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MUNICIPAL ORGANIZATION FOR PUBLIC HEALTH IN PITTSBURGH, 1851-1895

by

JACQUELINE KARNELL CORN

DISSERTATION

Presented to the Faculty of the College of Humanities and Social Sciences of Carnegie-Mellon University in Partial Fulfillment of the Requirements For the Degree of

DOCTOR OF ARTS

CARNEGIE-MELLON UNIVERSITY

May, 1972

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CARNEGIE-MELLON UNIVERSITY

College of Humanities and Social Sciences

DISSERTATION

Submitted in Partial Fulfillment of the Requirements

For the Degree of Doctor of Arts in History

Title Municipal Organization for Public Health in Pittsburgh, 1851-1895

Presented by Jacqueline Karnell Corn

Accepted by the Department of History

Readers Harold L. Burstyn (Director of Dissertation) — 22 June 1971 Date

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ABSTRACT

MUNICIPAL ORGANIZATION FOR PUBLIC HEALTH
IN PITTSBURGH, 1851-1895

Jacqueline Karnell Corn

Carnegie-Mellon University, 1971

The development of governmental responsibility for public health during the nineteenth century is conspicuously absent from the historical studies of cities in general and Pittsburgh in particular. The subjects of this dissertation are: 1) the early development of a municipal organization responsible for public health in the city of Pittsburgh and 2) the changing environmental conditions of the city of Pittsburgh which led directly to increased governmental responsibilities for public health.

Municipal Organization for Public Health in Pittsburgh, 1851-1895 describes the general public health issues of the nineteenth century, how and why Pittsburghers organized to promote community health, the public health conditions in Pittsburgh, the institutions that evolved, the medical advances which caused changes in public health policies and the extension of community responsibility for public health.

A forty-five year period was selected for investigation, 1851-1895. In 1851 the Pittsburgh city councils established a Board of Health. The Board was reorganized in 1868, 1872 and again in 1888 when it was succeeded by the Bureau of Health, a subdivision of the Department of Public Safety.

Materials used to investigate the history of municipal

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organization for public health in Pittsburgh included such primary sources as; 1) daily newspapers, 2) annual reports of the Board of Health, 3) annual reports of the Bureau of Health, 4) city ordinances, 5) city directories and biographical reviews, 6) professional journals of the Pittsburgh Medical Society and the American Public Health Association, 7) United States census reports.

It was possible to trace the evolution of the idea that the community should be responsible for aspects of health which are beyond the control of citizens acting individually. The findings of this study are that the development of a municipal organization for public health in Pittsburgh coincided with an expanding economy and rapid population growth. The pressures created by the new urban environment led to the need for increased delegation of community responsibility in the health area. When environmental conditions and epidemics of disease in Pittsburgh could no longer be satisfactorily dealt with on an individual basis, the municipality assumed responsibility, albeit limited responsibility, in these matters. Inadequate last minute responses to health problems characterize the activities of the Board of Health, with a pattern of action taken only in response to a crisis such as an epidemic of disease. The need for improved administrative efficiency to cope with epidemics of disease led to the few innovative changes at the Board of Health, i.e. collection of vital statistics, published reports, employment of a corps of workers and the reorganization of the Board of

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Health in 1888. Municipal uncleanliness, linked to high death rates remained an unsolved problem in the city of Pittsburgh. The spread of disease was facilitated by rapid urbanization and industrialization. A discrepancy existed between those diseases people feared most and those which caused the greatest amounts of sickness and death in Pittsburgh. Finally, a new concept in public health practice, prevention of disease, occurred in 1895 with the use of bacteriological science.

Because of the low priority given to health, as evidenced by the lack of funds allocated for this purpose, inattention to health questions by the governing body, and a minimal amount of pressure from citizens for better health conditions, and because of lack of knowledge of how best to combat disease, the public health officials could not keep pace with deterioration of the urban environment and the accompanying high rates of disease that occurred in Pittsburgh in the second half of the nineteenth century.

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MUNICIPAL ORGANIZATION FOR PUBLIC HEALTH IN PITTSBURGH, 1851-1895

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INTRODUCTION

Industrialism and urbanization, two significant components of nineteenth century history, cannot be separated from the history of public health. They created the conditions that engendered the need for community responsibility for public health. The subjects of this dissertation 1) the early development of a municipal organization responsible for public health in the city of Pittsburgh and 2) the changing conditions that led directly to increased responsibility for public health, illustrate that the same process that created the factory and the modern urban environment also caused enlarged health problems which called for new community action to prevent disease and to control the urban environment. Enlarged populations necessitated a new system of social organization and a more rational way of dealing with problems inherent in city life.

Early in the nineteenth century epidemics of disease focused attention on community health. Sporadic attempts to control disease lost their effectiveness when the sheer size of the city's population required a systematic approach to the control of disease. As health problems grew too large and too complex for individuals to seek their own solutions and to provide for their own physical needs municipalities organized Boards of Health to assume responsibility for public health.

Social attitudes change slowly. Too often human beings ignore or remain unaware of a growing problem until

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it creates havoc. The impact of epidemics of disease over and over again precipitated action to control disease and to control the physical environment of cities in the nineteenth century. The kinds of action taken to control dirt and disease in the nineteenth century were related both to the prevailing social attitudes and the state of knowledge that existed about disease.

When catastrophe struck, in the form of epidemics of yellow fever, smallpox and cholera, in American cities during the nineteenth century, it brought the question of epidemic into sharp focus. The early control of pestilence was usually based upon quarantine and sanitation, methods of control which developed from prevailing ideas about the spread of disease.

The sanitarians, or early health reformers believed that dirt caused disease. They theorized that illness stemmed from miasmas, unwholesome exhalations and emanations from decaying animal or vegetable matter, and that an individual received disease not from another ill person, but from his own surroundings. Filth and dirt heightened the possibility of the spread of pestilence. The miasmatic theory of disease led to the few health regulations made in the first half of the nineteenth century, such as the regulation of markets and attempts to abate the nuisances of filthy privies, dirt and decaying matter in the streets.

A second theory, that of contagion, developed in the nineteenth century. Advocates of this theoretical position held that disease could be transmitted from one person to

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another by direct or indirect contact. Contact with a person suffering from disease or with some secretion or object touched by an ill person was believed responsible for spreading disease.

Proponents of a third theory attempted to reconcile the miasmatic and contagionist points of view. While admitting that infectious diseases were due to either specific or non specific contagia, they believed that contagia could act only in conjunction with other factors, such as the state of the atmosphere, the condition of the soil or social factors. However, the miasmatic theory dominated public health theory and practice throughout the nineteenth century. Although sanitary reformers observed that poverty, inadequate housing and unsanitary surroundings caused the spread of disease, they did not understand the mechanisms that operated to cause specific diseases. A common social attitude toward disease in the nineteenth century was that God punished the immoral with poverty and ill health. This attitude led to the belief that immorality rather than poverty and the resulting conditions of overcrowding, poor housing and physiological misery caused the spread of disease. Nevertheless, epidemics of disease did impress the sanitarians with the need for community action to control the spread of disease. As cities grew and health problems enlarged, these men sought reforms through the extension of the role of government in public health. Indeed, definitions of public health when arranged chronologically, present a picture of expansion and extension of the role of government in promoting public health.

