

The Development of Municipal Fire Departments in the United States*

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1. INTRODUCTION

In 1852 not one city in the United States paid its firemen; they were all volunteers. By 1880 most of the cities with more than 10,000 people—and many with fewer—had municipally paid fire departments, as did most cities in Europe. But until 1866 the fire department serving the city of London was neither volunteer nor municipally paid; it was privately owned and operated by the city's fire insurance underwriters.

This article is an inquiry into the reasons for government provision of a specific economic service—that of extinguishing fires—in the United States. It is, therefore, an inquiry into the reasons why fire companies or departments have rarely been, in the United States, privately owned and operated for profit.¹ The purpose of the inquiry is to explain how and why this service came to be provided by government and to offer a general model to explain government provision of any particular good or service in a basically private enterprise economy.

Because the general model that will be presented assumes an environment in which private enterprise is the dominant form of economic activity or organization, the model is not intended to explain either a general failure of economic development or the absence of private enterprise. The model assumes that the basic requisites permitting and encouraging private enterprise are present, such as political stability; a suitably developed legal system; a suitable social structure; rational science; rational bookkeeping; and a basic philosophical outlook, reflected in the social structure and the view of history held by the culture, that permits change.

The general model that will be used to explain the establishment of municipal rather than private fire departments in the United States is the

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following: The development of private provision of any good or service is inhibited by three basic factors:

1. Government economic activity or intervention in the area of the specific good or service or related goods and services.
2. Insufficient definition and protection of property rights (insufficient legal framework).
3. The influence of tradition, or the absence of economic rationalism.

This third factor needs some explanation. In the context of this article, the meanings of "traditional" and "rational" are based on Max Weber's use of these terms. R. H. Tawney summarizes Weber's use of the term rationalism, as relating to economic matters, this way: "The word 'rationalism' is used . . . to describe an economic system based, not on custom or tradition, but on the deliberate and systematic adjustment of economic means to the attainment of the objective of pecuniary profit."² The rational is therefore systematic or methodological, whereas the traditional tends to perpetuate the status quo.³ Weber himself defines "a capitalistic economic action as one which rests on the expectation of profit by the utilization of opportunities for exchange, that is on (formally) peaceful chances of profit."⁴ Thus economic rationalism is lacking when the goal of an economic activity has purposes other than the benefits related to the profit resulting from the sale of the final output—i.e., when the activity itself is significant.

Weber's ideal capitalistic entrepreneur is thus not concerned with the power, prestige, or even the material comforts his success may bring him.⁵ But to define as traditional any economic decisions in which non-monetary psychic benefits, as well as monetary or material benefits, are considered results in excluding from the rational virtually all economic activity. Non-monetary psychic benefits and costs—prestige, the possibility of influence or power, desirable working conditions—are part of nearly all private economic decisions and have their effect in compensating differentials in wages and profit rates.

The problem is therefore to separate conceptually the pursuit of psychic benefits—i.e., values other than those derived from monetary income—from traditionalism.

First, the psychic benefits associated with the monetary income of economic activity—such as the prestige or power that may result directly from wealth—do not lead toward traditionalism. An activity can be considered traditional when the psychic benefits of the activity are so strongly tied to the method of production or distribution of the good or service that they mitigate strongly against change in these methods, even though the change may be a genuine technological advance—that is, it may be possible to produce the same good or service with fewer resources.

The possibilities for continuing traditionalism in a basically rational

economic environment are extremely limited. The psychic benefits that *accompany* monetary wealth do not discourage economic rationalism; traditionalism, as a force tending to perpetuate the status quo, is therefore associated with the acceptance of smaller monetary gain than might otherwise be achieved, not because of compensating differentials in wages or profit rates that are the result of differences in the supply curves of labor or capital to different occupations or industries, but because of the methods of production or distribution chosen. (The possibility of achieving greater monetary gain through force or fraud is excluded from consideration since rational economic activity is defined as being based on voluntary exchange.)

Because commitment to specific methods of production or distribution is basic to traditionalism, traditionalism may at times be associated with an activity in which a large group of people share psychic values that are realized by their common activity. The activity may, however, generate psychic costs for others. When these costs become great enough, the group will find it impossible to maintain its position because of economic competition unless it is able to do so through political power. The outcome then becomes a political power question rather than a purely economic one.

Traditionalism will be greater the more concrete the activity giving rise to the psychic benefits; thus the level of abstraction in the goals of people, or of a culture, is important. The goal of pursuing one's father's profession leads toward traditionalism, whereas the pursuit of excellence as a goal does not inhibit economic rationalism. Thus goals that have their philosophical base in a static view of the world are tradition-oriented. The full range of physical economic alternatives is either not seen or not accepted; the opportunity set considered is far narrower than the physical opportunity set.

The next two sections of this paper present the historical material concerning fire-fighting services in London and in America. The final section uses the model presented above to interpret the historical material.

2. Fire-fighting in London

Fire-fighting services were provided privately—by the insurance companies—in the city of London for some time, but this was never the case in the United States. Because fire insurance companies benefit from efficient fire-fighting, they appear to be logical private institutions for providing this service. The reasons for the eventual establishment of a municipal fire department in London, and for the absence of fire companies or departments owned and operated by fire insurance companies in the United States, are therefore relevant to the inquiry into the reasons for the establishment of municipally paid fire departments in this country.

London had neither fire insurance nor fire departments before its great fire of 1666. In 1667 Nicholas Barbon set up an office for insuring houses against

fire; his undertaking was incorporated in 1680 as The Fire Office, and several other fire insurance companies were founded soon afterward. In 1710 Charles Povey's Sun Fire Office was incorporated to insure personal property against fire. For most of the 18th century each insurance company maintained its own fire brigade, which extinguished fires in those buildings insured by the company and, in return for a fee to be paid later, in buildings insured by other companies. The insurance companies also had watchmen and salvage corps.⁶ The buildings insured by a particular company were identified by a fire mark, a large lead casting with the symbol of the insurance company on it. The fire mark was placed on the building in a prominent place and often included the policy number under which the insurance had been written; the insurance was not effective until the fire mark was in place.

In 1825 five of the London fire insurance companies combined their fire-fighting groups,⁷ perhaps to achieve economics of scale. Efforts were continually made to get the other companies to join the combination, and in 1833 the fire brigades of most of the individual companies were combined to form the London Fire Engine Establishment. In 1866 the united fire brigade was turned over to the London Corporation and became the Metropolitan Fire Brigade.⁸

The proximate cause for the transference of the fire brigade to city control was the Toohey Street fire of 1861, which destroyed property valued at £3 million. The House of Commons inquired into the problem of fire protection for the city, and everyone who testified at the hearings—including the officials of the fire insurance companies—agreed that the level of fire protection then provided by the Fire Engine Establishment was extremely inadequate for the city. The House of Commons decided that a new fire department should be formed, controlled and financed by the city.⁹

The insurance companies were pleased with this outcome, even though they were required to contribute £35 per £1 million insured to the upkeep of the new Fire Brigade. (They were still doing so in 1925.) Dickson attributes this pleasure to the disputes the fire insurance companies were having with merchants over the increased rates resulting from the Toohey Street fire,¹⁰ but these disputes were only the symptom of a more fundamental economic problem.

By 1825 fire marks had ceased to serve the purpose of identifying—for the fire fighters—the buildings insured by each company. They were considered essentially advertisements. Some insurance companies no longer issued fire marks, and those that did sometimes left them up after a policy had expired.¹¹ It seems reasonable to conclude that the London Fire Engine Establishment was therefore serving the entire city of London, whereas the expense of this fire protection fell only on those who bought fire insurance.

