technical matters, Chadwick had prevailed. The theoretical perspective he represented was in keeping with what was regarded as the most progressive clinical science then being worked out in the great hospitals of Paris. Farr himself had Parisian training, was attracted to many aspects of that new medicine, and found himself equally unable to develop a viable way to integrate into causes-of-death statistics all those factors that might be considered "social" causes of death.¹³

As well as being significant in the early shaping of modern public health, the controversy is important because the issues it involved are general issues of classification and causation. These will arise in some way whenever we try to classify events, deduce common causes, and make inferences for policy from our classifications. Throughout his career, Farr would struggle with the problem of making a classification system that was unambiguously exclusive (it should be clear under which heading a death belonged), that was exhaustive (there should be an appropriate category for all deaths),

and that facilitated empirical inference.¹⁴ Some of the problems—of splitting or lumping, of recognizing degrees of natural relation, and of deciding what parts of natural diversity to ignore—are inherent in any taxonomic endeavor.

The problems of classifying causes, which need belong to no single species, are especially complex: it will always be the case that any cause to which a death is attributed will identify only some components of a complicated process that will include various combinations of actions—political as well as personal—and conditions—social as well as biological, chemical, and even geophysical—many of which may be entirely unrecognized. Since, as Farr realized, one cannot include all antecedent factors, a question of utility enters in. Ideally, the cause listed will imply some of these other components. For example, Farr was trying to convince Chadwick that infant deaths from starvation imply particular economic conditions.¹⁵ If one wants to maximize the information available from the table, it makes sense to choose the sort of cause that most strongly implies the surrounding circumstances. But the sort of cause one chooses is also dictated by the sort of information about the state of society such a determination is to supply. Questions of responsibility will focus attention on some factors; questions of periodicity, preventability, or remediability will focus attention on others. Equally, the sort of causes one identifies may have quite different meanings for persons in different positions. What for Farr was a fact that perhaps conveyed some information about means of prevention (e.g., more uniform access to food and other “necessaries of life”) was to Chadwick an accusation of irresponsibility that was possibly criminal.

Philosophical Issues Inherent in the Controversy

At the heart of the controversy were the political and social implications of a table that classified causes of death mainly in terms of *diseases* (what Chadwick wanted Farr to stick to). These implications depended on what “disease” was conceived to be, what it meant to have a disease, and in what ways causes of disease related to causes of death. Here medical traditions of the late 1830s differed from today’s. Much of our use of causes-of-death reports (or specific morbidity rates) in public health is based on the assumption that diagnosis provides

Area in Square Miles.		Population according to Census of 1831.		Employed chiefly in Agriculture.		Chiefly in Trade, Manufactures, and Handicraft.		Other Families.		Total.		
57,805		13,597,187		834,543		1,227,614		849,717		2,911,874		
		Diseases.		Males.		Fem.		Total.				
Epidemic, Endemic, and Contagious Diseases.	Cholera	246	214	460								
	Influenza	220	264	484								
	Small-pox	3,070	2,761	5,831								
	Measles	2,340	2,392	4,732								
	Scarlatina	1,253	1,282	2,535								
	Whooping Cough	1,277	767	2,044								
	Croup	879	776	1,655								
	Thrush (1)	351	356	707								
	Diarrhoea	1,431	1,384	2,755								
	Dysentery	339	325	675								
	Ague	39	37	76								
	Typhus (2)	4,439	4,698	9,047								
	Krysipelas (3)	237	245	482								
	Septicæmia	39	43	73								
	Hydrophobia	13	3	16								
Total	16,190	16,347	32,537							683	133	816
Of the Nervous System.	Cephalitis (4)	567	434	1,001								
	Hydrocephalus	1,933	1,637	3,570								
	Apoplexy (5)	1,447	1,364	2,711								
	Paralysis	987	1,652	2,639								
	Convulsions (6)	5,798	4,931	10,729								
	Tetanus	45	11	56								
	Chorea (7)	3	9	12								
	Epilepsy (8)	273	292	575								
	Insanity (9)	147	138	285								
	Delirium Tremens	86	9	95								
Disease (10)	433	326	759									
Total	11,729	10,123	21,852									
Of the Respiratory Organs.	Laryngitis	11	13	24								
	Quinsy	141	148	289								
	Tronchitis	248	212	460								
	Pleurisy	140	96	236								
	Pneumonia	3,187	2,637	5,824								
	Hydrothorax	557	438	995								
	Asthma	1,020	744	1,764								
	Consumption (11)	9,494	10,753	20,247								
	Disease (12)	3,474	4,033	7,507								
	Total	18,925	19,597	38,522								
Of the Organs of Circulation.	Pericarditis	31	31	62								
	Aneurism	37	15	52								
	Disease (13)	834	648	1,482								
Total	902	694	1,596									
Of the Digestive Organs.	Teething	993	905	1,903								
	Gastro-Enteritis	1,710	1,666	3,396								
	Peritonitis	39	47	82								
	Typhus Mesenterica	228	209	437								
	Ascites	28	23	51								
	Ulceration (14)	96	74	170								
	Hernia	150	102	252								
	Colic	39	19	58								
	Constipation (15)	253	208	461								
	Worms	119	145	264								
Disease (16)	437	416	853									
Pancreas		2	2									
Hepatitis	91	92	183									
Jaundice (15*)	211	124	405									
Disease (16*)	716	605	1,321									
Spleen	4	8	12									
Total	5,115	4,735	9,850									
Of the Urinary Organs.	Nephritis	37	23	60								
	Ischuria	49	4	53								
	Dialyses (17)	68	27	95								
	Granular Disease	9	1	10								
	Cystitis	61	9	70								
	Stone (18)	161	19	180								
	Stricture	43	3	46								
	Disease	262	47	309								
	Total	683	133	816								
	Of the Organs of Generation.	Childbed (19)		1,265	1,265							
Parasæmia			31	31								
Ovarian Dropsy			13	13								
Disease (20)		13	13									
Total		13	1,485	1,498								
Of the Organs of Locomotion.	Arthritis	7	8	15								
	Rheumatism (21)	221	215	436								
	Disease (22)	277	200	477								
Total	505	424	929									
Of the Integumentary System.	Carbuncle	14	5	19								
	Phlegmon (23)	29	17	46								
	Ulcer	37	45	82								
	Fistula	39	12	51								
Disease (24)		27	27									
Total	158	106	264									
Of Uncertain Seat.	Inflammation	1,201	1,136	2,337								
	Hæmorrhage (25)	369	213	582								
	Dropsy	2,445	3,139	5,584								
	Abscess	247	217	464								
	Mortification (26)	395	276	671								
	Scrofula (27)	286	255	541								
	Carcinoma (28)	358	873	1,231								
	Tumor	48	81	129								
	Gout	67	12	79								
	Intemperance (29)	70	15	85								
Atrophy	478	491	969									
Debility	1,528	1,073	2,601									
Starvation	34	29	63									
Malformations (30)	75	41	116									
Sudden Deaths	634	419	1,053									
Total	7,942	8,265	16,207									
Violent Deaths (31)												
Causes not specified												
Total												
		Males.		Fem.		Total.						
		75,159		73,542		148,701				148,701		

