

Dying

Workers' Safety
and Health in
Twentieth-Century
America

for Work

Edited by David Rosner and Gerald Markowitz

Dying for Work:

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AMERICA

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For our children

BILLY, ELENA, AND TOBIAS MARKOWITZ
AND ZACHARY AND MOLLY ROSNER

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Introduction: Workers' Health and Safety—Some Historical Notes

In recent years, American labor and health historians have examined the effects of industrialization on the lives of workers and their families. Labor historians have looked at the transformation and control of the workplace while health historians have examined the relationship of immigration, industrialization, and urbanization to the public's health. One arena in which these two fields share common ground is the study of workers' safety and health, a field that looks directly at the effects on Americans of changes in the workplace and environment. This book seeks to bring the discussion of workers' health and safety into the mainstream of American labor and health history.¹ We believe that the health status of workers and their families is central to the issues of workers' control and public health in industrializing America. We begin with the premise that the exploitation of labor is measured not only in long hours of work and lost dollars but also in shortened lives, high disease rates, and painful injuries.

The chapters in this book do not provide a comprehensive history of the field of safety and health. Rather, they are meant to illuminate interrelationships between industrial and social organization and workers' health. Along with labor and health historians, we have asked an economist, two physicians with expertise in occupational medicine, a sociologist, and a chair of an academic industrial hygiene program to address historical issues in safety and health in an effort to help define the parameters of this new endeavor. Here they cover four major areas of interest: The first section addresses the alternative models that workers, activists, industry, and government have developed for addressing issues of prevention of, and compensation for, the ravages of industrial accidents and diseases. The second section looks at the development of state and federal regulation of safety and health in the plant. The third section focuses on one of the most ubiquitous industrial poisons, lead, and addresses the political and scientific issues surrounding its control. The final section of this volume examines the social and economic conditions surrounding three devastating industrial diseases of the twentieth century: asbestos-related disease, byssinosis, and radium poisoning. The chapters, all drawn from the ongoing work of the authors, are case studies in the history of occupational safety and health, and it is hoped that this work will stimulate a more synthetic integration by other historians of labor and health.

What becomes clear from the work of the various authors is that occupational safety and health history illuminates the tensions among and within

the scientific, economic, and political spheres in American society. In its most basic form, the struggle between labor and capital to control the means of production has set the context within which safety and health programs and policies have developed. The great struggles of labor in the late nineteenth and early twentieth centuries frequently revolved around wages, hours, and working conditions. As Alan Derickson, Robert Asher, Anthony Bale, and David Rosner and Gerald Markowitz show in their chapters on labor, big business, and government, the problem of safety and health was near the surface in many labor struggles. Labor organizers, for example, knew that underpaid, overworked, and poorly fed workers were more likely to be injured or incapacitated on the job: a miner who worked 12 to 14 hours a day could not stay alert enough to avoid injury from unguarded machinery in unlighted, noisy, and humid shafts; miners found their lives constantly threatened by speed-ups, explosions, dust, and suffocation. In contrast, employers, fearing the loss of control over production and the added costs of improving working conditions, have traditionally resisted reforms. Paternalistic benefit programs were often adopted by management as a means of increasing management's control over the work force.

The role of health professionals, most notably of doctors and industrial hygienists, has been shaped by this conflict between labor and capital. More often than not, professionals, even when they have sought to maintain their objectivity, have found themselves compromised by the highly political implications of their work. Many professionals have been able to find employment only with private industry and have often adopted the values and assumptions of their employers regarding responsibility for risk. Historically, only a small number have been hired by government or academe, thereby retaining some semblance of independence. But even there, as the chapter by Craig Zwerling shows, the professional cultures and political context of industrial hygiene and occupational medicine have often made them less than sensitive to the problems of the common laborer.