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The nineteenth century definition restricted public health to sanitary measures believed to offer individuals protection against hazards to their health. A problem was within the domain of health authorities if disease reached epidemic proportions or if it involved filth. The bacteriological discoveries of the late nineteenth century and the techniques for their application led to a new concept of public responsibility for the prevention, rather than the arrest or cure, of disease. At this time public health authorities integrated the existing responsibilities for sanitary measures with the new preventive measures provided by science.

Although epidemics focused attention upon health problems in the early nineteenth century a few significant inquiries, in the form of surveys, also uncovered increasing urban health problems. In 1837 Benjamin W. McCready a physician, called attention to the slums and the working conditions in the shops and factories of New York City. In 1848 another New York physician, John C. Griscome, studied the health problems of that city. He published The Sanitary Conditions of the Laboring Populations in New York, which analyzed in detail, the New York slums of the 1840's and their relationship to the sanitary conditions of the population. The American Medical Association also attempted to secure sanitary surveys of cities in the United States.[1] In 1850

1. George Rosen, A History of Public Health, M. D. Publications Inc., New York City, 1958, pp. 237, 238 and 240.

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Lemuel Shattuck, head of the Massachusetts Sanitary Commission, recommended that the Commonwealth of Massachusetts establish a Board of Health to deal with health conditions and urged further health surveys.[2] After the American Public Health Association was founded in the 1870's, that body attempted to survey health conditions in all large American cities.[3] The surveys performed demonstrated that American cities required health reforms; health problems grew with the cities.

In scarcely fifty years, from 1850 to 1895 the new concentration of factories in the cities of nineteenth century America had transformed them from predominantly commercial towns into complex urban centers. During this period Pittsburgh grew from a primarily commercial center into a thriving industrial metropolis. By 1895 factories, tenements, polluted air and polluted water characterized a city associated, at the beginning of the nineteenth century, with a rural setting of hills, forests and beautiful rivers.

Although prior to the Civil War Pittsburgh and other American cities had infant industries, the aftermath of the Civil War changed the United States into an industrial nation. Perhaps Pittsburgh experienced this transformation more intensely than other American cities. The difficult and confusing post Civil War years in the United States in general,

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2. Lemuel Shattuck, Report of a General Plan for the Promotion of Public and Personal Health, Boston 1850. (reprinted by Harvard University Press, 1948.)

3. Public Health: Reports and Papers of the American Public Health Association, vol. II, 1874.

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and in Pittsburgh in particular, brought with them new economic and social conditions compelling city dwellers to adjust to the pressures of urban living. Too often the new situations that called for new measures to alleviate problems were either ignored or neglected until too late; then filth and disease took their toll in the form of high death rates. At that point local conditions forced city officials to act. However, in Pittsburgh, municipal authorities acted in accordance with their long standing ideas about miasmas and did not attempt to use bacteriological knowledge and techniques of disease prevention until 1895.

The years included in this study, 1851-1895, coincided with the expanding economy, rapid urbanization and industrialization of Pittsburgh. In 1850 approximately 46,600 people lived in Pittsburgh; by 1900, 321,600 people resided in Pittsburgh, an increase of 275,000 in 50 years. The growth resulted from natural increase, immigration and the annexation of outlying towns. The growing industries of Pittsburgh attracted large numbers of people to the city. The amount of coal mined, the production of coke, steel, glass and large machinery and oil refining steadily increased during the nineteenth century. In 1870 seven large steel works in Pittsburgh produced 30,000 tons of steel. Within a decade Pittsburgh's steel production was valued at $18,300,000, capital had increased to $12,000,000 and the steel industry employed 8100 workers. In a decade and a half during the 1870's and 1880's an increase of 300 per cent in coal production brought the annual output to $13,000,000, 20 per cent of the

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national total. At the end of the 1870's the city's foundries and machine shops made $5,530,000 worth of products. In a decade the value of the output doubled. At the end of the 1870's Pittsburgh's glassworks employed 5,796 people and produced glass valued at $5,231,971. In ten years that industry's output was worth $6,176,076.[4]

The complexities resulting from this urban and industrial growth in the second half of the nineteenth century, demanded enlarged solutions to promote community health for they created the pressures that caused new health problems, augmented the old ones and conspired to make community health a public concern. In Pittsburgh when disease spread and environmental conditions could no longer be dealt with by individuals, the municipality assumed responsibility for additional aspects of public health. In 1851 Pittsburgh's city councils formed a Board of Health. They reorganized that Board in 1868, 1872 and again in 1888 when it was succeeded by the Bureau of Health. In 1895 the Bureau of Health added to its force a Division of Bacteriology and incorporated the new methods of medical science into its methods of protecting the public's health. The reorganizations of the health agency indicate the growing health needs of the city and the attempts to cope with the health problems directly related to the growing pressures of an increasing population.

The assumption of public health responsibilities by

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4. Stefan Lorant ed., Pittsburgh The Story of an American City, Doubleday and Company, New York, 1964, pp. 162-163.

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the municipality did not always have a rational basis. Emergency situations often precipitated action. The city councils of Pittsburgh did not act unless either excessive dirt, high death rates or fear of an approaching epidemic caused a critical situation. Thus the city councils started a pattern of acting only in the face of crisis when they established the Board of Health in 1851 in response to fear of an approaching epidemic of cholera.

During the following half century the Board extended its responsibilities, inaugurated new functions, added new workers to its ranks, attempted to rationalize its organization and eventually used new scientific knowledge and techniques to combat disease. Throughout this period 1851-1895 lack of funds, lack of knowledge of how best to fight disease, inattention to health problems by the governing body of the city and a minimal amount of pressure from the citizens for better health conditions hampered the activities of municipal health authorities in Pittsburgh.

City councilmen and civic leaders did not always respond to the needs of the citizens of Pittsburgh. Personal gain, rather than the welfare of the citizens, often motivated political leaders. The low priority given to health in nineteenth century Pittsburgh, the acquisitive spirit of the age, the inept government and the indifferent public led to the failure to actively promote public health. Thus in Pittsburgh unhealthy conditions outran attempts to improve them.

Dirt and disease were symptomatic of the problems of the emerging industrial society. Harsh factory conditions,

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long hours of work, crowding of large numbers of people into a given area with inadequate housing, an abundance of dirt and garbage and virtually no planning created the conditions for ill health and the spread of disease. Rapid growth only made the situation worse.

Sometimes the omission of certain problems tells us more about a society than the inclusion of them. Such is the case of smoke and industrial health in nineteenth century Pittsburgh. Although we now readily accept these subjects as public health concerns, in nineteenth century Pittsburgh they were not so regarded. Both the unsightly smoke and the dangerous factory conditions were accepted by the public as necessary outgrowths of the rapid industrial expansion of Pittsburgh. Both illustrate, once again, the priorities in nineteenth century Pittsburgh. Apparently industrial expansion headed the list, with public health trailing somewhere on the end of that list.