Farr's first nosological table for the second half of 1837. From William Farr, "[First] Letter to the Registrar General,"¹⁴ p. 82.

knowledge of cause (often a single specific cause) and thus is essential in identifying the condition or activity responsible for the disease—perhaps a source of environmental carcinogens or a contaminated well. We reason from cause of death to cause of disease to prevention. Such inference requires both accurate diagnostic ability and knowledge of the particular causes of particular diseases. Underlying both kinds of knowledge is the presumption that each disease is a distinct entity with a distinct cause—in short, that knowledge presumes an *ontological* conception of disease.

Medical men in the 1830s would not make these assumptions and inferences; as Farr effectively admitted to Chadwick, classifying deaths by *disease* is no satisfactory basis for classifying deaths by *cause*. Yet it was during these years that an older, *physiological* conception of disease was giving way to an *ontological* one. “Fever,” hitherto a generic term for a group of serial changes in the nervous system (or perhaps in the blood), evolved into the definite disease entities of typhus and typhoid. In this, Farr was a transitional figure, for highlighting hunger as a general cause of ill health was exactly the

kind of explanation that loomed large in that older tradition.

That tradition did not view most diseases as specific entities. However, its practitioners were much more aware of the philosophical complexity of the problem of disease causation than their successors were a few decades later or than most practitioners probably are today. Discussions of etiology in contemporary textbooks treated disease as a product of varying combinations of different types of causes, an approach exemplified in chronic diseases. (Later, acute transmissible diseases, presumably with single specific causes, became paradigmatic.) A key feature of that approach was an invitation to take stock of how virtually all aspects of the living situation—diet, work, emotional state—affected a person's health.

This "older tradition" was, in fact, a broad framework that subsumed many different pathological models with some common elements. It has been called "constitutional" medicine because of the centrality of the concept of disease as injury to the constitution, which manifests itself differently according to the individual's "diathesis," or idiosyncratic susceptibilities. That injury can be expressed as "debility" or as a deficit of "vitality," "nervous energy," the "conservative principle," or simply "health."¹⁶ Constitutional medicine explained illness in terms of living conditions and personal histories rather than as the presence of some particular disease. In such a medicine, diagnosis had a different significance than it does now. Mainly, the names of diseases one finds on nosological tables were just that—names—to designate a set of symptoms, a sequence of changes in the body, or sometimes hidden conditions presumed to give rise to those symptoms or that sequence. Diagnosis was more important for therapy and prognosis than for the answering of etiological questions.¹⁷ It did not follow that the set of changes labeled a "disease" was the effect of a single discrete cause, for such medicine recognized many kinds of causes of disease—"proximate" or "remote," the latter being either "predisposing" or "exciting," there being room also for "determining" or "consecutive" causes.¹⁸

Within this framework, most diseases were to be regarded as problematic physiological states rather than as ontological entities that temporarily take over a body. The great exception, a disease that was a species with a unique cause, was smallpox. Medical men disagreed about how many other diseases corresponded to

the smallpox model and how closely, but most thought the number was not large and included neither the many chronic diseases, like the various dropsies, nor many of those we now consider infectious, like consumption, scrofula, and the variouse fevers. Even though many would have judged at least some varieties of fever to be (sometimes) contagious, these still could be understood to be a manifestation of common causes—cold, wet, hunger, bad air, anxiety, etc.—which could also manifest themselves in other distinct clinical conditions.¹⁹

Any medicine based in advice on how to modify the external factors that affect one's health assumed that the individual had control of those factors. In large part, these medical ideas were the heritage of a medicine for the wealthy, who did have such control over the conditions of their lives. Applied to living conditions during the industrial revolution, however, that elite medicine had revolutionary implications, which was hardly surprising since working-class lives were being assessed according to upper-class standards of health. Rarely did those applying this medicine intend to be revolutionary. In part, medical men became involved in social questions as providers of authority. Asked to assess the effects of new institutions such as factories, they found much that was harmful to health. Some encountered such problems as practitioners. Samuel Smith, on the staff of the Leeds Infirmary, noted that "never a year passes, but I see several instances where children are in the act of being worn to death by thus working in factories." He told of telling parents that unless they removed a child from factory work, the child would die.²⁰ By regarding poverty as a cause of disease, a medical rather than a moral problem, some of the medical officers appointed under the new poor law to care for the poor circumvented the harshness of that law. For those to whom the threat (and experience) of hunger incited a greater effort to work, these officers prescribed a supportive diet as a remedy for an illness brought on by hunger and overwork.²¹

A few prominent physicians made social causes of disease the focal point of their careers as public figures or as researchers. W. P. Alison, professor of medicine at Edinburgh, led a campaign for Scottish poor law reform, arguing that it was the physician's professional obligation to act to remove sources of disease. The disease that concerned him was typhus. Alison believed that its most

readily removable cause was hunger, and thus the Scottish practice of depending on the (often grudging) charity of each parish was unacceptable.²² A Manchester practitioner, R. Baron Howard, wrote a treatise instructing his colleagues how to recognize the symptoms and postmortem appearance of chronic hunger, for he insisted that this, and not any specific disease, was a major cause of death there.²³

Clearly, constitutional medicine had social implications. What they were, however, was less clear, as was the question of whether a statistical inquiry into causes of death could help to make them clear. If "cause" were understood sufficiently broadly, one could identify a large number of antecedent events that might well have been crucial in whether the death occurred. Did that mean one should register such claims as we find Samuel Smith making—that factory labor is (in some sense) a cause of death—in the sorts of tables Farr was making up? It need hardly be said that the factory system (or capitalism) is not among Farr's headings; "starvation" and "intemperance" are the most "social" categories he used. Those who campaigned for reduction of working hours or against the new poor law were often suspicious of statistical studies of causes of death. They felt they knew what caused preventable deaths and how to prevent them. It was pretty obvious: less work, cheaper food.²⁴ The whole project of classifying deaths by disease might seem only a distraction.