Since not everyone insured his property, spreading the cost of the fire department over the entire property-owning population would make it possible to reduce the cost of insurance premiums, perhaps sell more insurance and possibly increase profits.

To support the Fire Engine Establishment, the fire insurance companies contributed two to three percent of premiums collected. Using the three percent figure and assuming that the city could provide equally effective service for the same expenditure, and that about one-third of the property in London was insured, premiums could decline almost three percent, although property owners would pay an amount equal to one percent of the insurance premiums on their property (or one percent of what the insurance premium would be were they to purchase insurance) to the city as a tax on property value to support the city fire department. The total cost of insurance and fire protection would be lower for the policy-holders, and the insurance companies could sell the same policy at a lower price without a reduction in absolute profits, and thus could possibly sell more insurance. If the insurance companies were able to keep premiums at the old levels, their profits would increase; but the industry has generally been highly competitive, and it is unlikely that such a situation would last for very long.

London's Fire Engine Establishment was part of a rational, profit-making industry; and government intervention in fire insurance, fire-fighting or related areas appears to have been minimal until 1866. Social pressure or "humanitarian" motives could be the reason why the Fire Engine Establishment served the entire city rather than just policy holders, but it is unnecessary to seek non-economic motives. The reason was probably that the insured buildings could not be protected unless the fires in uninsured buildings were also fought promptly, because of the speed with which a fire can spread and get out of control—especially when wood is a commonly used construction material, buildings are close together and fire-fighting techniques are primitive. Thus, it was probably economically the best policy for the Fire Engine Establishment to serve the entire city, with the result that those who did not buy insurance received the services of a fire department without paying for them.

3. Fire-fighting in America

A. The Development of Volunteer Fire Companies in America

In America fire-fighting preceded fire insurance. The first volunteer fire company, the Union Fire Company, was organized by Benjamin Franklin in 1736. It was a mutual association for fire protection; each member bought leather buckets and linen bags (for salvage) and was obligated to bring them to fires occurring on any member's property and to assist in fighting the

fire.¹² By 1752, the year of the founding of the first fire insurance company in the colonies, Philadelphia had six volunteer fire companies and eight fire engines.¹³

Volunteer fire companies were also formed in other cities and towns, and usually these organizations were not mutual but served all members of the community. These companies soon acquired fire engines; later hose companies were formed to link the engines of the engine companies to the water supply. Hook and ladder companies were also organized.

Many leading citizens belonged to the volunteer fire companies, and the volunteer firemen were very proud of their community position. The companies were extremely competitive; each fire created a contest to see whose engine would arrive first and whose engine could pump the most efficiently. It was a disgrace to be "passed"—overtaken by another company while trying to get to a fire—and a worse disgrace when the company's engine was "washed." This occurred when one engine was pumping water into the tank of another engine, which was in turn pumping the water onto the fire. If the tank overflowed, the engine had been washed; it could not pump water out as fast as it was being pumped in.

The rivalry among companies, which became extremely strong after 1840 or so, resulted in collisions on the street, false alarms to create contests between the companies and attempts to frame a too-efficient company. To improve its chances of being first to throw a stream of water on the fire, some Pittsburgh companies organized "plug guards"—auxiliary groups to rush to the scene of the fire, place barrels over the fire hydrants and sit on them until the engine arrived.¹⁴ The disorganization was not entirely the fault of the volunteer fire companies, however. Sometimes the fights were caused by rowdy groups that "ran with" the volunteers but were not actually members of the companies.¹⁵

The volunteer fire companies were also social organizations. They gave dinners and picnics, marched in parades, and gave benefits to help victims of fire. They also often voted as a bloc, and thus acquired political power.¹⁶ In time the prestige and appeal of being a volunteer fireman became less associated with fighting fires and more closely tied to the social aspects and political power of the volunteers. (One young man is reported to have considered joining a local church, but decided to join a volunteer fire company instead.)

The social and political benefits of membership kept the volunteers strong until the time of the Civil War. Many volunteer firemen fought in the war, and sometimes an entire company went in as a regiment. But the disturbances of the war broke the continuity of spirit and power of the volunteer firemen, and both their resistance to and their power to resist a paid fire department were greatly decreased by the war.

The volunteer companies had several sources of financing: contributions

from grateful persons on whose property the company had put out a fire; donations from citizens; funds from benefits given by the volunteer firemen; contributions, dues, and fines of members; the city government; and the fire insurance companies. In time many cities gained considerable control over the volunteer fire companies, and often paid the chief engineer whom the volunteers elected and perhaps a few other full-time people. Thus they had, in effect, a volunteer fire department, rather than a collection of independent fire companies, although the extent of control varied from city to city.

In summary, the volunteer fire departments were traditional organizations. The firemen were far more concerned with preserving their organization than they were with economic efficiency in fire-fighting. The political power they acquired was one reason for this desire, and it also provided the means. The volunteer companies were not profit-making enterprises, nor was profit their goal.

B. American Fire Insurance Companies and Their Support of Volunteer Companies and Departments

The first fire insurance company in the colonies (except for a short-lived effort in Charleston, South Carolina) was the Philadelphia Contributorship started by Benjamin Franklin in 1752. The Mutual Insurance Company of Philadelphia was formed in 1784, and offered to insure, for an extra premium, houses with trees in front of them—a class of risk the Contributorship was no longer willing to accept. The Insurance Company of North America and the Baltimore Equitable Society were founded in 1794. Other fire insurance companies were started in Philadelphia, New York, Providence, Boston, Hartford and other cities. By 1800 there were ten stock companies and four mutuals; by 1820 the number of stock companies had risen to 28.¹⁷

In contrast to the situation in London, the American fire insurance companies were founded in cities that already had fire-fighting forces. Generally a growing city established fire-fighting organizations before the insurance companies had occasion to underwrite a considerable number of risks in the city. The appeal of volunteer fire-fighting thus made it unnecessary for the insurance companies to own and operate fire departments.

Nevertheless, nearly every writer on the subject claims that the insurance companies did help support the volunteer fire companies and departments. The precise extent of this assistance would require detailed analysis of the financial records of fire insurance companies and fire companies, insofar as they exist, a task that was not attempted. The following specifics are available:

—The Mutual Fire Insurance Company of Germantown, Pennsylvania, offered \$3 to the first company in operation on any fire in which the insurance company had an interest.¹⁸

—In the early 19th century the Hartford Fire Insurance Company “apparently” paid the first working engine company arriving at the scene of a fire \$5. It also contributed regularly to the city’s four-man watch, and in 1815 contributed \$300 toward the purchase of a new fire engine for the city; in 1818 the company awarded five persons \$5-15 for their “laudable exertions” in extinguishing a particular fire.¹⁹

—Four or five awards of \$50, \$200 and \$300 to fire companies saving specific properties in the great Chicago fire of 1871 are mentioned by an historian of the Chicago fire. The early insurance companies in America issued fire marks as did the British companies and in a book on its collection of American fire marks, the Insurance Company of North America states that “. . . the Fire Mark stood as a guarantee to all fire brigades that the insurance company which insured the house in question would reward handsomely the brigade extinguishing a blaze on the premises.”²⁰ But except for the Chicago fire examples, I have found no references to awards to specific companies for successfully fighting a fire on insured property.

