Eating Smoke
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Published by Johns Hopkins University Press

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Shortly after 1 A.M. on August 10, 1887, clanging alarm bells roused the men of St. Louis’s Hook and Ladder Company No. 6, led by foreman Christian Hoell. Minutes earlier, a night watchman had pulled the handle on a fire alarm box, signaling that a building in the city’s commercial district had caught fire. Beginning in the cellar of a warehouse at the intersection of Second and Main Streets, the blaze spread up open stairwells and through the hollows in the walls. Second and third alarms rang in quick succession. Firemen rushed to the scene, searched for endangered citizens, and fought the blaze. Teams of men dragged hoses into the mammoth structure, seeking out the base of the inferno. Hook and Ladder Company No. 6 positioned its aerial ladder apparatus precariously close to the brick-and-iron-fronted structure, pouring water onto the holocaust from above. When after eight hours firemen had regained control, suddenly and without warning the warehouse’s exterior walls tumbled. The building entombed the company and its truck. Several men suffered severe injuries. Three perished instantly, among them foreman Hoell.

The tragedy struck a deep nerve among city residents, especially as they learned the cruel irony underlying Christian Hoell’s death. Described as the father of “modern life-saving services,” Hoell could not save himself, ultimately crushed under
the weight of the unstable and increasingly dangerous urban landscape. Nearly a decade earlier—following St. Louis’s devastating Southern Hotel fire in which dozens of guests perished despite extraordinary acrobatics by firefighters—Hoell had formulated a special scaling ladder and climbing corps to facilitate rescuing people trapped by fire. His innovation transformed firefighting in the United States, helping to make the nation’s fire departments more effective at saving lives in increasingly taller and more densely populated urban centers. Hoell trained new recruits in locales as distant as New York City in the skills of using the ladders, in the craft of saving lives. He played a critical role in the process through which firefighters and the National Association of Fire Engineers defined firefighting as a heroic life-saving occupation. As St. Louis residents mourned the loss by lining the route of a funeral procession and attending public wakes, they recognized not only the hazards faced by firemen but also their own vulnerability to fire.¹

As the *Evening Chronicle* mourned the “martyrs to duty,” a St. Louis business journal offered a different description of the blaze and its aftermath. The *Whipple Daily Fire Reporter* peered into the ledgers of those affected, revealing how another group of Americans confronted the problem. Written for an audience of businessmen, the *Fire Reporter* article recorded the details of the fire and provided a comprehensive accounting of the economic repercussions. The heaviest losses afflicted Bishop & Spears, a company that made and distributed the popular “Boss” brand peanuts. The firm occupied most of the building, and, moreover, most of its loss was uninsured. Falling walls also had damaged adjoining structures, and with exacting precision the *Fire Reporter* inventoried the financial consequences for those businesses as well. The economic aftermath reached into the coffers of insurance companies around the globe. Firms headquartered in the financial centers of the United States and Europe—New York, Hartford, Philadelphia, London, and Hamburg—suffered about 75 percent of the loss, which exceeded $350,000.

If fire underwriters winced at the substantial loss, they nonetheless understood the risks of their business, just as Hoell knew the hazards of his job. Soberly, insurers tallied the losses in ledgers and searched for patterns in the statistical rubble. They expected that their actuarial tables, with multiple classifications of risk, would help them to acquire insights about the problem and to improve their ability to profit from indemnifying the capital that flowed along the canals, railroads, and streets of industrial America. When firms underwrote insurance, they made calculated decisions to place financial capital in jeopardy. Insurers balanced considerable amounts of information concerning their portfolios of risk, the nature of the problem of fire, the insurance market, and their financial situation. By the last decades of the nineteenth century, underwriters managed data using a variety of
tools and organizational strategies, including a broad network of industry associations, company representatives, and business service firms, such as the Whipple Insurance Protective Agency, which published the Fire Reporter. Whether they inspected cities, mapped hazards, or compiled loss data, specialists provided information that helped firms to know fire dangers in distant places. In their home offices, insurers collected, organized, and classified the information using the latest management technologies. They established categories of safety and danger, which guided risk taking and shaped their ability to offer economic security to clients. The Fire Reporter reveled in the details of the industry—the means through which international capitalism defended itself and the accumulated wealth of urban America.2