Social Implications of Constitutional Medicine

To sketch how social such a theoretical framework could become, and to suggest how different its approach to causes of death (and disease) was from the approach that Farr was developing, I shall review the medical evidence heard by Michael Sadler's 1832 Select Committee on the Employment of Children in textile factories. Most of the medical witnesses were physicians or surgeons holding prestigious London hospital appointments: Sir Astley Cooper, Sir William Blizard, Sir Anthony Carlisle, Sir Charles Bell, Sir George William Tuthill, Sir Gilbert Blane, J.H. Green, John Elliotson, C. A. Key, P. M. Roget. Elliotson aside, none of these was in any sense a radical or even a reformer.²⁵ They were asked virtually the same questions and gave much the same answers. Typical is the view of Sir Charles Bell, retired

professor of anatomy of the Royal College of Surgeons. Bell was asked whether, from “general principles,” “analogies” of practice, or study, he had “any hesitation in tracing many injurious consequences to that system of labour, consequences which have been described . . . at great length, as affecting the health and the limbs, and shortening the life, of those exposed to it?” In reply, Bell stated that such work

would be very injurious to the constitution, and engender a variety of diseases; the great disease, emphatically using that word, is scrofula: where there is a want of exercise, deficient ventilation, depression of mind, and want of interest in the occupations, I should say, especially in young persons, scrofula, in its hundred forms, would be the consequences.²⁶

Bell and most of his colleagues had never practiced among factory children; they spoke from theory (although hospital and dispensary appointments had given them some knowledge of the health of the London poor). As Bell notes here, it is the constitution (not the body or a particular organ) that is harmed by factory work. Owing to hereditary or environmental factors, some constitutions are stronger than others, but all are fragile. What harms one constitution harms, in greater or lesser degree, anyone’s constitution: overwork harms health although some can work longer than others.²⁷ Sir Anthony Carlisle, anatomist of the Westminster Hospital, noted that children cannot take long labor in close rooms, but that the effects will vary

in proportion to their different constitutions: to some it will be fatal; as, for example, the children of scrofulous parents; others might resist a considerable proportion of unwholesome influence with more impunity. . . . The evil consequences will be in proportion to the youth of the person, his delicacy, or otherwise, the natural constitution, the length of time he is confined, and the confinement of the air.²⁸

These elite medics agreed that the effects of the factory could appear as many different diseases. Even scrofula, the disease Bell highlights, was not the specific tuberculosis of the glands that we think of but a more general condition.²⁹ Just as one cause appears as many diseases, many causes might contribute to this scrofula, although that does not absolve any one of them of responsibility. One could not then, as we now do, reason from diagnosis to cause. Each cause could contribute to many diseases; each disease had many causes. Further, most witnesses saw no sharp line between health and

disease. Harmful activities did not simply put one at risk; to call them harmful meant that they were destroying “health,” and the deterioration they caused would eventually warrant a specific diagnosis. Further, the concept of disease held by these medics was broader than ours; in Carlisle’s words, it included whatever was “injurious to . . . health” or a “deviation from health.”³⁰

Debility was a common concern inasmuch as quantities of vitality or energy were central concepts in contemporary physiological theory. Fatigue and depression were but subjective indicators of a somatic state of debility, which was in turn nearly the same thing as disease.³¹ Thus, according to Sir B. C. Brodie, surgeon of St George’s Hospital, “whatever tends to debilitate the general system will cause the disease to become developed; scrofulous diseases of all kinds, I conclude will shew themselves among children so circumstanced; scrofulous diseases generally appear in those who from any causes are in a state of debility.”³² Carlisle explained how leaving the overheated factory for the cold night air generated consumption:

Sudden alternations of heat and cold, the going out of a very hot room into a damp cold air repeatedly will inevitably produce slight inflammations of the lungs; those slight inflammations reiterated produce the groundwork of pulmonary consumptions, for all pulmonary consumptions are repetitions of little colds. The structure of the lungs, from this cause, becomes completely altered by those slight inflammations which disorganize the vascular tissue; when that has taken place, medicine is of very little use; but a sure mode of producing this malady is frequent alternations from hot rooms, with thin clothing, to cold damp air.³³

Witnesses accepted the interdependence of the mental and the physical; one was utterly at the mercy of the environment. One (physiological) effect of factory work would be “recourse to sensual stimulants, in order to rid the mind of its distressing feelings,” noted James Blundell of Guy’s Hospital; others were an “irritability of the nervous system, excitability of the feeling, and a certain busy play of the ideas when the mind is roused, together with that state of the mind generally which constitutes fretfulness and discontent; and I am further of opinion, that this system has a tendency to weaken the solid strength of the mind.”³⁴ Thus, attitudes and behaviors like heavy drinking (or precocious sexuality) were to be seen not as unfortunate moral choices

but as direct physical effects of factory labor.

Such a medical philosophy has sometimes been seen as a verbose substitute for sound science. Certainly an “everything-causes-everything” presumption is hardly a workable foundation for analysis. The explanations of the medical elite to Sadler’s committee often seem arbitrary, vague, and speculative. Yet to the Sadler witnesses, such complicated schemes of causation were the mark of a truly philosophical medicine. These individuals saw themselves as hardheaded followers of Newton, Boyle, and Bacon in eschewing occult qualities, refusing to mistake words (the names of diseases) for things, and allowing as causes only those entities that common sense could invest with causal efficacy.³⁵ Mechanical processes were prominent in their pathology: long periods of standing (or of sedentary labor) had necessary and readily comprehensible effects. According to Blizard,

long standing in one position has a very considerable influence on the circulating system; the veins become, as we denominate it, varicose or distended, and, of course the return of the blood to the right side of the heart is not regular, nor in the right quantity or quality; and if it is either deficient in the one or the other, it is robbed of a certain degree of its stimulus, which is necessary, that all the other organs may be in a proper state.³⁶

The effects of heat, or dust, were equally evident. The action of these causes was deemed so clear-cut that disease arose as “a certain consequence” of them.³⁷

Judged by canons like these, it was the sorts of causes hypothesized by those like Chadwick (and later Farr), whose arguments would culminate in the germ theory, that seemed arbitrary. In 1840 the “miasms” that Chadwick posited (or a few years later, the “zymes” that Farr suggested) were only names for hypothetical entities supposed to cause particular diseases. As the entities themselves were utterly undetectable, there was little basis even for conjecturing how they produced pathological processes. From the perspective of the medical philosophy outlined above, even though it might be appropriate to hypothesize such entities, they did not count as explanations. To say that a virus (or miasm or germ) was the cause of fever was to say that one did not know what caused it (and that the whole discussion of causes of death was thus a pretense) since mere words could not be causes.³⁸

The Rejection of Constitutional Medicine: Chadwick and Farr

It should be clear that in this constitutional medicine, causes-of-death statistics (if by these one means diagnoses of diseases of deceased persons) could not serve the purposes for which we now use them. Diagnosis had a much less important place in the logic relating cause to effect. One could not infer causal agent from postmortem diagnosis and then go on to seek the means by which the agent, whatever it might be, had reached the victim. But there was really no need to: the causes of disease were eventually—or in greater intensity—the causes of death. Both disease and death manifested the totality of devitalizing causes affecting the constitution of an individual with a particular “diathesis” or susceptibility. To know the disease present at the death told one something about the diathesis, but it did not tell one anything very specific about causes since anything that sufficiently weakened the constitution could transform the diathesis into the disease.