Smoke was a symbol of industrial productivity. "Where there's muck there's brass!", said the apologists for Pittsburgh's smoky atmosphere. Travelers romanticized the smoke of Pittsburgh. Constance Fennimore Woolson wrote in Picturesque America, "It has the picturesque aspect of a volcano; a cloud of smoke rests over it, and at night it is illuminated by the glow and the flash of the iron mills filling its valley and stretching up the hillsides, resting not day or night, but ever ceasingly gleaming, smoking, roaring. Looking down on Pittsburgh at night from the summit of its surrounding

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hills, the city, with its red fires and smoke, seems satanic. Quiet streets there are and pleasant residences...But it is the smoke and fire of Pittsburgh that gives it its character."[5] In all the reports of the Board of Health and the Bureau of Health between 1872 and 1895 there is not one mention of a health problem from smoke. In fact, many physicians believed that the carbon and sulfur in the air kept Pittsburghers healthy because the smoke retarded miasmatic diseases.

The working man of Pittsburgh knew about industrial hazards. He experienced them daily. But industrial hazards were not considered a health question until the second decade of the twentieth century. In 1911 Alice Hamilton undertook a survey of dangerous trades for the federal government. In her autobiography she described the conditions that she had seen in a lead plant in Pittsburgh. "I had been through their plant and found a drying room with a ceiling so low that the men had to stoop way over while they emptied the top pan. The men had told me that room was known as "the morgue".[6] She also told of the numerous accidents in the mills. "Today I went over to the West Penn Hospital to look through the records. It is an indescribably dingy place, smoke-begrimed and ugly. One of the great Carnegie steel mills is just below it and as I sat by the window I could watch the ambulances crawl up the hill to the accident

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5. Constance Fennimore Woolson, "On the Ohio", William Cullen Bryant, ed., Picturesque America; Or, The Land We Live In, Appleton and Co., New York, 1874, vol. II, p. 153.

6. Alice Hamilton, Exploring the Dangerous Trades, Little Brown and Co., Boston, 1943, p. 132.

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entrance with a new victim inside. Three came while I was there. So many cases are sent from the mills that evidently the clerk got tired of writing the name of the Company and had a rubber stamp made which, appropriately enough, he uses with red ink. All down the pages came these red blotches, just like drops of blood."[7]

Not until 1938 did Pennsylvania reluctantly assume some regulatory responsibilities for industrial health in its Department of Public Health. The Federal Government did not accept regulatory as contrasted to investigatory responsibility in this field, until December 29, 1970 when the Federal Occupational Safety and Health Act was passed by the Congress.[8]

Public health problems are recurring ones. Diseases that occur may change from the infectious ones of the nineteenth century to the chronic diseases of the twentieth century, but disease remains a public health problem. The urban environment causes concern today as it did in the nineteenth century. It is hoped that the study presented here will broaden our understanding of present environmental conditions, their relationship to disease, and most important, the public perception and response to these situations. By uncovering the evidence of past attempts to cope with similar problems, we gain insight into present and future alternatives.

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7. Ibid., p. 133.

8. Federal Occupational Safety and Health Act of 1970. Public Law 91-596, 91st Congress, S 2193. Dec. 29, 1970.

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I. EARLY HEALTH REGULATIONS IN PITTSBURGH

Haphazard solutions to environmental problems and a minimum amount of attention to the physical needs of an expanding community characterize early health regulations in Pittsburgh. By 1850 the few ordinances passed to promote health in Pittsburgh no longer sufficed to retain a healthy atmosphere which depended upon adequate housing, good water supply, pure food supply and the absence of filth. Lack of planning to create these conditions, alongside of the rapid population growth limited the effectiveness of the few regulations that did exist. Pittsburgh's early health regulations did not keep pace with the expansion of the city which created an environment that facilitated the spread of disease. Only the catastrophe of an epidemic of disease mobilized the community to assume responsibility for aspects of public health beyond the control of citizens acting individually.

In 1816 a charter legally changed the rustic borough of Pittsburgh into a city. The city built at the point of land where the Allegheny and Monongahela Rivers meet to form the Ohio, and surrounded by hills and forests contained approximately 10,000 people in 1816. In 1840 the population of Pittsburgh was 21,500; by the year 1850, 46,600. During the nineteenth century the city evolved from a commercial center into a thriving industrial metropolis. We shall see that while this evolution, characterized by the growth of industry, extension of the urban area and an expanding population, created the need for expansion of community services and

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functions, the priorities of a growing industrial city did not include health as a major item.

Public health practices in the nineteenth century emanated from the constant threat of disease. Fear of epidemic disease pervaded the piecemeal and hesitant mobilization of the community for achieving better health in the city. The theory that disease was caused by miasmas, unwholsesome exhalations or emanations arising from decaying animal and vegetable matter, became the premise for the few health regulations enacted by city councils. Essential to the theory of miasmatic disease was the concept that an individual received disease not from another ill person, but from his own surroundings. The corollary to the miasmatic theory of disease, that filth and dirt of all kinds heighten the possibility of the spread of disease, became the cardinal principal which influenced health regulations.

The markets, the water supply and the existence of "nuisance" (a catch-all term for loose animals, overflowing privies and vaults, dirt and decaying matter in the streets and alleys and the general filthy state of some areas of the city) were the health concerns of the city councils of Pittsburgh prior to the mid-nineteenth century.

Thus in 1816 city councils passed an ordinance to regulate Pittsburgh markets. The ordinance generally concerned weights and measures and the licensing of stalls. Only two of the thirty-one sections had any reference to health. Section twelve prohibited butchers or other people

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from depositing any garbage or offal in either of the market houses, under penalty of loss of license to use the markets for one year.[1] Section nineteen of the same ordinance excluded dogs from the market house on market days.[2]

"By 1820 the water problem in Pittsburgh had become acute. Lines of people formed in the morning before public and private wells and every morning and evening women and children would be seen wending their ways to the rivers. Many householders kept tanks in their backyards and had them filled by the old men with barrels, or carts on runners, who made a livelihood by selling river water for three cents a tubfull or six cents a barrel."[3] An 1824 ordinance raised money for a water works in Pittsburgh. The primary purpose of the ordinance was protection against fire; the secondary purpose to furnish a means of cleanliness, promote health and add to the comfort and convenience of the inhabitants of Pittsburgh.[4]

Nuisance covered a gamut of health problems, including hogs running at large in the streets, overflowing vaults and privies, depositing of offensive matter in the streets and running a bawdy house. Early laws regulated the sinking of privies, and the removal of common nuisances, i.e., dead

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1. City of Pittsburgh, Ordinance Book A1, p. 20.
2. Ibid., p. 21.
3. Leland Baldwin, Pittsburgh The Story of a City 1750-1865, University of Pittsburgh Press, 1970, p. 206.
4. City of Pittsburgh, Ordinance Book A1, p. 80.

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animals, garbage or offal, putrid meat and matter offensive or unwholesome to the neighborhood.[5] Laws regulated slaughter houses because they were considered injurious to the health of the inhabitants of the city.[6] Hogs and dogs roamed the streets of Pittsburgh. An ordinance in 1821 gave the city constable the right to seize and take into custody all hogs running at large within the city limits.[7]

In 1832 city councils enacted the first Pittsburgh ordinance for "sanitary purposes". The action of the city councils, creation of a Sanitary Board, stemmed from fear of cholera and the prevailing belief in the relationship between dirt and disease. The city councils acted to solve public health problems in this case because they believed that the filthy state of the city had created an environment that facilitated the spread of the disease.