Efforts to contain the problem of fire in urban America developed through the conjunction of firefighters’ and underwriters’ labor—through the heroic and the banal, through concerns about people and property, through the conflict between labor and business. Firefighters and underwriters struggled against the same environmental hazard, but they conceived the threat in starkly different terms. Firefighters battled fire up close, understanding the problem as a real, physical danger. Insurers worked to control the hazard in their ledgers, providing security by taking abstract, economic risks. Whereas firefighters preserved human life and the built landscape against environmental devastation, fire underwriters primarily protected financial value. Just as the type of security that each offered stood at opposing ends of the spectrum—the physical and the abstract—firefighters’ and underwriters’ methods and tools also varied. These contrasting approaches to hazard and risk give structure to this story about the elemental struggle to shield American cities.3

Eating Smoke examines patterns of historical change, especially the dynamic process of urbanization, by posing straightforward questions about the social and cultural significance of the battle against fire. How did firefighters and underwriters perceive the hazard of fire? How did firefighters and underwriters seek to control the problem? How did their efforts change over time and give shape to American cities between 1800 and 1950? Emanating from this fundamental line of inquiry, a number of related questions provide structure for each chapter. How did these actors remove or mitigate the danger? How did the work of underwriters and firefighters relate to one another and contribute to the development of fire protection more broadly? How did their quotidian routines produce safety and re-fashion societal order? And, how did their labor make urban America into a physical and cultural reality? To what degree did the interactions between firemen and underwriters structure urban society—its institutions, landscapes, and cultural practices?4
If war, famine, disease, and death were the four horsemen of the apocalypse, fire surely could have been a fifth. Controlling fire long posed a fundamental historical challenge to human society, but the growth of cities, especially after industrialization, caused fire safety to become more critical. Cities held an increasing and changing danger, and the greater concentration of people and property raised the stakes in the battle to hold fire within human control. In 1800 most Americans dwelled in small communities, but by 1950 nearly two-thirds lived in cities. By that time the population of twenty-five cities was greater than one million inhabitants, and more than one hundred cities had at least twenty-five thousand residents. During this period of extraordinary growth and change, fire posed a profound and sustained threat. No other environmental danger jeopardized the entirety of the city-building process—encompassing human life, property, and the dreams of city boosters—in such a sweeping or intense fashion. Even before a conflagration reduced Chicago to rubble in 1871, over four hundred large fires destroyed nearly $200 million worth of property in thirty of the nation’s principal cities. After the Chicago blaze, into the first decade of the twentieth century, sweeping fires struck countless cities. When nineteenth-century firemen noted in their ledgers that “if it had not been for the activity of our firemen the whole block would have burned,” they did not idly boast. Likewise, the smallest of blazes posed problems for the fire insurers, who struggled to meet the terms of fire insurance contracts, and hundreds of companies went bankrupt because they could not pay claims. Curiously, as fire threatened American society, it served as mass entertainment. Thousands of onlookers gathered to watch the action at fire scenes; stories of blazes filled newspapers, provided the subject of theatrical performances, and appeared in the early films of Thomas Edison. Yet into the twentieth century, fire remained a scourge.

Losses mounted yearly, even though the danger of citywide conflagration gradually diminished. Fire loss began to level off about 1920. When adjusted for commodities prices and variation in the amount of property exposed, fire loss diminished considerably after 1930, although loss per capita actually began to increase after World War II.5