Most often, the struggles over safety and health have been fought out within particular plants, around specific occupational hazards or diseases. But increasingly, workers and public health professionals have turned to government, at both the state and the national level, for protection. This has moved the conflict to another level and has forced government officials to mediate between labor and capital. Although the issues often have been framed in technical, scientific language, their social and political impact has been clear. As a result, government's resolution of these disputes generally has had less to do with the "objective" or scientific evidence than with the relative power of the contending forces. Zwerling's chapter and those by Jacqueline Corn and Rosner and Markowitz illustrate the contradictory impulses embedded within the governmental response.

Most often, the battles over industrial conditions have been fought over particular workplace or environmental issues. Lead, a central industrial

mineral, has continually been a focus of debate. Arguments over its relative importance or danger to society have been shaped by changing power relationships at different historical moments. The chapters by Rosner and Markowitz, William Graebner, and Ruth Heifetz all address the changing context of the debate. Two of the chapters specifically address the politics of leaded gasoline, an environmental and industrial toxin; the chapter by Heifetz looks at the role of women in identifying and defining the reproductive risks of lead.

There are other characteristic hazards associated with modern industrial society, and the three chapters by Angela Nugent, David Kotelchuck, and Charles Levenstein, Dianne Plantamura, and William Mass address three of them. Nugent looks at the politics of defining radium as a toxin in the 1920s. Kotelchuck, a practicing industrial hygienist, traces the early history of the asbestos tragedy. And Levenstein, Plantamura, and Mass look at the role of labor in the slow identification of brown lung disease following World War II. Together, the chapters give us a sense of the complex political history of industrial epidemiology.

The history of safety and health issues is particularly rich because it involves not only the contending forces of professionals, government, management, and labor, but also a panoply of journalists, social workers, consumer advocates, environmentalists, and industrialists. This concern over working conditions reached a peak in the first decade of the 20th century in the wake of the revolutionary social and economic changes that America had just undergone. In the decades after the Civil War, Americans witnessed the virtual explosion of urban and manufacturing centers. This was shocking to Americans reared in rural settings. In the antebellum era, most Americans lived on farms or in small towns; the factories that existed were scattered in mill towns and cities in the Northeast. With the growth of the transcontinental railroads, the development of national markets, the increased exploitation of natural resources such as coal and iron, and the massive immigration of labor from rural Europe to the growing industrial cities of the East and Midwest, conditions of work changed dramatically. America moved from being a fourth-rate industrial power to being the leading industrial producer in the world; and as some of the chapters in this volume indicate, working conditions for many laborers deteriorated. Speed-ups, monotonous tasks, and exposure to chemical toxins, metallic and organic dusts, and unprotected machinery made the American workplace among the most dangerous in the world. In mining, for instance, England, Germany, and France experienced fewer than 1.5 deaths per thousand workers during the first years of this century. In the United States more than three miners in every thousand could expect to die while working in a mine during any given year.² Clearly, the enormous wealth produced by the new industrial plants was achieved at an inordinate social cost. "To unprecedented prosperity . . .

there is a seamy side of which little is said," reported one observer in 1907. "Thousands of wage earners, men, women and children, [are] caught in the machinery of our record breaking production and turned out cripples. Other thousands [are] killed outright. . . . How many there [are] none can say exactly, for we [are] too busy making our record breaking production to count the dead."³ In a theme that would be repeated, many compared the toll of industrial accidents to an undeclared war. As early as 1904 *The Outlook*, a mass-circulation magazine, commented on the horrendous social effects of industrialization. "The frightful increase in the number of casualties of all kinds in this country during the last two or three years is becoming a matter of the first importance. A greater number of people are killed every year by so-called accidents than are killed in many wars of considerable magnitude," it pointed out. "It is becoming as perilous to live in the United States as to participate in actual warfare." The editorial demanded that the state document the extent of industrial accidents "in order that the people of the United States may face the situation and understand how cheap human life has become under American conditions."⁴