Accordingly, the disease was not in any strong sense the cause of death; the causes of the disease and not the disease itself were the real problem. When today we use disease incidence to identify unsatisfactory conditions like bad water or bad food-handling practices, it is the fact that these conditions lead to that disease—that they represent opportunities for infection—that is problematic. To medical men of the generation before Farr, an outbreak of disease (especially fever or consumption) was a measure of the degree to which conditions were unsatisfactory in their own right: to Thomas Bateman of the London Fever Hospital, writing in 1818, or to the Edinburgh professor W.P. Alison, fever was an indicator of the state of “misery” of a population.³⁹ That misery, which they understood physiologically as an exhaustion produced by cold, hunger, anxiety, and work, represented nothing less than the gradual wasting of bodies. The arrival (or spontaneous outbreak) of epidemic fever made the extent of that wastage evident, much as the fire that we make by tossing a match on a pile of dry hay (or that is produced when that hay spontaneously ignites) reveals the extent and condition of that fuel. The wastage was the real problem, medically as well as socially, for it was widely held that the contagion of fever would have little effect on a healthy population.

By contrast, to privilege the names of diseases; to regard them as discrete, natural entities, each having its unique cause; and yet to have no tools either to distinguish diseases reliably from one another or to discover their unique hidden causes was to indulge in obscurantism. To the medical elite who testified to Sadler, medicine had normative significance for social policy; yet transform “consumption” into the infectious disease of “tuberculosis” and downplay the “predispositions” that led to it, and the doctor is left with nothing to say about working conditions.⁴⁰ In retrospect we can see that the ontological assumption and the search for specific causes paid off in the germ theory of disease, although arguably, much of the imperative for health was lost with the disappearance of constitutional medicine. In 1840, however, to take that ontological route was either an audacious expression of faith in a science that was mostly yet to come, or an attempt to steer medicine away from a political critique of the industrial revolution. It was both—for Farr, mainly the former; for Chadwick, mainly the latter.

Chadwick’s reasons are plain. He was seeking to represent public sanitary improvement—water and sewers—as a means of social betterment that was consistent with the laws of political economy because it did not interfere with the play of the market in food or in labor. He based his case on the claim that diseases ranging from fever to tuberculosis, and social problems ranging from intemperance to revolutionary agitation, had one “all pervading cause”: concentrated emanations of decomposing matter, whose effects could be prevented by flushing the matter down the drain. With most diseases plausibly linked to decaying filth, he saw no great need to break down deaths by disease.⁴¹

The filth explanation could not so readily subsume starvation, however. Doubtless, filth exacerbated the pathological effects of hunger, but it seemed obviously not true that hunger in a clean environment was unproblematic. Starvation was too irrevocably a social and a political issue.⁴² For Chadwick, to admit existence of significant starvation was to acknowledge that a central and cherished theory was false. His poor law was derived from the axioms of political economy, which were in turn based in universal laws of human nature. Correct application of those laws and axioms guaranteed social harmony. The optimal workhouse was not best in the zero-sum sense of being the

best of a bad lot; it was to be ideal in all respects, full of positive feedbacks of goods, with “collateral benefits” popping up unexpectedly. It was inconceivable that the laws of political economy might be found incompatible with the laws of health; it was tantamount to saying that God was both *for* and *against* the free market.

Yet Sadler and the surgeons and physicians he questioned put medicine in direct opposition to political economy. J. R. Farr had been most insistent:

- [T]he only safeguard to the state consists in opposing this principle of political economy by the medical voice, whenever it trenches on vital economy. . . . [I]f it does [trench on vital economy], it is guilty of homicide.

- “You purchase your advantage at the price of infanticide; the profit thus gained is death to the child. . . . [Medical men could] never assent to life being balanced against wealth.”⁴³

This was no less than a rejection of the natural law warrant for political economy. A system in which one had to work oneself to death to eat, or starve to avoid being exhausted by work, could not have been God’s intention. Yet, arguing that the debilitation of factory work was hereditary and progressive, Carlisle had gone so far as to claim that within a few generations, the factory population would be unable to reproduce.⁴⁴ For Chadwick, a table of causes of death expressed in politically innocuous terms would help to subvert the possibility of professional medicine becoming political medicine, an independent and countervailing authority to his own political economy.

Farr’s views were more complicated. They bore the stamp of his social outlook, the research problems that most interested him, his grappling with the practical problems of classifying deaths, and even his anxiety, as a junior bureaucrat in a newly established post, to secure his future by claiming more utility for his work than it really possessed. For Farr, the heading “starvation” and, indeed, the entire nosological classification system were not social enough. In agreeing with Chadwick that ideally one should represent the variety of the cases listed as starvation, he was not hoping to exonerate the new poor law but to show that it had failed to solve a great social and medical problem. He wished to expose those hidden starvations, the deaths listed under diseases.