—The Philadelphia Contributorship made contributions to volunteer fire companies.²¹

—The Knickerbocker Fire Insurance Company of New York contributed \$100 toward the purchase of a bell for the church at Greenwich in 1805. “. . . [T]he Company, having insured several buildings in the neighborhood of said church, and the Board conceiving that a bell therein would be of use in preserving the same from being burnt by Fire,” resolved that the contribution be authorized.²²

—A company history states that the Insurance Company of North America made regular contributions to Philadelphia’s volunteer fire companies, quotes two specific cases of \$40 contributions toward the purchase of engines for volunteer companies, and states that such items can be found throughout the records of all fire insurance companies. ICNA also contributed \$250 per year for the use of Philadelphia’s nine hose companies.²³

—The Eagle Fire Company (an insurance company) of New York contributed several hundred dollars a year to New York’s volunteer fire department.²⁴

—Contributions from fire underwriters were made to finance steam fire engines for several cities. Cincinnati’s second steamer, purchased after the city had a paid fire department, was partially financed by such contributions; New Orleans’ first steamer was the gift of the local underwriters in 1855; New York acquired its first steamer this way, and St. Louis acquired two steamers this way by 1859.²⁵

It is impossible to tell precisely how important the underwriters’ support of fire-fighting was without access to accurate accounting records. But probably the funds supplied by insurance companies were not especially important, because if they had been they would probably be mentioned

more explicitly in the histories of volunteer fire departments; generally the only reference to these contributions is that the incentive awards contributed to rivalry among the companies. Nor do the histories of insurance companies mention the contributions as a drain on finances or a possible factor contributing to the failure of fire insurance companies.

The contributions to fire-fighting made by fire insurance companies indicate a total absence of any attempt to gain operating control of fire companies. The contributions fall in four classes: 1) incentive awards, 2) awards for services performed when insured property had been saved, 3) purchases of equipment for specific companies, and 4) contributions for equipment or services usable by all the fire companies (such as the Greenwich bell) or made to the city to be used at the discretion of the city authorities (such as the purchase of steam fire engines for the city).

The insurance companies had two reasons for making contributions and offering awards: first, a general "community charity" motive of the type the United Way inspires today; and second, reduction of risk. The reduction of risk could be achieved on insurance already written, but in the period following 1825 or so, the fire insurance business was intensely competitive, and any risk reduction could be expected to result in a reduction in premiums.

However, it is unlikely that the insurance companies made any precise calculations on the benefits of these contributions. During the years when they made such contributions willingly—until 1840 or 1850, perhaps—fire insurance rating was a poorly developed science. There was little historical experience on which to base calculations: conditions in industrial centers and cities, where most of the risks were written, were changing rapidly, so that new risk problems were continually arising; only a few trade associations existed, all were local, and although they were concerned with rate cutting, they did little if any work on the collection of information to study loss experience on different types of risks; and competition after 1825 or so was so extreme that insurance often had to be written at premiums below cost—or what later turned out to be cost—if it was to be written at all. The precise calculation of risks, even had it been possible, was not the determining factor in rates.

Risks were considered in rate making, however. Generally the early insurance companies had four risk classifications, such as non-hazardous, hazardous, extra hazardous and special. The distinctions were based on the building material used—wood versus brick—and the nature of the contents of the building.²⁶ Later the means of fire extinguishing were considered in the rates of at least some companies, such as the Eagle of New York in the early 19th century and the American Fire Insurance Company of Philadelphia as of 1823.²⁷ The Philadelphia Board of Fire Underwriters, organized in 1852, raised rates in areas where the volunteer fire department could not

reach the fire, and in the early 1850s a former officer of the American Fire Insurance Company stated that rates in Philadelphia had doubled because of the poor volunteer fire department.²⁸ In 1839 New York City rates included deficiency charges for buildings located on narrow streets.²⁹

Apparently the first attempt to use statistics on past experience in rate making followed the 1835 fire in New York. A patron of one of the insurance companies asked the officers about loss experience on paper mills, and the resulting investigation led to a more sophisticated classification for this particular company.³⁰ By 1866 the Putnam Fire Insurance Company was making systematic rate deductions for good fire departments.³¹

It was not until a national trade association (the National Board of Fire Underwriters) was formed in 1866 that rating became standard and scientific, and schedule rating was developed. The NBFU gave up its rate-making attempts in the 1870s, but it continued to have considerable influence. One of the rating schedules growing out of its work was the *Standard Universal Schedule for Rating Mercantile Risks*, first available in 1893. The 1896 edition of the schedule defined a standard city as one with a paid fire department and twelve men per steamer; the base rate in a standard city was 25¢ per \$100 insured. Deductions were made for exceptional city fire departments—for example, those having extra steamers, a water tower or fire boats. If a town did not have a fire department, 6¢ was added to the base rate. Various smaller amounts were added if the city had a fire department but it was volunteer, paid but not by the city, paid by the number of fires attended, paid but influenced politically, partially paid, lacking in a fire marshal, or deficient in number of men per steamer.³²

Theoretically, however, there is one reason for benefit from contributions for fire fighting even if the expected value of losses could not be reduced. If the company could reduce the probability of very large losses on specific risks, even while keeping the expected loss the same, it could reduce its probability of ruin. The probability of ruinous losses was quite high in this period because of the extensive use of wood as a building material, the building of connected structures and the ease with which a fire could get beyond the control of the fire-fighters. The immediate control of a fire was therefore of considerable importance to the companies.

The insufficiency of fire-fighting technology in this period is indicated by the growth of the factory mutual insurance companies between 1835 and 1850. The factory mutuals emphasized prevention of fire and control of fire independently of the fire department. A prospective factory owner became a member only after he had made the improvements recommended by the insurance company. One company history that reviews its loss experience from 1860 to 1910, noting in each case why the fire was or was not controlled, mentions the fire department as a relevant factor in only one case.³³

To summarize briefly: Although American fire insurance companies did make contributions to fire-fighting companies, their contributions were probably a minor part of the total expenses of the fire-fighting companies. The existence of willing volunteer organizations made it unnecessary for underwriters to go into the business of providing fire protection.

Furthermore, the extensive geographical area of the United States, and the resulting variety of locations in which a given insurance company might underwrite risks, would have made it more difficult organizationally to set up fire brigades owned and operated by the insurance companies. The agency system, under which a travelling company representative was empowered to write insurance, was begun in 1807 but grew slowly until the 1850s.³⁴ Geographical expansion of a particular company was limited in the early nineteenth century by state laws inimical to the operation of out-of-state companies, but New York's severe fire in 1835 resulted in changes in some of these laws, and insurance companies were interested in the spreading of risks through geographical expansion even before it became feasible.

The fire insurance companies became progressively less willing to make contributions to support fire departments, perhaps because the geographical expansion that was necessary for sound underwriting weakened their relationships with individual communities. By the end of the Civil War, the insurance companies were explicitly taking the position that fire fighting was a community responsibility. The possibility of having to pay the firemen caused some communities to take the stand that the insurance companies should pay for fire protection, either directly or through taxation, since the citizens had already paid for it once through insurance premiums. The development of an explicit position on the subject appears to be a response to the demands of communities for support from the insurance companies.