The Sanitary Board created by the Select and Common councils consisted of two members from the Select council and three members from the Common council, the Mayor, the Recorder, and the Alderman of the city. The Sanitary Board, given the duty to "adopt and direct all such measures as they think necessary for averting the introduction of the frightful epidemic disease which has approached the borders of our country,"[8] and the power to, "cause the streets, lanes,

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5. Ibid., p. 30.

6. Ibid., p. 39.

7. Ibid., p. 59. See also John Duffy, "Hogs, Dogs, and Dirt: Public Health in Early Pittsburgh," Pennsylvania Magazine of History and Biography, vol. 86, no. 1, 1963, pp. 294-305.

8. Ibid., p. 175.

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alleys, buildings, lots and shores of the rivers to be explored, cleansed and purified in an efficient manner,"[9] also could relieve the infected by providing suitable depots for the reception of the sick. The councils granted authority to the Sanitary Board to divide the city of Pittsburgh into districts and to appoint assistants to examine the districts daily and to report back to the Sanitary Board or Mayor the sanitary conditions of the districts. The ordinance provided for tri-weekly meetings of the Sanitary Board and additional meetings if necessary. The ordinance admonished the superintendent of the waterworks "to obey and execute the written orders of the Sanitary Board relative to the management of the water for cleansing and purifying the city."[10] It instructed the citizens of Pittsburgh to "obey the Sanitary Board and cleanse their gutters, pavements and spaces in front of their respective lots."[11] Refusal to obey meant the imposition of a fine.

In that same year, 1832, city councils authorized the Mayor to borrow ten thousand dollars for sanitary purposes,[12] raised money to extend the water works,[13] passed one ordinance to provide for cleaning the streets in the city of Pittsburgh,[14]

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9. Ibid.
10. Ibid.
11. Ibid.
12. Ibid., p. 177.
13. Ibid.
14. Ibid., p. 178.

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and passed another ordinance concerning the deposit of offensive matter.[15] In 1834 city councils passed still another health ordinance to suppress the nuisance of filthy vaults and privies.[16]

All these attempts to regulate health were directed toward creating some measure of cleanliness in Pittsburgh, and illustrate that the basis for community action to promote health had its roots in the ancient miasmatic theory of disease. When the citizens feared that disease in epidemic form was imminent they used the one weapon they had, cleansing the city. It would take time, a new attitude toward community responsibility for health and the use of the new bacteriological knowledge, developed at the end of the nineteenth century, to change the approach to community health problems. Another equally important ingredient necessary to cope with health problems was a systematic, long range approach toward community health problems. Short lived attempts at municipal cleanliness, that lacked continuity, and were far removed from an understanding of the vectors of disease could never really avert crisis.

Table I indicates yearly appropriations for sanitary purposes from 1836 to 1851. The irregularity of expenditures for public health by the city councils suggests that community leaders responded only when they anticipated a health crisis.

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15. Ibid., p. 179.
16. Ibid., p. 196.

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The data illustrates the lack of community interest in public health, except in times of crisis, i.e. epidemics. In each crisis period there were relatively large appropriations for sanitary purposes. After the crisis, appropriations were reduced and remained at a low level until another crisis arose.

City councils appropriated funds either to the sanitary fund or the sanitary committee, which illustrates that the entire thrust of community action was toward what later public health historians called the "sanitary movement". The major theme of the sanitary movement, the solution of health problems by cleansing the city, derived from the idea that a city free of dirt was a healthful place because dirt caused disease.

Epidemic disease both threatened and appeared in Pittsburgh time and time again prior to 1851. But in 1851 when the specter of an epidemic of infectious disease once more menaced the inhabitants new actions were taken, at the initiative of the State Legislature in Harrisburg. The State Legislature passed an Act of Assembly creating a Board of Health in the city of Pittsburgh. The Board remained the health agency for Pittsburgh for thirty-seven years until 1888 when the city government was reorganized and the Board became the Bureau of Health.

The sanitary conditions of Pittsburgh and the citizens' fear of cholera were the primary reasons for establishing the Board of Health. In 1851 Pittsburgh had achieved

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Table I

City of Pittsburgh:

Yearly Appropriations for Sanitary Purposes 1836-1851[17]

Year	Institution	Amount in dollars
1836	Hospital and Sanitary Fund	1,000
1837	Hospital and Sanitary Fund	1,000
1838	Sanitary Fund	1,000
1839	----------	-----
1840	Sanitary Fund	-----
1841	Sanitary Fund	100
1842	Sanitary Fund	50
1843	Sanitary Fund	100
1844	Sanitary Fund	-----
1845	Sanitary Fund	-----
1846	Sanitary Committee	200
1847	Sanitary Committee	50
1848	Sanitary Purposes	1,000
1849	Sanitary Purposes	1,000
1850	Sanitary Purposes	1,500
1851	Sanitary Purposes	1,000

17. Appropriations from Ordinance Books, A1-1., City of Pittsburgh.

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a rate of growth and a population that precluded further delay in establishment of a Board of Health. Other growing American cities had already created boards of health and Pittsburgh followed the examples of Boston, New York and Philadelphia. Although it was not as effective as the councils had hoped, the new Pittsburgh Board of Health was the embryonic form of a later, more rational organization.

When creating the Board of Health in Pittsburgh, the legislature in Harrisburg prefaced their act with: "An act to establish and secure the city and port of Pittsburgh from the introduction of pestilential and infectious disease."[18] Thus, the Board had one encompassing purpose, to keep Pittsburgh free from infectious disease. The Board consisted of nine members elected by the city councils. Board members chose a president, secretary and treasurer and made provisions for regular meetings.

In order to achieve its explicit stated objective of minimizing the impact of infectious disease, the Board had two weapons at its disposal, sanitary measures and quarantine. The Board had power to establish quarantine when they "shall deem it necessary for the protection of the said city against any prevailing pestilential or contagious disease."[19] "If it appeared that there was disease from abroad threatening the city," the Board could, "take measures if they became

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18. Annual Report of the Board of Health 1878, Appendix, p. 69.

19. Ibid., p. 69.

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aware of contagious disease within the city limits...by forbidding and preventing all communication with the infected house or family except by means of physicians, nurses, etc. ..."[20] The Board could also establish a lazaretto and such public hospitals as may be necessary. The extremely general act left room for varied interpretations of the Board's quarantine powers. Although the law provided penalties for violations of quarantine regulations, the lack of enforcement placed a major obstacle in the way of the Board's effectiveness. Provisions for sanitary matters were as general as those for quarantine. The Board of Health was authorized "to have all objects which may have a tendency to endanger the health of the citizens to be removed or corrected as they shall deem it necessary for the health of the citizens."[21]

The innovation for Pittsburgh provided in the Act of Assembly that created the Pittsburgh Board of Health, was for the registration of deaths. Americans interested in public health understood that rational measures could not be taken against the spread of infectious disease without statistical data about occurrence of the disease. The Shattuck report published in 1850 stressed the need for vital statistics.[22] Shattuck had helped to initiate state-wide registration of

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20. Ibid., p. 70.