Thus, Farr agreed with the Sadler witnesses that social and economic conditions were significant causes of death. But given the limitations of contemporary statistical methods, of number-crunching hardware, and of uniformity in reporting, it was difficult to juggle the many factors that did figure in each death. Too many categories and too much qualification impaired the drawing of general inferences. "Each case could be entered under only one head," Farr explained to Chadwick. It was "difficult to determine the influence of several concurring causes," he added; "the registers can only be considered to indicate an approximation to the real number of deaths from starvation." Starvation was probably a factor in many unclassified deaths (more than 7000); an identifiable disease might have been present in some registered as starvation just as starvation was likely a factor in some deaths listed under particular diseases; nor could one deny that other headings on the table—for example, "intemperance, insanity, and malformations"—had sometimes led to starvation.⁴⁵ Recognizing how much can be learned from correlating the incidence of diseases with the circumstances of their occurrence, we are likely to endorse Farr's search for general headings that would allow statistical investigation. Yet in a medicine of multicausal explanation, one was sacrificing a great deal: arguably, to require that the narrative history of a patient's constitution be condensed to a single word was to give up the possibility of a medicine that would take an interest in, and see as problematic, the full variety of pathological influences a person encounters.⁴⁶

It is also the case that social factors were not central to Farr's own research interests at the time, which had more to do with the ancient Hippocratic questions of the correlation of disease with climate, season, type of soil, and so forth.⁴⁷ The data he chose to gather better suited these issues. Whereas to Farr, "place" meant the town in which the deceased had resided, for W. P. Alison, chair of an 1835 Scottish advisory committee on deaths registration and most influential of the "humanitarian" physicians who stressed social causes of disease, "place" was understood as "the *exact residence*, *i.e.* not merely the town, village or parish, but the street and number, or the division of a parish."⁴⁸ Farr's "place" was appropriate to inquiries into effects of climate or soil; Alison's, to matters of class and standard of living.

Farr did insist, however, that his tables were to serve the purpose of "social amelioration."⁴⁹ They would provide a map of unhealthy places (probably no mystery) and, by enabling the "exciting causes" of the predominant diseases in those places to be identified, would guide improvement.⁵⁰ They would also aid medical practice as medical men would learn to modify their therapies according to place, season, and class. (In fact, modifying general therapies to particular circumstances was the traditional stock in trade of the learned physician; it is not clear how Farr's disease-specific death rates would have improved their ability to do that.) Physicians would also learn whether the so-called health resorts to which they were sending patients were really healthy.⁵¹

Farr tried also to explain "in what sense the term 'cause of death' is here understood." Yet the metaphor he chose (a broken watch)⁵² hardly clarified things. He contrasted deaths due to "external violence" like poison or fire, in which what one might call the "pathological process" and its initiating causes are immediately evident, with deaths in which the initiators are not evident and the pathological processes "under certain circumstances spring up spontaneously in the organization."⁵³ The two classes are "as distinct as day and night," yet they are also "passing into each other," which presumably means that there are deaths from conditions that are partly spontaneous and partly violent, although Farr did not talk about these or give examples of them.

This distinction effectively leaves no room for social causes of death. Deaths belong either in a small category of violent events, most of which are not diseases at all, or in a much larger group of what are effectively occult phenomena, things happening "spontaneously" yet in "certain circumstances." The latter class seems to presume an ontological conception of disease: the diseases can be described, distinguished, and perhaps even correlated with certain circumstances, but they cannot be genetically (causally) explained, or else they would belong to the class of violent events.⁵⁴ It is noteworthy that the examples Farr chose—cancer, inflammation, and rheumatism—were among the more mysterious of diseases; one could not readily have substituted fever, consumption, or scrofula. The emphasis on spontaneity was utterly at odds with the testimony of the Sadler witnesses only a few years earlier, who had held that

disease was the determined product of the impact on the constitution of the pathological forces to which it had been subjected. For them, most diseases would have belonged to an intermediate category, the products of a slow violence being done to factory children through mechanisms quite as comprehensible as the poisonings or fractures in Farr's more restricted conception of violence. The spontaneous, hidden, probabilistic elements of disease were subsumed by concepts of constitution and diathesis, concepts which, however arbitrarily they might be used, were not inherently inaccessible to scientific analysis.

Why was Farr so obscure? I do not think he meant to undermine inquiry into the social causes of disease; his sympathy is genuine. But he was by passion a statistician, and a statistician needs discrete units—here diseases—whose laws he can discover. A taxonomist who sees nature as a seamless web or a geneticist who doubts that genes determine characters will not only be devoid of a reason to inquire but will also be unable to work. Farr was also a man in search of a career, having already found that medical practice and medical journalism did not suit. By finding ways to maximize the significance of the information he had at his hands (in part by reframing questions to make them answerable with those data), Farr succeeded, transforming a specialist clerkship into a senior advisorship on health policy.

Conclusion

The actions taken at this time had far-reaching implications for public health. A "political medicine," with status equal to that of political economy in shaping public policy, failed to develop. The public health field, along with medicine more generally, achieved significant autonomy, yet it did so by sacrificing the claim to speak with authority on many social issues. It has reclaimed some of that authority, but with difficulty; Chadwick's border between medical and social remains hard to erase.

From time to time since the days of Chadwick and Farr, questions have arisen about how "social" medicine should be (and equally about what issues and actions a social medicine involves or implies). Throughout this century, many public health leaders have urged the importance of social determinants of illness and health.⁵⁵ Yet I fear that little of that concern has stuck to become part of

the mainstream or core of public health. To a midwestern layman like myself, the efforts of a doctor from the Centers for Disease Control and Prevention to treat guns as a public health problem (or of Physicians for Social Responsibility to make the same point about nuclear weapons) seem in some vague way a trespass of medical territory.⁵⁶ Their arguments persuade me, but I have trouble shrugging off that dead hand, according to which issues of economic justice or violence (domestic, local, international) belong to one category with one set of institutions, and medical issues belong to another. Perhaps the "social" is too amorphous, ill-defined, or diffuse, but I think we are also trapped by the inertia of a history that informs both professional culture and expectations among the public at large. In that history, the drama of the conquest of epidemic disease has loomed largest. In medical histories (and even in histories of public health), the matter of hunger and overwork as medical problems is often ignored, treated as marginal, or regarded as a recognition of the 20th century. I find a visit to the Sadler witnesses exhilarating because they represent a time when medical professionals did not have to apologize for thinking that social policy affected public health. The split that Chadwick and Farr effected had not yet taken place. □