Ironically, fire is not only a “bad master” but also a “good servant.” This incongruity exposes a fundamental aspect of human interaction with fire—one that has cultural as well as physical dimensions. Metaphorically, fire reflects this complexity, at once connoting multiple paradoxes between giving life and taking it, between renewing and destroying, between good and evil. With an extraordinarily rich historical symbolism, fire’s figurative quality is fraught with ambiguity that only enhances its inscrutability and makes controlling its expression all the more urgent. In nineteenth-century America, this allegorical dimension materialized with great
force as fire became ever more critical to driving industrial and urban development. In these processes, millions of people moved from country to city, converting raw materials into commodities and pushing cities to new heights. The migrants also produced dynamic neighborhoods and volatile economic markets. Shifting populations and increased capital investment created stunning opportunities for fire loss, with huge concentrations of fuel, often in novel forms and combinations. The changing built infrastructure and its human elements produced entirely new “fire environments” and altered existing hazards. Not only did unstable urban landscapes and markets increase their susceptibility to fire, especially to conflagration, but they made controlling the devouring element more difficult. Mastering fire became a test with dramatic stakes—with its cultural dimensions underscoring its material imperatives and vice versa.\(^6\) Thus, as fire threatened the physical landscape, it jeopardized the social and cultural infrastructure of American cities.

Seemingly an undeniable social good, extinguishing blazes, paying insurance claims, and physical rebuilding signaled not just the restoration of order but also the reassertion of particular regimens of political, economic, and social authority. For example, although preexisting arrangements of political and economic power typically reasserted themselves after fires—especially after conflagrations—societal fears and prejudices were reflected in the rebuilding process. Further complicating matters, the problem of fire did not remain static over time. Each time the material infrastructure or cultural fabric of urban America changed, so too did the danger. For example, late in the nineteenth century the threat of fire intensified and changed as cities grew taller, contained new combustible materials, and were more densely populated. Establishing order in environments so routinely in flux represented an enormous challenge. Architects, engineers, capitalists, legislators, and ordinary Americans held an interest in controlling the problem of fire, but firefighters and fire insurers took primary leadership in these efforts. Although other Americans helped to develop technical expertise about the fire hazard, ultimately solutions to the problem emerged only with the support of firefighters and the insurance industry. Battling a dynamic material and cultural danger, firefighters and underwriters constructed and reinvented strategies that drew upon the most basic social, cultural, political, and economic currents of American life. Among other things, attitudes about gender, labor, business, technology, the environment, efficiency, and public responsibility shaped firefighters’ and insurers’ labor and the safety they created. In developing the urban fire protective infrastructure, firefighters and underwriters reordered the lived spaces and collective consciousnesses of Americans; they also made urban industrial society both physically and culturally practicable.\(^7\)
Just as moments of crisis expose the inner workings of a culture, so too the everyday activities through which people protected themselves from fire reveal how Americans ordered their lives. For example, when individuals began to purchase fire insurance from joint-stock corporations at the turn of the nineteenth century, this marked a trend toward looking to economic markets for security against environmental calamity. Although this shift is not surprising given that the United States was in the early stages of a market revolution, the dramatic growth of the insurance industry during the nineteenth century recommends the importance of studying this rather mundane solution to a dramatic problem. Indeed, fire insurance played a primary and increasingly important role in the economy by protecting property and supporting the credit system. Additionally, it helped to fuel the growth of cities with fresh infusions of capital, and eventually the fire insurance industry became central to diminishing the impact of fire on everyday urban life. The history of fire insurance clearly belongs in any account of fire protection, urbanization, or industrial development, but it remains largely unwritten. Fortunately, research into life insurance and business history provides guidance, emphasizes the connections between the fire insurance industry and broader societal issues, and suggests several questions: What role did the management of information play in the industry’s development? How did underwriters organize, classify, and understand fire danger? How did that hazard become a quantified “risk?” How did making fire protection into a commodity shape public safety? How did understandings of class and gender structure the business of fire insurance?

Of course the merits of studying firefighting seem obvious, but relatively little work has been completed in this area either, with most of it focusing on volunteer fire departments prior to the Civil War. In the pages of numerous dissertations, journals, popular histories, and a recent monograph, researchers primarily have debated its ethnic, class, and gender dimensions. As a result, researchers have not studied closely changes in firefighting work and organization. This implies that the methods of firefighting are transparent, as obvious as the danger itself, and it fosters the impression that firefighting methods changed little after the advent of steam engines. Nothing could be further from the truth, as suggested by the work of anthropologists and sociologists studying firefighting, as well as the broader scholarship in the history of work and cities. Indeed, rigorously attending to minute changes in firefighting work, technology, and organizational structure reveals firefighting to be complicated labor, constantly changing in direct relation to the urban environment and the broader program of fire protection. This is not to say that the social composition of fire departments is not critical; rather it recommends asking basic questions about the work of fighting fires, making the tactics
and techniques of firefighting of central importance. What methods did firefighters use to fight fires; why and how did those tactics and techniques change? How did the experiences of firefighters—in facing fire, in engine houses, and in their communities—change over time? How did firefighters organize their labor differently over time? Who were firefighters and how did they understand their service? Perhaps most importantly, how did their work affect public safety in the face of the problem of fire?9