21. Ibid.

22. Lemuel Shattuck, Report of a General Plan for the Promotion of Public and Personal Health, Boston, 1850. (Reprinted 1948 by Harvard University Press.)

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vital statistics in Massachusetts in 1842. He also headed the Massachusetts Sanitary Commission of 1850 and directed a sanitary survey of Massachusetts. The commission urged further sanitary surveys and recommended, in the field of vital statistics, a decennial census, uniform nomenclature for causes of death and the collection of data by age, sex, economic status, and occupation. The Pittsburgh law provided only for the registration of deaths. It required a physician or surgeon in attendance upon any person who may have died in the city to "leave a note in writing with some member of the family of the deceased specifying the name, age, color, residence, whether married or single, employment, and the disease from which the person died. If there was no physician in attendance, or if the physician neglected or refused to perform his duty then the family of the deceased should apply to a physician appointed by the Board of Health to make necessary examination and furnish the note referred to."[23]

In 1852 the rapidly approaching danger from cholera made it necessary to extend the authority of the Board of Health. A supplement to the original act became law and imposed a number of additional duties upon the Board of Health. These new duties included: collection and removal of nuisances found on the public highways, wharfs, docks, etc., requiring privy wells to be emptied or corrected, giving authority for securing by purchase or otherwise a place or places where

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23. Annual Report of the Board of Health 1878, Appendix, p. 71.

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nuisance shall be deposited, providing for a systematic plan for removing the contents of cesspools and other offensive substances, fixing fees for licenses and permits to engage in filth removal from cesspools and prescribing the mode of legal procedure and fixing penalties for violations. The act also authorized the appointment of a health officer, to serve as executive officer of the Board of Health.[24]

Thus, based upon the view that the weapons necessary to avert the crisis of epidemic disease were municipal cleanliness and quarantine, the governing body of Pittsburgh, impelled by a crisis precipitated by the fear of epidemic disease, created a Board of Health. This response demonstrated the new idea that citizens acting collectively have a responsibility for community health.

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24. Ibid., pp. 71, 72, 73.

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II. THE FIRST TWENTY YEARS OF THE BOARD OF HEALTH

For almost two decades the Board of Health and city officials stressed municipal cleanliness as the alternative to epidemics of disease. Only a crisis goaded the city councils to act to protect the health of citizens of Pittsburgh. Although city councils did make meager appropriations earmarked for cleaning the city, these small yearly appropriations did not grow larger until the citizens feared an epidemic of disease.

Fear of epidemics dominated and directed the few public health measures that existed in the 1850's and 1860's, with quarantine and sanitation the only available public health weapons to either avert or moderate the effects of epidemics. In these twenty years, 1850-1870, the Board of Health was ineffectively organized; a rational administrative apparatus did not exist, there was no permanent working force attached to the Board of Health, other than the physician of the Board, and vital statistics were non existent. Without vital statistics the Board did not have a clear picture of the public health situation in Pittsburgh.

During 1851, the fear of cholera as we have seen, led to the formation of the Board of Health. In June 1851, city councils chose, from among their own members, the first members of the Board of Health. The Daily Pittsburgh Gazette's published account of council's meeting reported that after choosing members of the Board of Health, the councils declared the Board organized and Pittsburgh had a new administrative

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unit, technically responsible for the health of its citizens. Subsequent events proved the Board even less impressive in fact than on paper.

The Board of Health did not print and publish the proceedings of its meetings, nor did it print and publish annual reports until 1872. In place of published proceedings the newspapers reported accounts of the Board of Health meetings at irregular intervals. For example, in July 1851, a short item appeared in The Daily Pittsburgh Gazette entitled "No Sickness". It said, "The Board of Health met last night, but there being no sickness in Pittsburgh, adjourned without doing anything."[1] The Clerk of the Board of Health and later the Physician to the Board of Health collected data about weekly interments in the City of Pittsburgh which the newspapers published at sporadic intervals.

Pittsburgh's newspapers also published intermittent, indignant editorials that called the attention of the Board of Health to unattended nuisances or sanitary oversights, usually in the summer. "We call attention to the Health Officer and the Street Commissioners to the condition of Post Office Alley, and some of the premises adjoining it. It is in a very filthy condition, extremely unpleasant to those whose business requires them to pass through it, or to do business in the buildings the windows of which face open upon it, during this extremely warm weather. It is not only

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1. Daily Pittsburgh Gazette, July 18, 1851.

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unpleasant but positively detrimental to the health of the neighborhood."[2] Another article in a similar vein complained, "We would like to call the attention of the Board of Health to a pigpen in Wilson's yard, just behind our offices. The fumes arising from it and slop with which its occupant or occupants are fed are neither very pleasant nor salubrious in this hot weather. If people will keep pigs in a crowded city they should wash them daily and keep them as clean as a fashionable lady would her lap dog."[3]

In 1851 when cholera had seemed imminent the city councils designated 1,000 dollars for "sanitary purposes". Cholera did not strike, and in 1852 appropriations were non-existent. The Board of Health received 500 dollars in each of the following years, 1853 and 1854. These inadequate funds reflect the negligent attitude of the city councils toward public health. Appropriations of money assigned to the Board of Health are listed in Table II.

It must be remembered that the Board of Health was in reality an emergency measure against cholera. One can surmise, even in the absence of records of the number of cases of cholera and the unreliable death records, that cholera appeared only to a limited extent in the years 1851 to 1853. The Board of Health and the citizens of Pittsburgh watched the havoc created by cholera in cities all around

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2. Ibid., June 18, 1852.
3. Ibid., July 20, 1852.

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TABLE II

City of Pittsburgh:

Yearly Appropriations for Board of Health or for Sanitary Purposes (in dollars)[4]

Year	Amount	Purpose
1851	1,000	Sanitary Purposes
1852	-----	----------
1853	500	Board of Health
1854	500	Board of Health

4. Figures for appropriations were found in Ordinance Book A1, City of Pittsburgh.

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them, yet somehow refused to believe that disaster in Pittsburgh was imminent. Thus, the Board reassured the inhabitants of Pittsburgh that their city was a healthful place. For example; "Health Report: the number of deaths for the week ending the twentieth instant, is unusually low -- there being only ten set down in the weekly report. The health of the city has never been better."[5] In a similarly consoling manner the Board of Health reported, "Health of the City: the deaths in the city last week amounted to but fourteen. This taking the season of the year into consideration is a small number out of so large a population and speaks well for the health of Pittsburgh."[6]

Nevertheless, cholera neared Pittsburgh. Ominous warnings appeared toward the end of June 1854. On June 30, 1854 the Daily Pittsburgh Gazette reported that two passengers on the Ohio and Pennsylvania Road had died of cholera beyond Mansfield. Death from cholera occurred on the Vienna during a trip between Cincinnati and Pittsburgh. "Gradually this fearful disease draws nearer to us, and we should be prepared for its advent among us,"[7] the Daily Pittsburgh Gazette warned readers at the end of June. From that day on the number of cases of cholera steadily increased. During July and August of 1854 the number of deaths attributable to cholera

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5. Daily Pittsburgh Gazette, March 24, 1853.
6. Ibid., June 27, 1854.
7. Ibid., June 30, 1854.