Prior to the 20th century workers were barely protected by a variety of state and federal statutes that addressed a number of very specific workplace conditions.⁵ However, during the progressive period, there were demands for a more systematic, more integrated approach to understanding and affecting the excesses of industrial capitalism. To reformers at the turn of this century, the country appeared woefully behind the industrialized European community.⁶ And during the first decades of this century a movement arose that brought together a broad coalition of radicals, reformers, labor leaders, and even business representatives. Within the context of a larger social movement to reform health conditions in general, contemporary discussion of occupational safety and health came to be part of broader social concerns regarding workers' housing, sanitation, and general living conditions. Reflecting a broad ecological notion of the relationship between the environment and the health status of workers, some argued that there was no clear means of distinguishing occupational safety and health from other social and environmental problems.⁷

Representatives of the labor movement shared this broad conception of safety and health. At the 25th Annual Convention of the American Federation of Labor in 1906, for instance, the delegates identified tuberculosis as one of the organization's most pressing problems. In a dramatic chart showing the death rate from consumption in fifty-three occupations, the A.F. of L. pointed out that marble and stone cutters, cigar makers, plasterers, printers, and servants all had death rates well above four per thousand while bankers, brokers, and officials had the lowest death rates—below one per thousand. In an address before the convention one speaker spelled out the connection between work, wages, living conditions, and tuberculosis: "All this means, really, the regulation of factory conditions, the regulation of

housing, and the passage of child labor laws" were essential for battling the "Great White Plague." Significantly, the A.F. of L. claimed that health status would be a direct measure of the success of the trade union movement. "In the same degree that the trade union movement becomes powerful will it establish such improved conditions that will check and eliminate the ravages of consumption."⁸ Other unions noted that "no movement" that ignores the industrial workplace can mount an effective "campaign against tuberculosis."⁹

Union campaigns to make shop conditions more sanitary were linked to broader public health issues—most importantly, to the battle against infectious disease. Cleaning up the workplace and keeping the work force healthy were seen as benefits to both the worker and the public. In 1910 the greater New York local of the International Union of Bakers and Confectionery Workers conducted a successful strike to demand more sanitary working conditions. "Perhaps no phase of the trade union movement has ever affected the public so directly as the agitation for sanitary conditions in the bake shops," commented one leading periodical. In May of 1909, 3,000 Jewish bakers struck, and less than a year later 4,000 German workers followed suit.¹⁰ The union identified unsanitary workshops and the spread of infectious disease with non-union bakeries and sought to make an alliance with the public by linking unsanitary working conditions, the health of the public, and unionization: "the great bread eating public of this country should see to it that the bread they eat bears the bakers' union label."¹¹

The very prevalence of contagious diseases such as diphtheria, influenza, tuberculosis, and typhoid within the working class spurred more middle-class consumers' groups to take up the issue of health conditions on the job and in the home. In part the appeal was based on fear, to make sure the middle class and wealthy would not be infected by goods tainted by sick workers. In the growing garment industry of New York, many dresses, shirts, and trousers were sewn on a piecework basis in tenement slums, raising the specter that the same diseases infecting those in tenements would be transmitted to the men, women, and children of the middle class. It was this terror that led the National Consumers League to become active in tenement reform and anti-tuberculosis campaigns. Its label, along with the International Ladies' Garment Workers' Union's, came to be the mark of clothing manufactured under hygienic conditions. The League became involved in a wide variety of labor related issues including fire safety, workers' compensation, and occupational disease legislation.¹²

The special social conditions surrounding work at the turn of the century led to a broad conception of the meaning of occupational safety and health—and to seemingly incongruous alliances. The rapid unregulated growth of industry, the enormous immigration of foreign workers, the growing strength of the Socialist Party, the fear of social unrest, and the terror engendered by infectious disease gave the movement a special appeal.