Acknowledgment

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References

- Major biographies of Edwin Chadwick are S.E. Finer, *The Life and Times of Sir Edwin Chadwick* (London, England: Methuen, 1952); R.A. Lewis, *Edwin Chadwick and the Public Health Movement, 1832-1854* (London, England: Longmans, Green, 1952); and Anthony Brundage, *England's "Prussian Minister": Edwin Chadwick and the Politics of Government Growth, 1832-1854* (University Park, Pa.: Pennsylvania State University Press, 1988). The major modern biography of William Farr is John M. Eyler, *Victorian Social Medicine: The Ideas and Methods of William Farr* (Baltimore, Md.: Johns Hopkins University Press, 1979).
- G.R.W. Baxter, *The Book of the Bastiles; or the History of the Working of the New Poor-Law* (London, England: John Stephens, 1841). See also John Knott, *Popular Opposition to the 1834 New Poor Law* (New York, N.Y.: St. Martin's Press, 1986), and M.A. Crowther, *The Workhouse System, 1834-1929, the History of an English Social Institution* (Athens, Ga.: University of Georgia Press, 1982). On the views of the newspapers, see Finer, *Sir Edwin Chadwick*, 99-101, 128-129.
- S.Q. Sprigge, *The Life and Times of Thomas Wakley* (London, England: Longmans, Green, 1897), 483-484.
- William Farr, "[First] Letter to the Registrar General," *First Annual Report of the Registrar-General, Parliamentary Papers, 1839*, vol. 16, no. 187, app. P, p. 75. Ostensibly, Chadwick wrote on behalf of the Poor Law Commission to Registrar General T. H. Lister, yet the controversy is clearly between Chadwick and Farr. Under the heading "Relief of Destitution," the entire correspondence was printed by Chadwick in the Poor Law Commission's *Official Circulars* for March 9, 1840, and May 18, 1840. The correspondence is also reprinted in D. V. Glass, *Numbering the People: The Eighteenth Century Population Controversy and the Development of Census and Vital Statistics in Britain* (Farnborough, England: Saxon House, 1973), 150-167. The entire set of circulars has been reprinted: Poor Law Commission, *Official Circulars of Public Documents and Information Directed by the Poor Law Commissioners to be Printed, chiefly for the Use of Boards of Guardians and Their Officers, Ten Volumes in Two, 1840-1851* (New York, N.Y.: Augustus M. Kelley, 1970). See also Eyler, *Victorian Social Medicine*, 25-26.
- Ironically, Farr had made this last claim as part of an argument comparing health in the country to health in the towns, an argument in which he deferred absolutely and uncritically to Chadwick's controversial doctrines about the relative importance of poverty and filth as causes of fever. See Farr, "Letter to the Registrar General," 78.
- Farr to Chadwick, November 29, 1839, in Poor Law Commission, *Official Circulars*, March 9, 1840.
- Chadwick to the Registrar General, February 24, 1840, in Poor Law Commission, *Official Circulars*, March 9, 1840. This economic argument is Chadwick's principal evidence for the adequacy of diet.
- Farr to Lister, March 17, 1840, in Poor Law Commission, *Official Circulars*, May 18, 1840.
- Chadwick's accusation (see his letter to the Registrar General of February 24) that Farr was "against the administration of the New Poor Law" is interesting as an indication of his hypersensitivity. Farr's testimony to the select committee on the poor law act concerned the conditions of employment of medical officers, and while it suggested revisions, it can hardly be construed to have been "against the administration" of the act (46th Report of the Select Committee on the Operation of the Poor Law Amendment Act, *Parliamentary Papers*, 1838, vol. 18, pt III, no. 518, qq 15703-15841).
- For Farr's nosological table, see Farr, "Letter to the Registrar General," 82. On the problems of certifying causes of death, see Eyler, *Victorian Social Medicine*, 44-45.
- See "Alleged Death from Starvation: Singular Inquiry," *Times* (London), August 26, 1840, p. 7; William Farr to *Times* (London), August 31, 1840, p. 5e; C. Fowell to *Times* (London), August 25, 1840, p. 3; R. H. Hobbs to *Times* (London), September 1, 1840, p. 3; "Examination in the Case of Elizabeth Friry," *The Lancet*, November 28, 1840, pp. 348-349.
- Poor Law Commission, *Official Circulars*, May 18, 1840.
- A reviewer in the *Edinburgh Medical and Surgical Journal* generally sympathized with Chadwick's perspective ("Review of First and Second Annual Reports to the Registrar General," *Edinburgh Medical and Surgical Journal* 54 [1841]: 179-183. On Parisian clinical medicine, see W.F. Bynum, *Science and the Practice of Medicine in the Nineteenth Century* [Cambridge, England: Cambridge University Press, 1994], chap. 2. On Farr's Parisian experience, see Eyler, *Victorian Social Medicine*, 1-2).
- Eyler, *Victorian Social Medicine*, 54-64.
- It might be argued here that one should not expect causes-of-death statistics to reflect social causes of death, that they were not intended to have any relations to questions of urban or occupational health, and that perhaps other sets of statistics—such as general mortality rates, age tables, or infant mortality among certain groups—should have been the indicators of social causes of death. Yet because they did not purport to represent causes of death, those statistics did not unambiguously provide the relevant political facts, either.
- Sir G. Blane, *Elements of Medical Logick*, 2nd ed. (London, England: Underwood, 1821), 37-41; James Copland, "Disease: the Causation and Doctrine of," in *A Dictionary of Practical Medicine, Comprising General Pathology*, vol. 1 (London, England: Longman, Brown, 1858), 557-558. The following discussion draws much from several works by Lester King, particularly his *Medical Thinking: A Historical Preface* (Princeton, N.J.: Princeton University Press, 1982). I have given this subject more detailed consideration in "Predisposing Causes and Public Health in Early Nineteenth Century Medical Thought," *Social History of Medicine* 5 (1992): 43-70. On the specific application of this perspective to mortality, see John Reid, *The Philosophy of Death, or a General Medical and Statistical Treatise on the Nature and Causes of Human Mortality* (London, England: S. Highly, 1841).
- Yet even a single diagnosis did not warrant a particular therapy. John Armstrong made clear that the same species of fever warranted depletative therapies in some, supportive therapies in others, according to the patient's constitution (John Armstrong, *Practical Illustrations of Typhus Fever, of the Common Continued Fever and of Inflammatory Diseases*, 3rd ed. (London, England: Baldwin, Craddock, and Joy, 1819), 294-295).
- This was pretty much true no matter which of the several theoretical systems of medicine of the day one followed. The exception is when one was talking of the "proximate cause," which is nothing other than the disease: "We call the thing first conceived the cause, and that which comes next the effect; not because there is any real difference between the cause and the effect, since the cause is inseparable from the effect. . . . The cause of disease is the same thing with the disease itself" (*Dr.*