The narrative structure employed in *Eating Smoke* facilitates comparison of firefighting and fire insurance: how did firefighters and underwriters understand and seek to control the problem of fire? Juxtaposing the work of firefighters and underwriters in alternating chapters renders each group clearly, highlights the interplay between them, and exposes the tension inherent in their different visions of hazard and risk. These paired chapters are divided into four chronological groupings. Each part explores a distinctive moment in the struggle to define and to confront the problem of fire, capturing the dynamics of historical change as well as emphasizing continuities. The four parts—“Smoke,” “Fire,” “Water,” and “Paper”—suggest the connections between fire protection and the process of urbanization by metaphorically linking them to broader social changes in the nature of community, societal organization, and the economy. “Smoke” explores the period from 1800 through 1850, “Fire” from 1850 to 1875, “Water” from 1875 through 1900, and “Paper” from 1900 to 1950.

As cities began to experience dramatic growth early in the nineteenth century, smoke emanating from manufactories signaled the possibilities and hazards of urban and industrial growth. Both firefighters and underwriters identified and sought to understand the emerging problem; they remade old institutions, invented new approaches to controlling danger, and tested them in the urban laboratory. By midcentury, fire emerged as a central threat to urbanization, and efforts to reorganize fire protection intensified. Insurers gathered and analyzed data about the problem, seeking to know it better. They remade the hazard into a quantifiable risk—into a commodity—as they looked toward the nascent industrial order for guidance in organizing fire protection. Volunteers remade their institutions, emphasizing their expertise as firefighting specialists, and began to transform their avocation into an occupation.

During the last decades of the nineteenth century, firefighters used water and ladders to attack fires more aggressively, and took the lead in providing urban safety. For the first time, firefighters routinely ventured inside structures, “eating smoke” as they battled fires from the inside. Firefighters began to rescue citizens trapped in a built landscape that had grown taller and more densely populated. At
the same time, insurers more intensively collected and manipulated information, created standard methods for classifying fire risk, and erected an extraordinary program of surveillance to apprehend the risks of the ever-changing urban environment. However, they struggled to remain solvent and disavowed any responsibility for public safety. As result, firemen became icons of safety, providing the first systematic standard of fire safety in the increasingly urban nation. During the twentieth century, paper provided the means of triumphing over fire and trumped the use of water in making cities materially safer. The fire insurance industry shifted direction; underwriters translated their knowledge about fire risk into expansive business, legal, and behavioral practices. Drawing upon the latest techniques of business management and marketing, as well as five decades of engineering and architectural research, these codes transformed the American landscape. Interestingly, firefighters remained the most prominent symbols of safety. Like other Americans, they chose to discipline themselves in order to combat fire more effectively. Fire departments developed extensive bureaucracies and standard work rules. As firefighters established a more regimented approach to fighting fires, they also secured better wages and benefits and developed highly patterned careers. Even so, eating smoke and saving lives remained critical markers of firefighting prowess, as firemen became, somewhat paradoxically, disciplined heroes.10