Occupational safety and health was part and parcel of a larger movement to reform American society; it contained all the contradictions alliances of this larger social movement. At one end of the spectrum were radicals such as the famous feminist socialist Crystal Eastman and the socialist head of the Amalgamated Clothing Workers Union, Morris Hillquit. At the other end of the political spectrum were the “enlightened” owners of corporations such as International Harvester and United States Steel who sought to divert the movement toward voluntary welfare and safety programs. Between these two extremes were a wide variety of middle-class reformers and conservative labor representatives who recognized that uncontrolled capitalism was killing and maiming so many workers that it was undermining the legitimacy of capitalism itself.

On a concrete level, the movement was successful in achieving a few important legislative and political victories. Perhaps the most important in terms of the long-term battle to control workplace hazards was the effort to get the federal and state governments involved in regulating working conditions and the passage of workers’ compensation laws. In the decade after 1911, 25 states passed laws that guaranteed some form of financial compensation to workers injured on the job and to their families. Employees gave up the right to sue an employer in return for prompt and sure remuneration for an accident incurred on the job, regardless of who was at fault. Whatever the criticisms that we may today have of this system, at the time it was considered a victory for those seeking to improve working conditions. The passage of workers’ compensation, in combination with other factors (such as the decline of the Progressive movement in general and the onset of World War I), also resulted in a dramatic change in both the ideology and the program of safety and health reformers. Central to the Progressive movement was a need to integrate safety and health issues into broader social and political struggles around the responsibilities of the larger society to industrial workers and their families. With the decline of this larger social movement, safety and health was relegated increasingly to businessmen themselves. Under the slogan “Safety First,” the scope and focus of the movement narrowed dramatically.¹³

Workers’ compensation gave businessmen an interest in reducing injuries, because each company’s insurance premiums would be based on its own accident rates. Corporate leaders, still conscious of the significance of popular opinion in the creation of workers’ compensation laws, also feared that future reform efforts might be more radical. Hence, they sought means by which to gain greater control over the movement to make the workplace safer. The National Safety Council, organized in 1911, became the focus of most business efforts around workplace safety. Its general proposition was that “safety pays” and that employers benefited economically by taking the lead in accident prevention.

The new safety movement of the late teens and early twenties can be

distinguished from the older Progressive Era efforts in a number of ways. First, the new business-led efforts emphasized the responsibility of the workers themselves, rather than that of industry, to prevent accidents. Second, they narrowly defined the problem as one of safety rather than health. Third, they saw professionals, rather than workers or reformers, as the prime source of change and thus sought to take the discussion of safety and health out of the public arena.

The effort to blame the workers built upon the general antipathy for immigrants that prevailed at the turn of the century. One publicist maintained that the importation of cheap foreign labor was responsible for the high accident and disease rates that prevailed in American industry. Citing the high percentage of foreign-born workers who suffered from lead poisoning in New York City, Arno Dosch explained it as a product of the immigrants' ignorance: "The Americans know how to take care of themselves. . . . They wash their hands and faces when they stop work." He held that "the immigrants from Eastern Europe do not unless someone stands over them and makes them do it." He went beyond this observation to assert that "this class of Eastern European peasant lacks the intelligence and initiative either to avoid the ordinary dangers of rough labor or to keep in efficient health."¹⁴

Most "safety first" advocates saw the problem of worker carelessness more broadly. Rather than condemn only the immigrant for his recklessness and ignorance, they blamed his American counterpart as well. Whereas the progressives held that industry was responsible for most accidents because of its failure to provide safeguards from dangerous machinery, the "safety first" movement turned the problem on its head. They claimed that few accidents were due to faulty machinery or inadequate safeguards and that most were the fault of workers themselves.¹⁵ One movement member maintained that "one of the principal sources of accidents is the worker himself. Carelessness, thoughtlessness and lack of knowledge all conspire to cause him injury."¹⁶ The *National Safety News*, official organ of the National Safety Council, was more specific in its analysis of the causes of accidents. While "faulty plant conditions" was thirteenth on its list, the major causes were "ignorance of English," "inexperience," "mental limitation," "faulty attitudes—fatalism, antagonism toward the industrial medical department, timidity," "mental sets—the chronic kicker, the grouch and the radical have mental sets," and "excitability." Last on their list was "fatigue," but the author was quick to point out that this was "not necessarily from overwork, but from hard and stressful living conditions, undernourishment, loss of sleep, financial and domestic worries or emotional stress."¹⁷