- Boerhaave's *Academical Lectures on the Theory of Physic Being a Genuine Translation of His Institutes and Explanatory Comments Collated and Adjusted to Each Other, as They Were Dictated to His Students at the University of Leyden*, vol. 5, *Pathology* [London, England: W. Innes, 1746], 372–373. See also Copland, *Dictionary of Practical Medicine*, 558).
19. Contagion implied transmissibility and clinical similarity. It did not imply a specific transmissible entity, in the sense in which the "virus" of small pox was considered. Bateman held that the contagion of fever need be nothing more than "morbid exhalations and secretions" capable of "constituting a medium of infection capable of generating fever." Thomas Bateman, *A Succinct Account of the Contagious Fever of This Country Exemplified in the Epidemic Now Prevailing in London* (London, England: Longman, Hurst, 1818), 13–14, 142–144. On contemporary fever pathology, see J.M. Good, *The Study of Medicine*, 2nd ed., vol. 2 (London, England: Baldwin, Craddock, and Joy, 1825), 42–76.
 20. Charles Wing, *Evils of the Factory System Demonstrated by Parliamentary Evidence* (London, England: Saunders and Otley, 1837), 214–215. According to working-class witnesses, factory labor was being directly cited as a cause of disease by practicing medical men. For instance, J. Hebergam of Huddersfield, when asked to what cause the death of his brother was "attributed by [his] mother and the medical attendants," answered "that he died from working such long hours, and that it had been brought on by the factory" (Wing, *Evils of the Factory System*, 59). James Paterson of Dundee similarly reported that his brother had died from consumption attributed by a doctor to "being confined at that work" (Ibid., 72). It is important also to note that the major vindication of the factory owners, the *Report of the Factory Commission of 1833*, which held that factory workers had better health than town residents generally, was the work principally of Chadwick.
 21. Ruth G. Hodgkinson, *The Origins of the National Health Service: The Medical Services of the New Poor Law, 1834–1871* (London, England: Wellcome Historical Medical Library, 1967), chap. 1.
 22. W.P. Alison, "Preface," in *Observations on the Management of the Poor in Scotland, and Its Effects on the Health of Great Towns*, 2nd ed. (Edinburgh, Scotland: Blackwood, 1840).
 23. R. Baron Howard, *An Inquiry into the Morbid Effects of Deficiency of Food Chiefly with Reference to Their Occurrence amongst the Destitute Poor* (London, England: Simpkin, Marshall, and Co., 1839), 1–3.
 24. On the ideology of the early statistical movement, see M. J. Cullen, *The Statistical Movement in Early Victorian Britain: The Foundations of Empirical Social Research* (New York, N.Y.: Barnes and Noble/Harvester, 1975). Because constitutional medicine generated so rich an assemblage of causes, "obvious" solutions were virtually limitless. While many medical men highlighted poor food and overwork along with crowded housing and filth, political writers tended to select solutions. Those representing agricultural interests often focused on long hours and child labor in factories; those representing industrial interests saw the key health problem as protective tariffs on food, which kept prices high and starved the poor. On the interplay of at least the first two of these issues, see Eric J. Evans, *The Forging of the Modern State: Early Industrial Britain, 1783–1870* (London, England: Longman, 1983). Overcrowded housing and filth were politically more innocuous; in part they could be readily acknowledged as problems (especially the former) precisely because it was not clear that they were the fault or responsibility of any one group in particular.
 25. On the political views of this group, see Adrian Desmond, *The Politics of Evolution: Morphology, Medicine and Reform in Radical London* (Chicago, Ill.: University of Chicago Press, 1989), and Sprigge, *Thomas Wakley*.
 26. Wing, *Evils of the Factory System*, 112. In general, on the role of medicine in the factory controversy, see Robert Gray, "Medical Men, Industrial Labour and the State in Britain, 1830–1850," *Social History* 16 (1991): 19–43.
 27. It is significant that a focus on the differing responses of individuals to a particular set of conditions was not, as it sometimes has been, a means to divert attention from social causes of illness by relocating problems in individuals, for whose idiosyncrasies society could not be held responsible (the "blame-the-worker" response).
 28. Wing, *Evils of the Factory System*, cxii.
 29. Cf. J.H. Green, professor of anatomy at King's College, as quoted in Wing, *Evils of the Factory System*, 154: "[It is] scarcely possible to present in any brief summary the many dire effects of scrofulous disease, but we may mention, first, that the mesenteric glands are often the seat of disease, favoured by the irritation of unwholesome and ill-digested food, shewing itself in weakness, emaciation, protuberant abdomen, and slow fever. Next, the absorbent glands about the neck, the inflammatory swelling, excited, perhaps, by variations of temperature; for the particular seat of the disease, or its development in any particular organ, may be determined by accidental circumstances. Then we find that the disease attacks the skin in the form of scaly eruptions, cracks, stops, ulcerations, and slowly suppurating tubercles. Again, that the eyes become affected in the various forms of scrofulous ophthalmia, and often end in blindness, or the bones, and especially the joints, become diseased, terminating in caries of the spine and white swellings. Then, that the internal viscera are affected with tubercles, as the liver, brain, spleen etc. And, lastly, that the lungs become the seat of this destructive disease in the form of that incurable complaint of our climate, pulmonary consumption."
 30. Wing, *Evils of the Factory System*, 132. This perspective did not preclude the conception of at least some diseases, such as contagious fevers, as entities that attacked people, but in highlighting a predisposition or induced debility due to factory work, it tended to relegate that contagion to secondary status in explaining the incidence of disease and the death it might produce.
- See, for example, C.T. Thackrah of Leeds, the main contemporary authority on occupational disease: the "factory system reduces the nervous power, in other words, the vigour of the constitution, that it renders persons more feeble, more subject to suffer from attacks of disease. . . . [Those] constantly so employed are shorter-lived than others"; they are "liable to attacks of disease to which they would not have been subject, or under which they would not have succumbed" (Wing, *Evils of the Factory System*, 232–233). See also J.H. Green: "the child of the most healthy constitution may, by continued exposure to these causes, acquire a disposition to the disease, and become actually the victim of it; whilst those who might have been subject to it from an original fault of the constitution may by the careful preservation from these causes [i.e., the debilitation of factory labor] remain exempted from the disease" (Ibid., 154).
31. "Debility," in Copland, *Dictionary of Practical Medicine*, 473–474. Copland held that debility was so "intimately connected with diseases as to be virtually disease itself." Its synonyms were "asthenia, atonia, adynamia, all slightly different, but overlapping greatly." Its causes in children were hereditary, "through the exhaustion of their parents," as well as induced due, among other factors, to bad or insufficient food, "abstraction of the animal warmth," absence of light, air, and exercise.
 32. Wing, *Evils of the Factory System*, 128.
 33. Ibid., 137.
 34. Ibid., 123, 126. For Blundell this is a deduction of a nervous system-based pathology. Through the metaphor of organization, the same phenomena could be explained within a solidist framework: according to Sir William Blizard, surgeon to the London Hospital, "whatever affects one particular important organ tends to disorganize the whole frame; there is a dependence of one organ upon another" (Ibid., 118).
 35. Cf., Blane's condemnation of the elaboration of "terms," "visionary and gratuitous" (*Elements of Medical Logick*, 141).
 36. Wing, *Evils of the Factory System*, 116.
 37. By 1830, the need to maintain combustion in the "the engine of the body," or to keep up its temperature or avoid loss of its nervous "energy" were equally acceptable, and especially in the wake of the chemical revolution, the vitiating effects of re-breathed air was no less clear (Green, quoted in Wing, *Evils of the Factory System*, 153).
 38. Cf., Alfred Hudson, "An Inquiry into the Sources and Mode of Action of the Poison of Fever," in Alfred Hudson and William Davidson, *Essays on the Sources and Mode of Action of Fever* (Philadelphia: A. Walde, 1841), 142. Hudson quotes Magendie's criticism of Devergie: that "we attribute this odor to miasma, that is to say to a cause void of meaning, because we are ignorant of the nature of the object which it represents."
 39. "The character of an epidemic, therefore, is in some measure a test or index of the situation and circumstances of the population among which it occurs" (Bateman, *A Succinct Account*, vi); "The existence of