A writer in an insurance journal noted that fire insurance is indemnity and depends on risk; and that fire insurance companies should not be so weak as to give in to the requests of town councils for contributions to fire brigades, because the policy holders then pay to put out fires on uninsured premises—they are “paying handsomely for the privilege of being allowed to help in saving improvident people from the consequences of their own recklessness. . . . [I]nsurance should be recognized as a private commercial compact affecting underwriter and client alone.”³⁵ The National Board of Fire Underwriters also took the stand that it was not the job of fire insurance companies to extinguish fires.³⁶ And the Putnam Insurance Company gave the following instructions to its agents in 1866:

Donations to Fire Companies: The plea that insurers are more interested than others in the fire department is plausible but untrue. Of the property at large, but a comparatively small portion is insured, citizens running large risks without consideration; whereas *we get pay* for the

hazards we assume. We believe in a good fire department, however, and also in the policy of keeping on the right side of it, but we pay our share of its expense in reduced rates, and must be chary of donations. When particular circumstances exist that seem to justify a gift the matter may be submitted to this office, with the facts, for decision.³⁷

The *Standard Schedule* of 1896 also considered the problem: "For a salvage corps or fire patrol, if supported by the city, deduct 3%. If supported by the Insurance Company, deduct nothing. (Having paid for it, they are entitled to it.)"³⁸

In spite of their growing reluctance to make donations, the insurance companies had a great deal to do with the introduction of the steam fire engine. They helped finance its development and gave many cities their first steamers. They probably did so because of the substantial reduction in risk the steamer would bring about, but they may also have realized that the steamer made the transition from a volunteer to a paid fire department much easier. The insurance companies were also in favor of paid fire departments, because they felt that better training, better discipline and freedom from political control would improve fire protection—a gain for them if taxpayers footed the bill. The steam fire engine is the last area in which the fire insurance companies made substantial contributions to fire fighting as such; in later years their efforts were more concentrated in areas such as building code legislation and the testing of materials.

Although the insurance companies in the United States never controlled or sought to control fire departments, the firemen apparently found the fire underwriters objectionable:

The insurance companies do not like to see a Fire Department too efficient and are, consequently, in opposition to the best interests of the community in this regard. They will gladly "pay for fires" so long as the sum so paid does not exceed their premium receipts, and so deprive them of dividends, but when the small fires grow into large ones, and losses swell proportionately, the underwriters are the first to denounce the Fire Department. From the fact that it is to the interest of the insurance companies that fires should occur, the absurdity of placing the Fire Department in the hands of underwriters becomes at once apparent.³⁹

C. The End of the Volunteers

By 1850 volunteer fire departments had become undesirable organizations for several reasons. These reasons, and the fact that the volunteer organizations did not internally generate changes that would have improved their performance, can be traced to the traditional nature of the organizations.

First, the volunteers were generally opposed to any technological changes in fire-fighting that would result in changes in the volunteer organization. The volunteers in most cities opposed the introduction of the steam fire engine, for example, because with steam fire engines many fewer men were needed; capital could be substituted for labor. In 1859 the chief engineer of

New York's volunteer department stated that "the introduction of steam fire engines would embarrass seriously the volunteer system."⁴⁰ New York's fire insurance companies commissioned Paul Hodge to build a steam fire engine in the 1840s. The engine was brought to fires by the insurance patrol, but the firemen refused to supply it with hose or water, and it was finally sold to an industrial buyer for stationary power purposes. In the same decade Captain John Ericsson of England was awarded a prize by the General Society of Mechanics and Tradesmen in New York for his design for a steam fire engine, but the New York City councilors, dependent on the firemen's vote, refused to consider the purchase of steamers for the department.⁴¹ This traditionalism of the volunteers meant that even had people desired better protection and been willing to pay for it, it would not have been forthcoming.

Second, the volunteers were considered an undesirable social influence by many people. The fire houses were meeting places for the local rowdies and were thought to corrupt youth. Some of the fights the volunteers got into were caused by young men who "ran with" the fire companies, although they were not members. It was felt that this type of activity could be reduced by having a paid department.

Third, the volunteers in many cities had considerable political power. Although the politicians who benefited from this power supported the volunteers, many people felt that the city would be better off without the political machine based on the volunteers. The most striking example of the political power of the volunteer firemen is that they provided the political base for New York's "Boss" Tweed, who got his political start organizing firemen's votes. William M. Tweed was successively a member of four different fire companies in New York and then organized the Americus Engine Company No. 6, known as the Big Six, in 1849. He was its foreman from 1852 to 1854.⁴² The political influence of the New York volunteers began about 1836,⁴³ and they came to be strongly backed by Tammany Hall. The issue of a paid fire department had to be decided by the state legislature, and it was not until 1866, when New York had a Republican legislature brought in with Lincoln's reelection, that a bill for a paid department for the city was passed.⁴⁴

The political influence of the firemen in New York caused misallocation of funds. Until December of 1864 the officers of the volunteer department were not responsible for its expenditures—the funds were allocated by the Common Council and the Street Commissioner's Department, and often went for the purchase of extravagant furniture and supplies for selected companies.⁴⁵ Political influence also undercut the discipline of the department. More firemen than necessary were allowed to become members, men expelled by department officials or their own companies were restored to membership by the politicians, and rioters were often not punished.⁴⁶

An historian of San Francisco noted that fear of political influence was

one of the reasons for the establishment of a paid fire department in that city in 1865.⁴⁷ In Philadelphia the political power of the volunteer firemen prevented the passage of a bill to have a paid fire department in the early 1850s; the bill was supported by the property owners of the city.⁴⁸

Fourth, the rivalry among the fire-fighting companies, although it had at times improved their performance, was on the whole detrimental to their effectiveness in putting out fires and aroused public opposition to the volunteers. Although rivalry might have made the volunteers an average of just a few percentage points less efficient than they might otherwise have been, a particular property owner or insurance company ran the risk of the full burden of this inefficiency. It was possible for a building to burn to the ground entirely, when destruction might easily have been very limited had the fire-fighters' arrival not been delayed. The outrage at the rivalry that allowed an occasional building to burn to the ground unnecessarily was very great—probably much greater than it would have been had the cost of this rivalry been evenly distributed among the property owners and insurers.

Rivalry among the volunteers was the proximate cause for the establishment of the country's first paid fire department in Cincinnati in 1853. In 1851 two of the city's volunteer fire companies crossed paths on the way to a fire in a planing mill, and before the fight was over ten companies were involved. Help was sent from Covington, Kentucky, across the river—not help to put out the fire, but to assist one of the volunteer companies in the fist fight. The planing mill burned to the ground.⁴⁹

Rivalry was apparently also a reason for Louisville's establishment of a paid (and steamerized) fire department in 1858. The chief engineer's report for 1859 stated that false alarms to create contests between the fire companies were a thing of the past.⁵⁰

In St. Louis in the early 1850s, the volunteers engaged in rock-throwing while supposedly fighting fires and sometimes stole merchandise. In May 1851 the captain of a volunteer company discovered while fighting a fire that his engine's hose had broken. Unable to pump water, he gave the water to a rival company. His action was investigated by the Firemen's Association and concluded to be "indiscreet behavior." While the Firemen's Association tried to police the volunteer companies, it had little success, and St. Louis established a paid department in 1857.⁵¹

The establishment of a paid department in Pittsburgh in 1870 has been attributed to action by the business community opposed to the violence and inefficiency of the city's volunteer companies,* as well as the desire for

* Whether the business community favored paid departments is a question barely touched on here. If commercial property was more extensively insured than individual homes, the business community may have favored municipal paid departments to improve protection and consequently reduce their own insurance premiums.