Industry argued that improvements in plant safety required two major programmatic changes: First, and most importantly, workers had to be educated to protect themselves from accidents. Second, this responsibility had to reside with experts who understood the newly emerging field of

industrial medicine within the context of the overall needs of industrial production. For "safety first" advocates the workplace was no longer seen as part of a larger social and economic environment. Nor was the workplace seen as being in need of radical or substantial reorganization as defined by an earlier generation of progressive reformers. The first objective, that of affecting the work force, was to be handled by the newly emerging field of occupational medicine, and specifically by the company physician working in the plant. "The point of approach to the human potential had best, therefore, be through the industrial dispensary. Under a high-grade physician it will be the great melting pot of the human experiences of men. Here the virtues and the weaknesses of the men will be most apparent. The physician will also be confessor, advisor, priest. Through him the employee may learn that it pays to be healthy, steady, and of good habits. He does not hesitate to preach the 'Sober First' campaign."¹⁸ During the 1920s, hundreds of companies hired their own physicians, nurses, and other engineering and medical personnel. The control of workplace hazards came, then, to be dominated by experts in the newly emerging fields of industrial hygiene, industrial medicine, and engineering and lost its close identification with the broader perspectives of progressives and labor reformers.

Until this point, with the exception of World War I, nearly all governmental regulation of occupational health and safety was carried out at the state level. The federal role in controlling health hazards was extremely limited. This meant, in practice, that there was little or no uniformity among safety codes, statutes, or enforcement practices. Even within states, codes often varied greatly. The strength of state and local codes and enforcement practices varied between urban industrial and rural agricultural settings, between north and south, and, most importantly, between strongly organized and non-union states.

The problems of this highly fragmented and weak governmental presence were brought into high relief by a major disaster that affected the health of at least two thousand predominantly black workers in the anti-labor state of West Virginia in the early years of the Depression. In the spring of 1933, at the start of the New Deal, a series of lawsuits were filed revealing that over the course of the past three years 476 workers had died and most of the other workers were disabled by acute silicosis caused by the inhalation of dust while drilling 3.75 miles of tunnel to divert water from New River to a hydroelectric plant at Gauley Junction, West Virginia. The hydroelectric plant was being constructed by New Kanawha Power Company, a subsidiary of the Union Carbide Company, to provide power to its nearby petrochemical plant. Despite the fact that the company knew that they were exposed to dust that was 97 to 99 percent pure silica, no precaution was taken by management to provide the workers with masks, ventilation or any other protection. The legacy of the lack of government regulation and the dependence of workers on management paternalism was revealed in congressional

testimony that reported that company physicians systematically misled workers who complained of lung ailments: "the company doctors were not allowed to tell the men what their trouble was. "A Dr. Mitchell of Mount Hope, a company doctor, testified" . . . that he had told the men they had 'tunnelitis'." Despite denials by the company of knowledge of the dangers, it became obvious that management and professional alike took precautions to protect themselves from the dangers of silicosis by routinely using face masks denied workers when entering the tunnel. Furthermore, it was revealed that company geologists had determined before construction of the tunnel that the mountain through which they were boring was almost pure silica: They shipped the silica to another Union Carbide subsidiary "where it was stored in the yard. It was so pure that it was used without refining." The horror of this event was brought to public attention when it was discovered that 169 of these workers had been buried in a mass grave in a nearby field by a local undertaker who was paid by the company itself.¹⁹ This, the worst industrial disaster in American history, brought to public attention the need for increased government control over working conditions. During the New Deal administration of Franklin D. Roosevelt, Frances Perkins's Department of Labor engaged in a fascinating experiment in governmental involvement in safety and health (see chapter 6).