Broadly speaking, the shift from smoke to paper metaphorically suggests the triumph of organizational technologies and intellectual labor over firefighting tools and physical work in containing the problem of fire. Additionally, the transitions from smoke to fire to water to paper reflect the degree to which the problem of fire grew more standard, systematic, and rational from the nineteenth century to the twentieth century, mirroring broader trends in the work, community, and everyday lives of ordinary Americans. Not imposed from the outside, this drive for improved efficiency and systematic protection developed within the work cultures of firefighters and fire insurers. From the early nineteenth century, firemen and underwriters repeatedly introduced new technologies, reorganized their labor, created written standards of behavior and procedure, and introduced measures that quantified the efficiency of their work. They made the organization of fire protection more complex and bureaucratic and their work activities more standard and regimented, usually according to written procedural guidelines. Likewise, the provision of fire protection shifted from local, often geographically circumscribed communities united by face-to-face social relations, to an array of impersonal networks mediated by professional and economic organizations that crossed neighborhood, city, regional, and even national boundaries. Of course neither attempts to organize fire protection more rationally nor the gradual shift of authority away
from local communities occurred completely. Indeed, fire protection continued to vary by locale well into the twentieth century, and its provision continued to depend upon a mix of expert knowledge and local understandings. Throughout the twentieth century, firefighters remained intimately tied to neighborhoods, and the fire insurance industry depended upon a steady stream of information from well-connected local organizations and representatives. The tension between local experience and broader efforts at standardization remained a salient issue in fire protection well after the 1950s.

Capturing the dynamic interaction between day-to-day experience—especially of firefighters and insurers—and the increasing rationalization of fire protection posed a difficult methodological challenge. As a social historian, I am particularly interested in understanding the particular historical experiences of firefighters and underwriters, without obscuring the broader implications of their efforts. Therefore, *Eating Smoke* examines both local and national stories simultaneously—a balancing act made more complicated by my decision to examine the history of fire protection over such a considerable period of time. As a result, I made several significant choices about source materials and narrative style, including especially the decision to tell this story through the lens of firefighters and underwriters, within the context of their local work environments (which was outlined above). After much deliberation, I also decided to develop detailed accounts of firefighting in Philadelphia and St. Louis and to examine fire insurance by studying the Aetna Fire Insurance Company and the Insurance Company of North America. However, this study is more than a comparative analysis of two cities and two firms, although these cases are exceptionally well suited to telling this story. Critically, I have placed these particular stories into a much broader context by closely examining the major firefighting and fire insurance organizations—the International Association of Fire Engineers and the National Board of Fire Underwriters. In addition, I have studied firefighting and fire insurance by reading countless professional journals, work manuals, conference proceedings, and accounts of fire protection in dozens of other cities and towns—all of which helped to shape my analysis, even though they are not always detailed explicitly. Nonetheless, it would be inaccurate to claim that *Eating Smoke* reveals, definitively, all the facets of the nation’s changing means of protecting itself from fire. There are numerous exceptions, in part because local structural conditions varied and produced subtly yet significantly different fire environments. In fact, the challenge of creating a systematic program to deal with such a dynamic danger—variable over place and time—bedeviled underwriters and firefighters, and it is a central theme of this book. Ultimately, however, this study should be viewed as the sum of its parts; it is
as much about firefighting as it is about fire insurance, and it is as much about the
process of urbanization in the United States as it is about fire protection.11

The near invisibility of fire protection, except for moments of extreme crisis,
attests to how dramatically firefighters and underwriters transformed the Ameri-
can landscape during the nineteenth and twentieth centuries. Until the unsettling
events of September 11, 2001, most Americans believed in the permanence of the
cities around them, despite evidence to the contrary. That confidence in the in-
tegrity of the physical environment, and in the ability of the capitalist economy to
maintain itself, has rested on faith in institutions and technologies like those de-
ployed by firefighters and underwriters. When trapped by flames, we expect to be
rescued. When our property is damaged, we expect to be compensated. After all,
property insurance is an unquestioned part of every home mortgage. We are in-
ured to the pervasiveness of the fire protective infrastructure by which firefighters
and insurers have helped to remove the danger from our consciousness. Although
the fashion in which this was brought about at first blush seems normative and un-
controversial, this was not always the case; the methods with which Americans have
controlled fire did not appear suddenly or without conflict. Fire safety extended
gradually, and though it was the project of many Americans, it developed primar-
ily at the intersections of the work performed by firefighters and underwriters. As
these groups physically and metaphorically battled fire, they not only brought
the problem largely under control, but they also helped to make urban America a
reality.