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quickly increased. On September 16, the Board of Health reported forty-six deaths for one day in the city, and a total of ninety-nine deaths for a one week period.[8] Those who could left the city. The editors of the Daily Pittsburgh Gazette apologized for the sparseness of their newspaper because many of their staff "took to the woods in fear of cholera." On September 21, the Daily Pittsburgh Gazette reported 560 deaths from cholera since the fourteenth of September.[9] By the end of September nobody doubted that cholera had appeared in Pittsburgh in epidemic form. The reported number of deaths from cholera in 1854 vary. The Board of Health attributed 535 deaths to cholera.[10] Leland D. Baldwin in his book, Pittsburgh, The Story of a City, noted that, "The candid Post reported that in two weeks in September there were 400 deaths from cholera."[11] The only certainty is that cholera existed in a virulent form in Pittsburgh in the summer of 1854.

In addition to uncertainty with respect to the number of deaths due to cholera, it is not possible to determine the nature or extent of efforts to arrest the disease. The principal preventive measures were the cleaning and disinfecting of a number of privy vaults, the sprinkling of lime in the streets and gutters, general purification of infected

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8. Ibid., September 24, 1854.
9. Ibid., September 20, 1854.
10. Annual Report of the Board of Health 1889, p. 55.
11. Leland D. Baldwin, Pittsburgh, p. 212.

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streets, and the lighting of numerous bonfires in the infected districts.[12] Knowledge of how best to combat the disease was limited and, as noted above, the amount of money appropriated for this purpose was minimal.

The common belief that filth caused the disease of cholera accounted for attempts at sanitary measures. But many people also believed that cholera infected only the irreligious, the immoral, and the poverty-stricken. They associated the disease with the poor, who were believed to indulge in excesses of all kinds. Poverty was too often looked upon as a moral vice.

Because cholera could not be conquered with disinfectants, bonfires or sanitary measures the city fathers tried fasting and prayer. Frederick E. Volz, the Mayor of Pittsburgh, and William Adams, the Mayor of Allegheny, jointly issued the following proclamation on September 16, 1854 at the height of the cholera epidemic. "A recommendation: whereas it has been signified to us that it is the wish of a large and respectable portion of the community acting in concert with the clergy of the two cities, that we should officially designate and set apart a certain day for the purpose of "general fasting, humiliation and prayer" as humble and devout acknowledgement of our dependence upon Almighty God, the Creator and Preserver of the Universe, and our hope that He will in His kind mercy, bless the earth and forgive our sins, stretch forth His hand to the preservation of His afflicted

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12. Annual Report of the Board of Health 1889, p. 55.

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people from all calamity, and especially try to stay the progress of Pestilence among us. This, therefore is to give public notice, that the 21st of September instant, is recommended by us as a proper day, when the citizens of Pittsburgh and Allegheny, abstaining from all worldly employment, shall repair to their several places of worship, and in the full contrition of their hearts, make humble confession of their sins, and supplicate the blessings of offended Heaven against all immediate and future causes of tribulation."[13]

The epidemic of cholera finally declined at the end of September, leaving many surviving citizens destitute. The Board of Health met in September to make provisions for victimes of the epidemic. They recommended that aid be given through each of the city wards, and that each ward organize benevolent societies to cooperate with official authorities to give aid to relieve the poor. The benevolent societies had authorization to solicit funds to help the needy.

The epidemic of cholera in 1854 caught the Board of Health off guard, ill organized and inadequately funded to respond effectively to the challenge of disease in Pittsburgh. In the aftermath of the epidemic voluntary societies, rather than an agency of the municipal government assumed responsibility to aid needy citizens.

Cholera never again struck in Pittsburgh in such a virulent form, but fear of the disease remained. The cholera epidemic had reached its peak in the summer months of 1854.

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13. Daily Pittsburgh Gazette, September 16, 1854.

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The following spring the citizens were urged to clean up their city in an effort to ward off a newly feared epidemic. Articles and complaints about sanitation began to appear in the newspapers at the end of March 1855. Complaints ranged from the subject of unremoved filth to that of dead horses and cows left in the streets.[14] A tongue-in-cheek article appeared in the Daily Pittsburgh Gazette. "The people of Pittsburgh fearing a revisitation of the the pestilence which afflicted them last season, have gone to work in earnest to put their household in order...Cleveland Leader. The Leader is certainly ahead of all contemporaries in these parts. If the news is true, we are glad to hear it."[15]

A few Pittsburgh citizens died from cholera in 1855, and the same sequence of inadequate preventive measures were repeated in 1856. As soon as spring arrived newspaper editorials complained about the filthy condition of the city. An editorial appeared in April 1856 entitled "Street Cleaning". It cautioned Pittsburgh citizens that, "Warm weather is approaching and it is necessary for the preservation of the public health that the city should undergo a thorough renovation. It is not pleasant to contemplate that the lives of hundreds of our citizens who fell victim to the cholera in 1854 were sacrificed recklessly and thoughtlessly for the want of sanitary regulations. Had there been no local causes to invite the fell destroyer who knows but we should have escaped...

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14. Ibid., March 22, 1855.
15. Ibid., May 8, 1855.

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Nature always compensates herself for her violated laws...We will ask them (city councils) to take into consideration the filthy condition of the city, and inquire if some better plan cannot be derived than that now in use which is so utterly inefficient."[16]

The same responses continued throughout the decade. Fear of an epidemic of disease precipitated limited action based upon a limited concept of community responsibility for public health and a belief that dirt caused disease. The city councils appropriated small amounts of money for street cleaning for each year during the period 1853 to 1859 and even smaller amounts to the Board of Health. Although responsible for the cleanliness of the streets, the Board shared this responsibility with the Street Commissioners. Table III indicates the amounts of money allocated to the Board of Health and for street cleaning.

In 1856, in response to the debacle caused by the cholera epidemic the Board of Health received additional powers to enforce sanitary regulations, but it shared responsibility for enforcement with the Street Commissioners, the Mayor and the Alderman. The new law was vague. It prohibited citizens from placing or throwing any object, matter or thing that might endanger the health of people, on any lot, street, lane or alley. Fines, upon conviction, of not less than two or more than five dollars went to the Board of Health.

The Civil War and the industrial growth that ensued

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16. Ibid., March 15, 1856.

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Table III

City of Pittsburgh:

Dollar Allocations to the Board of Health

and for Street Cleaning, 1853-1859[17]

Year	District I	District II	Board of Health
1853	2,200	2,200	500
1854	2,200	2,000	500
1855	2,200	2,000	1,300
1856	2,200	2,000	1,000
1857	2,500	2,000	1,000
1858	-----	4,100	1,000
1859	-----	2,000	100

17. Figures for appropriations were found in Ordinance Books A1 and 1, City of Pittsburgh.

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profoundly influenced later Pittsburgh history. The Civil War stimulated the Pittsburgh industry which helped to furnish the army with the materials of war. Production of iron and steel grew steadily and the price of steel rose. The war with its demands upon Pittsburgh's industrial capacity brought the city head on into the industrial revolution. Iron and steel manufacturing assumed great importance and gave impetus to the coal industry. The glass industry expanded and Pittsburgh became the first great center of oil refining. In 1866, annual exchange clearings of the Pittsburgh Clearinghouse Association, reflecting the amount of business activity in Pittsburgh, totaled $83,731,242. In 1870 the annual clearings of the Pittsburgh Clearing House Association totaled $786,694,231. Between 1880 and 1890 the assessed valuation of real estate in the City of Pittsburgh rose from $99,600,000 to $207,300,000.[18]

During the war years, a time of money-making and frenzied growth, efforts in the direction of creating a healthful city were held in abeyance. "The streets and the public utilities fell into decay while citizens prospered; petroleum waste dumpted into the rivers by the refineries was pumped into the city reservoirs and no one seemed to care save those who had to drink it."[19]

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18. Stefan Lorant ed., Pittsburgh the Story of an American City, Doubleday and Company, New York, 1964, pp. 467, 469, 471.