The postwar era witnessed a growing interest in the effects of industry in creating environmental pollution. Despite the waning activity of government in the Cold War years of the 1950s, a newer perspective on the relationship between industry and society developed in conjunction with a growing popular concern over environmental pollution and occupational hazards. These dual movements had very different origins and political perspectives. Many in the environmental movement had little or no interest in workers' problems and often found themselves at loggerheads with workers whose interests were substantially different. Often, environmentalists such as Rachel Carson, whose book *Silent Spring* popularized concern over DDT and other industrial products, took a decidedly anti-industrial stance that equated pollution with industrialization itself. This sometimes put them in conflict with labor, whose goal was to find ways of making industry safe, rather than to eliminate it altogether. Other environmentalists such as Barry Commoner worked more closely with labor, seeking ways of promoting environmentally sound policies that protected people both inside and outside the factory.

There was a similar divergence among professional industrial hygienists and labor leaders about the proper approach to occupational safety and health. In the fifties, professionals focused on the problems of plant safety rather than on longer-term health hazards. The few professionals such as William Hueper who had a broader perspective on the relationship between industrial chemicals and cancer found their professional lives cut short and their reputations sullied. But in the 1960s, activists such as Anthony Maz-

zochi of the Oil, Chemical and Atomic Workers' Union and Lorin Kerr of the United Mine Workers of America pressed their campaigns for comprehensive protection both for workers on the job and for the broader community. This new movement gained strength from the legitimacy of social activism provided by other contemporary movements for civil rights and the War on Poverty and against the Vietnam War. While these movements had limited appeal to many workers, some unions—the United Automobile Workers, hospital workers, the United Mine Workers and others—sought to forge ongoing alliances around common issues. Many other workers supported the demand for health and safety legislation because of the dramatic increase in injuries associated with the speed-up in production necessitated by America's growing involvement in Vietnam.

The most dramatic results of these movements were three pieces of legislation passed in 1969 and 1970. In 1969, Congress enacted the Mine Safety and Health Act, which provided protection to miners on the job and financial and medical assistance to those diagnosed with job-related diseases such as Black Lung. In 1970, Congress increased government protection of American workers through its passage of the Occupational Safety and Health Act, which mandated the creation of both the Occupational Safety and Health Administration (OSHA) in the U.S. Department of Labor and the National Institute of Occupational Safety and Health (NIOSH) in the Department of Health, Education and Welfare. OSHA was to set and enforce national standards for safety and health on the job while NIOSH, the research arm, was to establish safe levels of exposure to industrial pollutants. In the same year Congress passed the Environmental Protection Act, which created the Environmental Protection Agency (EPA) to enforce a wide range of programs aimed at reducing the dangers of pollution to the broader community. It may appear to many that this rush of legislation was a result of the movements that arose during the activist 1960s. We hope that this necessarily cursory introductory essay, along with the other chapters in this volume, helps in bringing the rich history of safety and health to the attention of historians, professionals, and workers alike.

NOTES

1. Other historians have investigated different aspects of occupational safety and health. William Graebner and George Rosen, for example, have written detailed work on various aspects of mine safety; Barbara Sicherman has recently published a collection of Alice Hamilton's letters; Paul Brodeur has recently published a volume on the history of asbestos-related diseases, and others have done detailed studies of specific industries or particular diseases. While all this work is extremely valuable,

only Henry Selleck and Alfred Whittaker in their encyclopedic work during the early 1960s, *Occupational Health in America*, (Detroit: Wayne State University Press, 1962), have sought any type of synthesis. See also Ludwig Teleky's *History of Factory and Mine Hygiene* (New York: Columbia University Press, 1948) for an overview of this subject; also, Judson MacLaury, "The Job Safety Law of 1970: Its Passage Was Perilous," *Monthly Labor Review*, March 1981:18-24; and Stuart Kaufman and Judson MacLaury, "Historical Perspectives" in *Protecting People at Work, A Reader in Occupational Safety and Health*, ed. Judson MacLaury (Washington: U.S. Department of Labor, 1982).