TABLE 1
New York Fire Department Data

Time Period	Population (Census Year)	Fires	Losses	Members	Companies	Expenses
1795-1803	60,489 (1800)	6-11	—	—	—	—
1804	—	16	—	—	—	—
1805	—	13	—	—	—	—
1806-1814	95,519 (1810)	16-37	—	—	—	—
1817-1822	123,706 (1820)	—	—	1,269 ^a	—	\$ 13,339/yr. avg.
1823	—	—	—	1,284	47	—
1825	166,000	—	—	1,088	—	—
1830	203,007 (1830)	119	—	—	—	\$ 22,962
1831	—	—	—	—	—	\$ 12,984
1832	—	—	—	—	—	\$ 18,000
1835	270,089	—	—	—	—	—
1840	312,710 (1840)	—	—	—	—	—
1843	—	—	—	1,661	90	—
1844	—	—	—	1,581	91	—
1845	371,223	260	\$ 474,830 ^b	1,567	86	—
1846	—	258	—	—	—	—
1849	—	—	—	1,600	—	—
1850	515,394 (1850)	289	1,304,093	—	90	—
1851	—	319	707,478	2,211	94	—
Oct. 1853-Sept. 1854	—	385	2,900,284	2,950	123	—
1855	—	—	1,167,119	2,631	—	—
Aug. 1855-July 1856	—	354	—	3,085	—	—
Mar. 1857-Feb. 1858	—	322	428,266	3,559	133	\$110,000
Feb. 17, 1858-Feb. 17, 1859	—	261	—	3,700	119	—
June 1, 1860-May 31, 1861	814,254 (1860)	403	1,347,297 ^c	4,040	94	\$337,892
1862	—	311	1,428,584	3,814	—	\$385,512
Jan. 1, 1863-Mar. 31, 1863	—	—	—	—	—	\$ 8,643
1862-1863	1,000,000	268	1,191,922	—	—	—

Time Period	Population (Census Year)	Fires	Losses	Members	Companies	Expenses
June 1, 1863–May 31, 1864	—	370 ^d	2,935,054 ^d	3,960	125	\$115,000 ^e
June 1, 1864–June 30, 1865	—	665	2,109,891	3,421	123	—
Apr. 1, 1865–June 30, 1865	—	—	—	—	—	\$115,567
1866	—	—	—	583	—	\$600,000 ^f

SOURCES: A.E. Costello, *Our Firemen* (New York: Knickerbocker Book Publishing, 1888), pp. 82–143; *Annual Report of the Chief Engineer*, relevant years; *Communication from the Street Commissioner* (New York: Edmund Jones & Co., 1865); and John V. Morris, *Fires and Firefighters* (Boston: Little, Brown, 1955), p. 167.

^aNumber of members in 1822.

^bExcluding the Bond Street Fire.

^cOne-third of these losses were in one fire.

^dIncludes 51 fires in July 1863 (the month of the draft riots) with losses of \$1,125,068.

^e\$115,000 was allocated out of \$160,000 requested.

^fAmount requested and paid for six months.

political control of the fire department by business leaders.⁵²

Although rivalry led to occasional disasters, inefficiency itself—or the inability of the volunteers to deal with the problem of fire—does not seem to have been a major factor leading to their downfall. Data for New York, for example, show no significant increase in fires per fireman or losses in the years preceding the establishment of a paid department (see Table 1). Nevertheless, the paid department was smaller and more efficient, enough so that improvements were reflected in insurance statistics by 1871.⁵³

Given the undesirability and the traditionalism of the volunteer organizations, there were two alternative ways to rationalize fire-fighting: private enterprise and government provision of the service. For either alternative, payment of firemen was necessary, because only if they were paid would the city or an entrepreneur have enough control, and enough freedom from political pressures, to rid the fire department of its undesirable social features and make fire-fighting more efficient. (The establishment of a paid municipal fire department did not always, however, succeed in ridding the fire department of political influence. Philadelphia's department continued to be politically influenced for many years,⁵⁴ and as noted above, the *Standard Universal Schedule for Rating Mercantile Risks*, which first came out in 1893, specified a lower rating leading to a higher cost for insurance for a city where the department was paid but politically influenced.)

The problem for the voters in a given city, or for the potential entrepreneur, was of course how much more people would be willing to pay to have non-volunteer fire protection. There were positive social benefits in getting rid of the volunteers, but even the same level of fire protection would probably have cost more; it seems likely, however, that people did not want the same level of protection—they wanted better protection. It is significant that there were economic factors making a paid department more feasible after 1850 than it had been before—specifically, the steam fire engine and the telegraphic alarm. In addition, lower fire insurance rates owing to the decrease in destruction of property due to better service could offset the cost of a paid fire department.

The Steam Fire Engine: The development of the steam fire engine was the most significant technological development influencing the cost of a paid fire department. The steam fire engine was invented in England in 1828, and one model was produced and another designed in the United States in the 1840s, but the opposition of the firemen and the inadequacies of the early models prevented its acceptance. A lighter, more practical model was built by Moses Latta in Cincinnati in 1852.⁵⁵

The importance of the steam fire engine was that it made it possible to fight fires with far fewer men. Because the system of high pressure water mains was not developed until around the turn of the century, water to fight

fires had to be pumped except in occasional cities where natural water pressure was great. Thirty or forty men were required to operate a hand engine; they pumped in relays and were often exhausted after less than an hour. By contrast, a steam fire engine could be operated by ten to twelve men; and even an early model once worked continuously for six hours.⁵⁶

Because the steam fire engine was an unusually labor-saving device, it lowered sharply the cost of a paid fire department. The development of the Latta steamer was a direct result of Cincinnati's 1851 riot in which the planing mill burned to the ground while the volunteers fought each other instead of the fire. Following the riot the chief engineer of the fire department investigated ways to fight fires without so much manual labor, and he helped finance Moses Latta, a local manufacturer, who was working on a practical steam fire engine. The engine was successful enough to warrant its purchase by the Cincinnati City Council, which then told the volunteer firemen that it could not be operated by unskilled volunteers.⁵⁷

Although the average steam fire engine was more expensive than the average hand engine, all but the earliest models were more effective as far as the distance they could throw a stream of water and the amount of water they could get to the fire in a given amount of time. The price paid for steam fire engines between 1852 and 1883 ranged from \$700 to \$10,000; most of them cost \$3-5,000.⁵⁸ Such a price would be extravagant for a hand engine, but once fire departments were paid, the wage bills saved as a result of the steam engine more than made up for the higher cost—in fact, the steam engine probably lowered the cost of a paid fire department to the point where it became a viable alternative. The data do not permit exact comparisons because hand and steam engines are not directly comparable in their fire-fighting capabilities, their costs for different capabilities are not precisely known, and it is also impossible to determine the amount of service a city obtained for the firemen it paid in comparison to the service provided by the volunteers. However, as an example, suppose a hand engine cost \$1,500 and a steam engine \$4,000; and the steam engine required fifteen men and the hand engine forty men. At part-time wages of \$100 a year (a reasonable wage during this period), the wage bill plus the cost of the engine would have been \$5,500 in the first year under both arrangements; in later years the steamerized company would have cost \$1,500, the unsteamerized \$4,000. Furthermore, the steam engine may well have done the work of more than one hand engine.