19. Leland Baldwin, Pittsburgh, p. 323.

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The physical expansion of Pittsburgh in the decade of the sixties can be observed in the numerous ordinances passed during these ten years. The City Councils passed ordinances to create a large number of public sewers, to extend old streets and open new ones, to grade, pave and widen streets, to number houses and to provide for the extension of street railways. The population of Pittsburgh grew from 49,221 people in 1860 to 86,076 people in 1870, an increase of 36,855 people.[20] During this period of industrial, physical and numerical growth the city councils alloted the Board of Health a mere 500 dollars for each of the war years and the same amount for each year that followed in that decade. The sanitary condition of the city left much to be desired.

Except when epidemic disease threatened, it is difficult to ascertain what the Board of Health did in the decade of the 1860's. It surely did not keep pace with the growing health problems of the city of Pittsburgh. Although cholera was the most spectacular of the epidemic diseases of the nineteenth century, there were also other diseases, tuberculosis, smallpox, diptheria and typhoid fever, associated with the crowded conditions of emerging urban communities and the growth of industry. They too accompanied the dirt, overcrowding, want and ugliness common in the new industrial world. In the absence of reliable statistical data about causes of death prior to 1872, I assume that cholera caused

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20. See Table IV, Chapter III, for numerical and percent changes in population of Pittsburgh from 1850 to 1900.

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fewer deaths than other infectious diseases. Nevertheless, fear of cholera dominated the activities of public health officials and led them to neglect other diseases.

Thus in 1866 in response to a newly feared outbreak of cholera the same chain of events occurred that had occurred a decade earlier. Fear stimulated a response in the form of a call to clean the city of Pittsburgh. The usual editorials appeared in the press. "Pittsburgh has long maintained the reputation of being the healthiest city in the Union: and while this may be true, it is equally true that the cholera and other epidemic diseases have at times made sad havoc among our people. Although the rate of mortality may be greatly reduced by proper attention to sanitary measures -- the most important of which is cleaning and purifying inside and outside of all dwellings, shops, stores, factories, stables, etc., within the city limits. There are hundreds of filthy cellars, filthy kitchens, filthy yards and filthy stables which no Sanitary Board can reach. These and more especially the back yards should receive a thorough cleaning before the warm weather sets in. All cesspools which require emptying should be attended to before the first of May and plentifully supplied with lime or some other disinfectant. If each and every occupant of dwelling, store or shop would have his premises thoroughly renovated between the present time and the first of May there would be but little work for the Board of Health or the Sanitary Committee, and the people would not feel the dread of the cholera which is now experienced in view of the filthy conditions of the city

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generally. Let every family see that the work of purification is begun at once and carried on until every particle of refuse or decaying matter shall be removed. By this means the city can be thoroughly renovated in a few weeks, and the expense will be so trifling to each that no one will feel it a burden. If the people will only attend to their private premises, the Board of Health and the city authorities will attend to nuisances of a public nature and to keeping the streets, lanes, and alleys in a healthful condition."[21]

In May 1866, the city councils responded by appointing a Sanitary Committee. The committee redistricted the city and engaged five men to see that the city was kept clean. The Board of Health agreed to work with the Sanitary Committee, which was supposed to report to the Board all nuisances that came to their notice. Conflict existed between the Board and the Committee because both groups had the same jurisdiction. This peculiar delegation of powers by the city councils suggest that they had little faith in a Board of Health, especially one incapable of combatting epidemic disease successfully orof effectuating sanitary reform in the city.

We have seen that the Board was helpless when confronted with the numerous health problems of a growing city. They lacked adequate funds and did not have any clear cut authority to deal with the health questions of the day. They

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21. Daily Pittsburgh Gazette, March 16, 1866.

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did not have vital statistics for use as a tool to counteract the growing health problems and a working force did not exist to carry out the measures of the Board.

In 1869 Crosby Gray became Health Officer of the Board of Health. Many years after his election, he said about himself, "Without experience in the conduct of affairs pertaining to public sanitation he, with considerable hesitation accepted the position and assumed duties." About the Board he said, "The stock in trade on hand consisted of one city code; two death registers, containing the mortality lists up to that time; one minute book, containing a record of the proceedings of the Board from the date of its organization; one cesspool permit book; three hundred blank certificates of death, presented in sanguinary colored ink; two hundred blank schedules for use of sextons in making returns; one hundred blank lists for abatement of nuisances; one hundred blank lists of diseases arranged alphabetically; one antiquated desk and a half dozen chairs. The working force consisted of the health officer and one assistant. The population of the city was estimated to be 85,000."[22]

The reaction of officials and citizens to a real or feared epidemic of cholera illustrates again and again that the thrust of public health practices in the 1850's and 1860's was based upon a crisis philosophy. It was this attitude that retarded the rational development of the Board of Health. In order to create a more rational Board of Health and to

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22. Annual Report of the Bureau of Health 1889, pp. 56-57.

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eliminate inadequate, last minute responses to health problems, the Board required a more effective administrative apparatus and a more systematic collection and compilation of vital statistics.

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III. EFFORTS TO CREATE A MORE RATIONAL BOARD OF HEALTH

By 1872 a combination of internal factors (urban expansion and population growth), external factors (the influence of the American Public Health Association, and the example set by other cities) and an epidemic of smallpox led to a redefinition of the responsibilities, powers and duties of the Board of Health. One can discern at this juncture, a change in social attitude toward public health. Government officials no longer could view infectious disease and sanitation as problems to be dealt with solely by the individual affected. Health and sanitation became community problems subject to community measures for solution. Social attitudes still narrowly defined the limits of community responsibility. Nevertheless, the germ of the idea did appear. Today the scope of community responsibility is still a puzzle to health officials and public health workers concerned with housing, the delivery of health services, and the rising incidence of drug addiction.

Pittsburgh steel and industry, spawned by the Civil War, transformed the small, commercial city into a complex industrial center. The area and the population of Pittsburgh grew steadily. The population of Pittsburgh was approximately 50,000 in 1860; by 1880 it had reached 156,000, a threefold increase. Table IV shows the rapid rate of population growth in Pittsburgh between 1850 and 1900.