- epidemic fever in any great community, particularly if there be neither war nor famine to explain it, becomes a most important test to the legislator of the destitute condition of the poor, and, as I shall endeavour to shew, of the deficiency of the funds which, in a better regulated state, are applied to their support" (Alison, *Observations on the Management*, 18). Farr's notion of disease as the "iron index of misery" seems to belong to this tradition but seems out of place in the context of an ontological conception of disease ("Letter to the Registrar General," 65).
40. One could also describe this transformation as turning from a focus on the person to a focus on the disease agent in etiology, from health and well-being to disease in medical practice, and from degenerative conditions such as consumption to infectious epidemic diseases in public health.
 41. Eyler shows Chadwick to have been interested in deaths registration only because it would make the job of poor law medical officer more attractive (*Victorian Social Medicine*, 45).
 42. It could be held, however, that adequate intake did not have its adequate nutritive effect when the nervous system (the digestion) was disturbed by sewer emanations. Had Farr split the 63 deaths between "debility" and "intemperance" (which he legitimately could have done), there probably would have been no problem.
 43. Wing, *Evils of the Factory System*, 146–150. B.C. Brodie, along with many other witnesses, was asked "in a *medical* point of view, and consulting the feelings and principles of humanity" [italics mine], whether it was not as essential to protect factory children as it had been to protect West Indian slaves (*Ibid.*, 128).
 44. Wing, *Evils of the Factory System*, 134–135.
 45. Farr to Lister, March 17, 1840, in Poor Law Commission, *Official Circulars*, May 18, 1840.
 46. In designing forms for registering deaths, Farr does invite identification of "primary and secondary diseases," although only the primary diseases figure in the tables (Eyler, *Victorian Social Medicine*, 51). It is also illustrative to consider Henry Rumsey's criticism of Farr on this issue. Rumsey held that the solution to the oversimplification was even more simplification (*Ibid.*, 61).
 47. Farr did take data on occupation and produced studies of occupational mortality in some later reports. See Noel A. Humphreys, ed., *Vital Statistics: A Memorial Volume of Selections from the Reports and Writings of William Farr* (1885; reprint, with a new introduction by Mervyn Susser and Abraham Adelstein, Metuchen, N.J.: New York Academy of Medicine/Scarecrow Press, 1975).
 48. The Edinburgh Sub-Committee, "Report on the Registration of Deaths," *Fifth Report of the BAAS for 1835* (London, England: John Murray, 1836), 251. It is noteworthy here that causes of death and causes of disease are seen as the same problem. Alison's committee acknowledged, in keeping with multicausal thinking, that "every individual case of disease, or of death from disease, is probably determined by several external causes." By collecting large numbers of cases of particular diseases, however, one could determine "the respective influence" of each cause (253). Alison also insists that it was crucial to distinguish "whether the fatal disease was acute or chronic" (254), but he does not explain why this is so important. "Acuteness" might be seen to distinguish the effects of a sudden invasion of some mysterious and accidental influence from the state of "health" produced by the individual's general conditions of living.
 49. In his "Letter to the Registrar General," Farr speaks of districts where people were "constantly sick, and the energy of the whole population is withered to the roots. Their arms are weak, their bodies wasted, and their sensations embittered by privation and suffering. Half the life is passed in infancy, sickness, and dependent helplessness" (65).
 50. Farr does not say how one is to infer exciting cause from the information in the tables. He does suggest that comparisons between places of high and low mortality from a disease will indicate the amount of disease that is preventable; however, in terms of both contemporary medical theory, with its emphasis on individual diatheses, and Farr's own belief in the importance of gross geographical factors, it does not follow that, under a proper public health regime, all places and peoples would have the same low mortality.
 51. Farr, "Letter to the Registrar General," 63–64.
 52. Contemporaries would have recognized this as an inversion of William Paley's use of the same metaphor in his well-known work on *Natural Theology* (1802). Paley maintained that, just as one would assume that a watch found in the grass was the product of an intelligent designer, so too could one assume that the marvelous adaptations of plants and animals were the work of a benevolent Creator.
 53. It is clear from context and also from Farr's nosological table that he does not mean "poisons" to include "morbid poisons"—that is, the presumed agents of specific transmissible diseases. A category for "violent deaths" with 4845 entries in the first report included deaths from eating poisonous plants, breathing fumes or carbonic acid, overdosing on drugs, being killed by animals, etc. (Farr, "Letter to the Registrar General," 82–83). I thank an anonymous reviewer for pointing out this possibility.
 54. "Spontaneous" is ambiguous because it can refer either to randomness or, as in "spontaneous combustion," to an event that requires no external cause but is presumed to result from the normal causal action of internal causes. In the former sense, it is incompatible with "certain circumstances." In either case, the existence of disease is rendered much more mysterious than it is to the Sadler witnesses.
 55. George Rosen, "What Is Social Medicine: A Genetic Analysis of the Concept," *Bulletin of the History of Medicine* 21 (1947): 674–733; Elizabeth Fee, "Designing Schools of Public Health for the United States," in *A History of Education in Public Health: Health That Mocks the Doctor's Rules*, ed. Elizabeth Fee and Roy Acheson (Oxford, England: Oxford University Press, 1991), 155–194; Elizabeth Fee and Barbara Rosenkrantz, "Professional Education for Public Health in the United States," in Fee and Acheson, eds., *History of Education*, 230–271; Stephen J. Kunitz, "Explanations and Ideologies of Mortality Patterns," *Population and Development Review* 13 (1987): 379–403.
 56. "A Social Disease," *Mother Jones* (May–June 1993): 26–28.