In 1829 the Boston volunteer fire department had 1,200 members;⁵⁹ in 1869, the steamerized and paid department had fifty-eight full-time men and about 300 part-time men.⁶⁰ Providence, the only large city to have a paid department before it acquired steamers, reduced the number of firemen from 1,200 volunteers to an authorized maximum of 450 paid men, but these men

were not full-time; they held other jobs and were paid a maximum of only \$75 a year.⁶¹ Obviously, the change from volunteer to paid, even when the paid firemen work only part-time, is responsible for a large part of the reduction in the number of firemen, but the Boston reduction must be partially attributed to the steam fire engine, since the reduction is greater than that for Providence and the figure for the number of volunteers is for 1829.

Finally, paid and steamerized fire departments appear to be related. Table 2, based on a survey of 642 cities in the United States and its territories in 1880 and 1881, shows the frequency of paid and steamerized fire departments by size of city.

TABLE 2
Paid and Steamerized Fire Departments in U.S. Cities, 1880-1881

Population	No Department	Paid; Steamers	Paid; No Steamers	Volunteer; Steamers	Volunteer; No Steamers
5,000 or fewer	48	26	14	69	112
5,001-9,999	5	34	7	68	45
10,000-49,999	1	96	6	61	20
50,000-99,999	—	12	—	1	—
100,000 and over	—	16	—	1	—

SOURCE: *Insurance Journal*, Vols. 7-10 (1880-1881), relevant issues.

Contingency table tests for the independence of a paid fire department and the use of steam, made for the first three population groups, result in rejection of the hypothesis of independence and are significant at the .01 level for all three groups. The Chi-square value for the .01 level of significance with one degree of freedom is 6.63, whereas the values of the statistic were 10.1 for the cities with fewer than 5,000 people; 7.3 for cities of 5,001 to 9,999; and 11.6 for cities of 10,000 to 49,999. (The cities without fire departments were excluded from these calculations.) Although the survey of cities is probably reasonably complete, the data are not as clear-cut as the table makes them appear; many cities under 50,000 had fire departments that were both paid and volunteer; also, some cities did not have steamers because natural water pressure made them unnecessary. The one city in the largest group listed as having a volunteer fire department is New Orleans, and actually the city's department was not volunteer; fire protection was provided by contract with the city between 1855 and 1890.

Table 3 presents data for major cities on the year the city established a paid department and the year it acquired its first steamers.

Table 3
Paid/Steamerized Data on Major Cities

City	First Year Paid	Year of First Steamers	Population (1880)	Number of Steamers (1880)
Cincinnati	1853	1853	255,708	20
Providence	1854	after 1854	104,850	8
St. Louis	by 1857	by 1859	350,522	20
New Orleans	1855 ^a	1855	216,140	20
Louisville	1858	1858	—	—
Chicago	1858	ca. 1856	503,304	29
Boston	1859	1854	362,535	33
Baltimore	1859	1859	332,190	13
San Francisco	1865	—	233,956	11
New York	1865	1856	1,206,590	43
Pittsburgh	1870	—	156,381	12
Philadelphia	1871	1858 (?)	—	—
Washington D. C. ^b	—	—	147,307	6
Detroit	—	—	116,342	11
Newark	—	—	136,400	10
Brooklyn	—	—	566,689	19
Buffalo	—	—	155,137	14
Cleveland	—	—	160,142	13
Milwaukee	—	—	115,578	7

SOURCES: Insurance Monitor, (1880-1881), various issues; and other sources noted for Tables 1 and 2.

^aDisbanded; by contract until 1890.

^bFor these seven cities of over 100,000 people in 1880, data on the year a paid department was established and the year steamers were first acquired have not been uncovered. (All had paid, steamerized departments by 1880.)

The Telegraphic Alarm: A second technological advance was the application of telegraphy to the transmission of fire alarms. The technique was developed by William F. Channing in 1845 and was in use in Boston by 1852.⁶² The telegraph was a more effective way to send out a fire alarm than the ringing of bells, since it pin-pointed the location of the fire and brought only needed fire companies into action. It also reduced crowds at fires, because the alarm was not public and therefore fewer people knew about a

given fire. Full-time firemen, on duty in the fire house where the telegraph messages were received, were required if the telegraph was to be used, and thus it probably encouraged paid departments. The telegraph cannot be considered a major influence, however, because most cities had paid departments before they introduced telegraphy for sending alarms, and in some cities, such as Philadelphia, firemen continued to have other occupations even after they were paid. Philadelphia established a paid fire department and adopted a telegraph alarm system in 1871, but in 1872 only half the force was paid for continuous service.⁶³ Providence established a paid fire department in 1854, but as late as 1871 the mayor called for higher wages for the firemen so that they could be in attendance at the fire house, telegraphy could be used and crowds at fires reduced.⁶⁴

Insurance Premiums: A factor offsetting the cost of a paid fire department was the decline in insurance premiums that might result from a better fire department. Although rating did not become systematic until after 1866, competition and increasing experience did lead to differences in rates for different degrees of risk. Baltimore established a paid fire department in 1859, and in the same year the mayor noted that the aggregate reduction in insurance premiums for the city was greater than the cost of the new department, which was an initial outlay of \$90,000;⁶⁵ operating expenses also increased, however, as Table 4 shows.

Table 4
Baltimore Fire Department Data

Time Period	Fires	Expenses	Losses
1851	—	\$13,582	—
1856	—	17,000	—
July-Dec. 1857	185	17,400	—
1858	255	37,963 ^a	—
1855-1858	—	—	\$2,175,000
1859 (paid)	179	40,070 ^b	150,000
1859-1862	—	—	803,000
1861-1862	—	—	143,000

SOURCES: *Ordinances of the Mayor and City Council of Baltimore*, relevant years; *Insurance Monitor*, 11, no. 6 (June 1863):155.

^a\$800 to each of 21 companies, plus \$21,163 in other expenses.

^bProjected expenses; plus \$90,000 initial outlay.

Thus, the steam fire engine, the telegraph alarm and potential insurance rate reductions resulting from lower losses probably led to a significant increase in the attractiveness of fire protection provided by a paid department. Baltimore officials claimed that its paid and steamerized department reduced losses considerably (see loss figures in Table 4), but losses vary so much over time and are influenced by so many factors that the lower losses cannot necessarily be attributed to the new fire department. And the great fires in Chicago and Boston, in 1871 and 1872, occurred after the departments there were paid and steamerized.

Finally, as cities grew, the volunteers may have become less willing to serve and the misuse of funds due to the political power of the volunteers may have increased; thus the cost per capita in dollars or privileges for the volunteer-provided service may have increased, and perhaps the volunteers—given the nature of their organization—simply became incapable of providing the level of protection they had previously provided. The evidence for unwillingness on the part of volunteers is not strong. Although the time of the volunteers, in terms of earnings foregone, may have been increasing, the non-monetary benefits of being a fireman appear to have outweighed these costs; there was no shortage of firemen. Nevertheless, there could have been a shortage of volunteer firemen interested in effective fire-fighting rather than in the social and political benefits of membership. Unwillingness of volunteers to serve definitely became important after the Civil War, since the war somewhat destroyed the social cohesion of the volunteers and weakened their political influence.

4. The Establishment of Municipal Fire Departments

Although the volunteers were undesirable and various developments eventually made the change to a paid department feasible, the demand could have been satisfied by private enterprise as well as by municipally controlled fire departments, had circumstances not been unfavorable to private enterprise. Three conditions inimical to the development of private enterprise in this area led, however, to the establishment of municipal fire departments.

The first was the traditional nature of the volunteer organizations. During the years when the volunteers provided satisfactory fire protection, it was unnecessary and uneconomical for the fire insurance companies, or any other private business enterprise, to supply this service.