2. B. Reeve, "The Death Roll of Industry," *Charities and the Commons* 17 (1907): 791.

3. *Ibid.*

4. Editorial, "Slaughter by Accident," *The Outlook* 78 (Oct. 8, 1904): 359.

5. George M. Kober and Emery R. Hayhurst, eds., *Industrial Health* (Philadelphia: P. Blakiston's Son and Co., 1924), pp. vii-lviii.

6. See for example Alice Hamilton, *Exploring the Dangerous Trades* (Boston: Little Brown and Company, 1943), for a brief discussion of this interesting moment in public health history.

7. "The Tuberculosis Fight in an Industrial City," *Charities* 13 (Dec. 17, 1904): 279; Frederick Almy, "Transcript of Proceedings," *Second Report of the New York Factory Investigating Commission*, 1913, vol. 4, pp. 1831-32; and Graham Taylor, "Industrial Basis for Social Interpretation," *The Survey* 22 (Apr. 3, 1909): 9.

8. "How to Prevent Consumption," *The International Woodworker* 16 (May 1906):137-9; "Paul Kennaday on Tuberculosis," *The International Woodworker* 16 (May 1906): 139-40.

9. "Labor is Against Tuberculosis," *The Glassworker* 6 (April 1909): 6.

10. "A Strike for Clean Bread," *The Survey* 24 (June 18, 1910):483-88.

11. "Investigations Have Disclosed the Fact that Unhealthy and Poisonous Bread is Made in Non-Union Bake Shops," *The Woman's Label League Journal* (June 1913):13.

12. Charles Swan, "Enterprise Liability for Industrial Injuries," *Annals of the American Academy of Political and Social Science* 38 (July 1911):262-3; "The Consumers League Label and Its Offspring," *The Survey* 32 (Aug. 8, 1914): 478; Mary H. Loines, Chairman of the Brooklyn Auxiliary of the Consumers League of the City of New York to Hon. Robert F. Wagner, Dec. 12, 1912, *Second Report of the New York Factory Investigating Commission*, 1913, vol. 2, 1330-31, and vol. 4, 1576-77.

13. Donald Wilhelm, "Safety First: The New Social Work," *The Outlook* 107(July 25, 1914): 701; C. W. Price, "Some Outstanding Facts in the Safety Movement," *American Labor Legislation Review* 10(1920):26.

14. Arno Dosch, "Our Expensive Cheap Labor," *World's Work* 26(Oct. 1913):699.

15. "Some Causes of Accidents," *Scientific American* 124(April, 1921):352; "A study of the causes of 220,707 accidents which have occurred in the plants of the United States Steel Corporation shows that but 4.94 percent of the total number, excepting those in connection with overhead electric cranes, were due to machinery causes."

16. Fred G. Lange, "Safety and Accident Prevention," *Industrial Management* 61(April 1, 1921): 257.

17. W. R. Woodbury, *National Safety News* 7(May, 1923):25; see also Frank Moffett, Address to the National Safety Congress in "The Personal Element in Safety," *Literary Digest* 68(Jan. 8, 1921):102. There were limitless possibilities for blaming the victim: "Aside from the man's psychological make-up we may consider some of the secondary factors. The man may be too daring, and may like to run risks; he may be old or he may be young; or he still may need discipline; any one of these

coupled with the fact that he may have something on his mind or troubles of his own."

18. Otto P. Geier, "The Human Potential in Industry," *Scientific American Supplement* 84(Dec. 22, 1917):386.

19. U.S. Congress, House Committee on Labor, "An Investigation Relating to Health Conditions of Workers Employed in The Construction and Maintenance of Public Utilities," Jan.-Feb. 1936, in *West Virginia Heritage* (Richwood, WV: West Virginia Heritage Foundation, 1972), vol. 7.