The willingness of fire-fighters to provide their services without pay was closely connected to the freedom they therefore had to choose their methods of operation and the social and political benefits of providing the service; the volunteers would not have been willing to provide their services free to an entrepreneur who had control over hiring, firing and methods of operation.

Besides precluding the early development of private enterprise in fire-

fighting, the volunteers were inimical to the development of private enterprise in two other ways: their existence encouraged government activity in the area, and their financial and political ties to municipal governments made government action necessary to rid the city of the volunteers.

Government activity was encouraged because, with the exception of a few cities, the volunteers could not completely finance their own operations, and since the volunteers were willing to serve all members of the community, they had no way to induce contributions from private persons. Thus the city taxed to provide equipment and pay a few full-time members of the department. In St. Louis, for example, the city bought hose for the volunteer companies and gave each of them \$1,000 a year during the early 1850s.⁶⁶ The rivalry and rowdiness of the volunteers also led to ordinances dealing with the behavior of volunteers. Finally, the bloc voting power of the volunteers made it desirable for the politicians to distribute public funds to the fire companies in amounts and for purposes not solely based on the criterion of effective fire protection.

The close ties of the volunteers and the city government made government action necessary if the city was to rid itself of volunteers. As long as the volunteers continued to receive municipal support, a private, profit-making fire company that charged private persons for its services would have found no market, since the additional cost of the increased benefits received would have been very great, and the undesirable aspects of the presence of the volunteers would still have existed. Only if the volunteer service had become almost worthless would people have been willing to pay for private service, and the volunteer service was not that bad. City governments could have taken action leading to the establishment of private enterprise, perhaps by refusing to finance fire protection, ceasing to grant privileges to volunteers, and making arrangements for the transition to private enterprise through the sale of fire-fighting equipment to private companies; but it would have been complicated and the period of transition would have been difficult.

Second, government activity in the area of fire-fighting and in related areas was inimical to the development of private enterprise.

By the time paid fire departments became economically desirable, fire-prevention and fire protection were accepted as proper functions of a municipal government, and the voters had actually already accepted government provision of fire-protection service. The transition to city control was therefore a gradual process rather than a decision made at the time when the demand for a paid department became strong.

City control over the volunteer fire companies came from a variety of sources. Most cities exempted the volunteer firemen from one or more of the following: jury duty, the militia in time of peace, the road tax, the poll tax. Some cities passed laws controlling the territory in which a volunteer fire company could operate and barring minors from membership.⁶⁷

When the cities achieved control of the water supply—either by public ownership of water works, contracting with a private company, or giving a private company rights of way to supply citizens with water—the volunteer fire companies had to be granted the right to draw water from these sources by the city. Cities also bought equipment for the volunteer fire companies, either with tax money or donations from fire insurance companies or citizens. The equipment was then given to a particular fire company for its use, and conditions could be placed on the fire company as a result. Finally, several cities passed ordinances bringing the volunteer fire companies under city control: the city paid the chief engineer, and perhaps some other members of the fire department, and placed the volunteers under their control. Such ordinances were a natural outcome of city financing of the volunteers and the fact that the exemptions the volunteers received made it possible for the city to set up criteria for deciding who was and was not a member of a volunteer organization.

The acceptance of fire prevention and fire protection as a proper function of the municipality probably meant that the alternative of private enterprise was not even considered; but even had it been, government provision and control of telegraph services, water and streets would have made the area an unappealing one for the private entrepreneur, since the city authorities could have forced a company out of business at any time had they refused to allow it the use of these government-provided goods and services. (The city provision of such services makes it likely that fire protection would have become a monopoly in any given city. Otherwise, however, there is no reason why it would have, although specific companies might have served certain areas of a city. The cooperation among companies necessary for fighting large fires would also have been a logical development, since being able to call on other companies—for a price, of course—would have been a selling point for any given company.)

Third, the legal framework, specifically the definition of private property rights, was perhaps inadequate for private enterprise. The problem was that to provide effective fire protection for even a part of the population, all fires had to be fought promptly to prevent their getting out of control. Under the existing legal framework there may have been no reason for any given person to pay for the services of a fire department since, if enough other people paid, the service would be provided free. Although in low-density areas the free-rider problem may not be severe, it appears to have been substantial in London and in the larger U.S. cities in the 19th century.

The question is what kind of a legal liability structure would have provided sufficient inducement for virtually all property owners to purchase fire protection services. Some writers claim that in early England and Ireland, an occupier's liability for fire and its spread was strict.⁶⁸ In England in 1707 and in Ireland in 1715, strict liability was modified, at least for homeowners. In

England the Fire Prevention Act of 1774 extended the modification to commercial establishments and made liability for damages by fire a question of negligence: "No action, suit or process whatever shall be had, maintained or prosecuted against any person in whose house, chamber, stable, barn or other building, or on whose estate any fire shall . . . accidentally begin, nor shall any recompense be made by such person for any damage suffered thereby, any law usage or custom to the contrary notwithstanding. . . ."69

Under the strict liability rule, liability could be avoided only if the fire was an independent act of a third party or had a natural cause—lightning, for example.⁷⁰ Nevertheless, one writer notes that "while the early English decisions are considered by some authorities to have laid down a rule of absolute liability for damages resulting from a fire intentionally started, a critical examination of them would seem to indicate that liability, where imposed, was in all instances expressly based on negligence."⁷¹ This would appear to be Blackstone's understanding of the common law. Writing a few years before the passage of the 1774 legislation, he says:

. . . by the common law, if a servant kept his master's fire negligently, so that his neighbour's house was burned down thereby, an action lay against the master; because this negligence happened in his service; otherwise, if the servant, going along the street with a torch, by negligence sets fire to a house; for there he is not in his master's immediate service: and must himself answer the damage personally. But now the common law is, in the former case, altered by statute 6 Ann. c. 3. which ordains that no action shall be maintained against any, in whose house or chamber any fire shall accidentally begin; for their own loss is sufficient punishment for their own or their servant's carelessness.⁷²

While Blackstone interpreted "accidental" as equivalent to "unintended," later legal opinion did not, and the term was taken to mean by chance or without known cause.⁷³ It seems reasonable to conclude that in fact liability for damage caused by a fire was always based on negligence, with the exception of a few cases that did not become compelling precedents.⁷⁴ R. L. Carter comments:

The greatest weakness of both risk assumption and insurance is that the individual only has to meet his private costs, the social costs of his risk lying outside the calculations. The only way in which this defect could be rectified would be by imposing an absolute legal liability on occupiers of premises for all losses suffered by third parties as a result of a fire at the premises. This revision would mean a radical change in the law of torts with widespread implications for other risks. It therefore cannot be considered only in relation to fire.⁷⁵

Strict liability for damage by fire would have given people more reason than they had to purchase fire protection services. But even with liability

based on negligence, the purchase of fire protection services would have been encouraged if the failure to make provision for fighting fires—in London, by purchasing fire insurance and thus jointly purchasing the services of the insurance companies' fire brigades—was considered in itself negligent. I know of no cases where this issue is raised.

Indirect incentives of legal liability for fires—whether strict or not—led to liability insurance that covered damage to the property of others, including damage by fire. I have not determined when this type of insurance first became available either in Great Britain or in America, but it probably developed after the negligence doctrine was well established, since insurance against damages caused by fire was itself not available until 1667 in London and 1752 in the colonies. Because fire companies were never privately owned in America, the issue would not, however, have come up at all; whatever fire-fighting forces were available served the entire population.⁷⁶

It is tempting to argue that the common law and statutory law of negligent liability rather than absolute liability is central to the explanation for the absence of the development of private fire-fighting companies in England and the United States. Strict liability has little meaning, however, if it is impossible to insure against it and if, in the absence of insurance, the claims made are so large that it is impossible to pay them. Thus, it is questionable whether, in the context of history, strict liability would have made a great deal of difference.

5. Conclusion

In America the existence of willing volunteers⁷⁷ and the traditionalism of the volunteer organizations, as well as extensive government activity in the area of fire protection and the acceptance of this activity as a proper municipal function, had an important inhibiting effect on the development of private fire-fighting companies. Government provision of related services would have been especially important in making fire-fighting an unappealing field for private enterprise, since it is a continuing disadvantage, whereas the other circumstances inimical to private enterprise would have changed in time had private enterprise ever gotten a start in this area.

But these circumstances were generally not present in London, and yet in 1866 the fire insurance companies willingly turned over a privately owned and operated fire department to the city of London. It is possible that they did not consider a spin-off of the department as a possibility, but more likely the need to fight all fires to save insured properties made a partially tax-financed department attractive for the insurance companies and the business community, which may have been paying most of the insurance premiums.

NOTES

1. An outstanding exception, though not the only one, is the Rural Metropolitan Fire Department of Scottsdale, Arizona. Rural Metro was incorporated in 1948 and for a time sold its services to individuals on a subscription basis. It now provides fire-fighting to Scottsdale and some neighboring communities on a contract basis, but continues to serve other homeowners for a subscriber's fee. It will also answer calls for non-subscribers, in which case it charges 17 times the annual subscription fee if it can save the property, but nothing if the damage is total. Subscribers' fire insurance rates are lower. It would be interesting to know whether their liability insurance, which would include insurance against damage to the property of others by fire, is also less expensive. Per capita costs to Scottsdale under its contract with Rural Metro are only about a fourth the cost of the average municipal fire department. The company has kept costs low through technological innovation and effective personnel management. Although members of neighboring paid departments are critical of Rural Metro, researchers have found it efficient. See Robert Poole, Jr., "Fighting Fires for Profit," *Reason* 8, no. 1 (May 1976):6-11 and "Coping with Tax Cuts," *World Research INK* (August 1978):2; Robert Albrandt, Jr., "Efficiency in the Provision of Fire Services," *Public Choice* 16 (Fall 1973):1-15; and Peter Greenberg, "Now Who Ever Heard of a Free Enterprise Fire Department?" *Flightime* (Continental Airlines) 8, no. 7 (July 1973):21-23.
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23. James, *Biography*, pp. 98, 100.
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26. Geldert, *Eagle Fire*, pp. 34-35.
27. J.A. Fowler, *History of Insurance in Philadelphia, 1682-1882* (Philadelphia: Review Publishing and Printing, 1888), pp. 317, 337.
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45. *Annual Report of the Chief Engineer of the Fire Department of the City of New York* (New York: Edmund Jones, 1865), p. 12.
46. Costello, *Our Firemen*, pp. 123, 127.
47. John P. Young, *San Francisco*, Vol. 1 (San Francisco: S. J. Clarke Publishing, 1913), p. 442.
48. Fowler, *History*, p. 406.
49. Holzman, *Romance*, p. 73.
50. *Ibid.*, p. 84.
51. Arlen R. Dykstra, "Rowdyism and Rivalism in the St. Louis Fire Department, 1850-1857," *Missouri Historical Review* 69, no. 1 (1974):52.
52. Ronald M. Zarychta, "Municipal Reorganization; The Pittsburg Fire Department as a Case Study," *Western Pennsylvania History Magazine* 58, no. 4 (1975):471-487.
53. Richard B. Calhoun, "New York City Fire Department Reorganization, 1865-1870," *New York Historical Society Quarterly* 60, nos. 1-2 (1976):6-34. See also Donald James Cannon, *The Fire Department of the City of New York, 1835-1898: A Study in Adaptability* (Ph.D. diss. Fordham University, 1976).
54. *Fire Service in Great Cities* (Silsby Manufacturing Company, 1886[?]), p. 46.
55. William T. King, *History of the American Steam Fire-Engine* (Chicago: Owen Davies, 1960), p. 13.
56. Morris, *Fires*, p. 174.
57. Holzman, *Romance*, p. 74.
58. King, *History*, pp. 13, 18, 23, 76, 100, 122, 125.
59. Josiah Quincy, *Address to the Board of Aldermen* (Boston, 1829), p. 10.
60. *Boston Executive Department Annual Report* (1869), p. 77.
61. *The Charter and Ordinances of the City of Providence* (Providence: Knowles, Anthony, 1854), p. 163.

62. Morris, *Fires*, pp. 181-182.
63. *Fire Service in Great Cities*, p. 45.
64. "Mayor's Address," *Providence City Manual* (Providence: Hammond, Angell, 1871), p. 8.
65. *Ordinances of the Mayor and City Council of Baltimore* (1959).
66. Dykstra, "Rowdyism," p. 61.
67. Considine, *Man Against Fire*, p. 43.
68. See Terrence Prime, "Occupier's Liability for Fire," *Solicitor's Journal* 116 (March 17, 1972):207-209; and Nial Osborough, "Liability in Tort for Unintended Fire Damage," *Irish Jurist* 6 (Winter 1971):205-216.
69. Prime, "Occupier's Liability," p. 207, and Osborough, "Liability," p. 205-206.
70. Prime, "Occupier's Liability," p. 207.
71. *American Law Reports*, 2nd ed., vol. 24 (San Francisco: Bancroft-Whitney, 1952), p. 252. This source reviews important cases in British, Canadian and U.S. law. For a general discussion of U.S. law relating to fire, see "Fires," *American Jurisprudence*, 2nd ed., vol. 35 (San Francisco: Bancroft-Whitney), pp. 579-641.
72. William Blackstone, *Commentaries on the Laws of England*, vol. 1, p. 431.
73. Osborough, "Liability," p. 207.
74. *American Law Reports*, pp. 253-254.
75. R. L. Carter, "Pricing and the Risk of Fire," in *Essays in the Theory and Practice of Pricing* (London: Institute of Economic Affairs, 1967), p. 36. For a discussion of a legal system based on strict liability rather than negligence, see R. A. Epstein, "Defenses and Subsequent Pleas in a System of Strict Liability," *Journal of Legal Studies* 3 (January 1974):165-215.
76. Rural Metro (mentioned in note 1) currently provides service by subscription in some areas. It would be interesting to determine whether non-subscribers can purchase fire insurance and liability insurance on the same basis as non-subscribers.
77. The reader should not be left with the impression that volunteer fire departments are past history, although this is true of major cities. According to the National Fire Protection Association, in 1969 there were more than 23,000 volunteer fire companies in the United States, and 1.2 million volunteers, in comparison to only 200,000 paid professionals. Volunteer departments buy about 80 percent of the fire-fighting equipment sold in the United States. Equipment in many cases is financed by municipal taxation, and volunteer departments often have a few paid professionals or pay volunteers for responding to alarms. The volunteers raise additional funds through social functions. Pride and independence continue to be motives for the rejection of central coordination of the fire companies in an area or take-over by the municipality. "Fire Volunteers Face Shortage of Manpower, Civil Rights Pressure," *Wall Street Journal*, June 5, 1969, pp. 1, 8.

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