The pressures created by the need to accommodate large numbers of new residents intensified the major health

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Table IV

Population Growth in Pittsburgh[1]

Year	Population	Change from Previous Decennial Listing Persons	% Change
1850	46,601		
1860	49,221	+ 2,620	+ 5.6
1870	86,076	+ 36,855	+ 75.0
1880	156,389	+ 70,313	+ 81.6
1890	238,617	+ 82,228	+ 52.6
1900	321,616	+ 82,999	+ 34.7

1. Population Statistics from the Pennsylvania Manual.

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problems of sanitation and the spread of infectious disease.

At the same time the health measures taken in Pittsburgh did not result entirely from internal factors. Although local environmental conditions influenced the framers of the new law, external factors also had their effect. Citizens of other cities experienced rapid expansion and faced circumstances similar to those encountered by Pittsburghers. The Pennsylvania legislature patterned the new Act of 1872 after the ordinances of Chicago. The American Public Health Association founded in 1872 also stimulated communities to mobilize and organize for better public health. The stated object of the association was "the advancement of sanitary science and the promotion of organizations and measures for the practical application of public hygiene."[2] The American Public Health Association held annual meetings at which members presented papers related to all aspects of public health. Its annually published journal of reports and papers undoubtably influenced members of the Pittsburgh Board of Health.

Scientists made new bacteriological discoveries in the late nineteenth century, but years intervened before the incorporation of the new knowledge into the activities of the Pittsburgh Board of Health. Prior to 1895 new bacteriological discoveries played only a limited role in Pittsburgh's organization for public health.

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2. Public Health Reports and Papers, vol. I, p. xii (A.P.H.A.).

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Once again an epidemic demonstrated the inadequacies of the Board of Health and was the impetus to revamp the existing health regulations in Pittsburgh. In 1871-72 epidemic smallpox engendered a relative flurry of activity at the Board of Health. The Board organized a corps of sanitary inspectors for special service under Crosby Gray, the health officer. It divided the city into districts with an officer assigned to duty in each one.[3] It made provisions for gratuitous vaccinations and authorized the health officer to advertise in the city papers that the physician to the Board of Health would perform free vaccinations each Monday at the office of the Board of Health.[4] In June 1871, health officers were instructed to put all cases of smallpox under the care of the city physician and to isolate the disease "as much as possible." The Board of Health also designated physicians to give free vaccinations throughout the city.[5] Though the Board did not have the power to compel the vaccination of citizens of Pittsburgh unwilling to be vaccinated, it did have power to compel people entering the city to be vaccinated and it could make regulations to prevent people who had smallpox from entering the city.[6] In November 1871, conditions were so bad that the Board of Health, which usually met twice a month, met twice a week. The November report of

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3. Annual Report of the Board of Health 1899, p. 59.
4. Daily Pittsburgh Gazette, March 8, 1871.
5. Ibid., June 3, 1871.
6. Ibid., October 30, 1871.

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the Board cited 92 deaths from smallpox, 195 cases of smallpox and 11 businesses closed in the city during that month.[7] At the semi-weekly meetings members of the Board realized the need for better laws and suggested passing a much needed law to overhaul the existing sanitary regulations and to compel physicians to report all cases of diseases.[8]

A major problem during the smallpox epidemic was the lack of a municipal hospital for those with the disease. The Board of Health relied on the limited accommodations of Mercy Hospital and The Pittsburgh Infirmary, private institutions, for the care of smallpox patients. Often these private hospitals claimed that admitting smallpox patients endangered the life and health of other inmates, and that the city did not have the right to ask the hospital to assume the risk of admitting patients with a highly contagious disease. In 1872 both hospitals served notice to the Board of Health that thereafter they would not admit smallpox patients. The Board repeatedly urged the city councils to take action to provide for proper care of smallpox patients. A hospital was not built during the crisis, either because of the refusal or the neglect of the city councils to provide the necessary funds. Although the Board of Health had been empowered by the legislation that created it in 1851 to establish public hospitals, a period of 24 years had lapsed before the Board finally exerted its authority to build a municipal hospital to provide care

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7. Ibid., December 11, 1871.
8. Ibid., November 13, 1871.

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for smallpox patients.

The Board of Health apparently recognized fully its limited effectiveness when it recommended a recodification of the health laws of Pittsburgh. The recommendations made by the Board were a modification of health laws of Chicago.[9] In 1872 the state legislature in Harrisburg passed an act, based upon the Pittsburgh Board of Health's recommendations, to revise and amend the health laws of the city of Pittsburgh. The new act enlarged the powers and duties of the Board of Health, provided for the appointment of additional officers and employees and proscribed their duties. It made a clearer statement of the powers and duties of the Board of Health than had the old act of 1851. Better sanitary conditions for the city of Pittsburgh and a more rational approach to the control of epidemic disease were the goals of the framers of the Act of 1872.

The smallpox epidemic evidently affected the formulators of the new act because a number of its sections were designed to control the spread of infectious disease, especially smallpox.

The Act of 1872 vested the Board of Health with powers to establish quarantine, as had the Act of 1851, but this time more clearly enumerated the Board's powers. The Board of Health received, once again, the power to erect, purchase or lease a public hospital for the protection of the city, to make rules for the hospital and to appoint physicians,

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9. Ibid., February 12, 1872.

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officers and servants. The health officer had the responsibility for visiting and examining sick persons (those with infectious diseases) reported to him. Sick people were to be removed to the hospitals provided. In case of smallpox, a notice which read "Smallpox Here" had to be placed on the houses of infected people. There was a penalty for removing the notice without the permission of the Board of Health. The law further obliged every physician in the city who had a patient with an infectious disease to report the disease to the Board of Health. Neglect of this duty made the physician liable to a fine of fifty dollars. It became unlawful to turn persons suffering from an infectious disease into the streets; all disease had to be reported to the Board of Health. The penalty for refusing to report an infectious disease was not less than ten or more than one hundred dollars or confinement to the county prison for up to sixty days. The physician of the Board of Health had to report to the Board the prevalence of any epidemic, contagious or infectious disease. Moreover, he had to keep a supply of vaccine and see that all persons "so far as he may have it in his power" were properly vaccinated. The Board of Health had the power to issue orders requiring the vaccination of all persons in the city, within a time prescribed by the Board. If any person refused vaccination he would be fined not less than five or more than twenty-five dollars. If an epidemic arose or the sanitary condition of the city warranted it, the Board of Health had broad powers "to take measures to preserve

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public health." The city councils could raise money to cover any extraordinary expenses.[10]

Although the new act attempted to cope with the problems of infectious disease in a rapidly growing city by enlarging the Board of Health's powers and duties, it also incorporated a philosophical change in the approach to community health. Infectious disease, a major health problem of the nineteenth century and one to be dealt with by the individual affected, was now considered a community problem subject to community measures for solution. A change in social philosophy can be detected, but as yet new scientific knowledge or new attitudes toward disease were not utilized. The Board of Health still applied the old solutions of the 1850's, quarantine and sanitary regulations, to the ever growing health problems of the 1870's.

Pittsburgh had the same sanitary problems in 1872 as it had had earlier, only now they were augmented by the growing population. The new sanitary rules and regulations reflected the needs and problems of a changing urban environment, and a change to a new, although restrained, attitude of community responsibility for health. In this regard they were similar to the regulations for the control of infectious disease.

It was still unlawful to throw offensive matter, or matter likely to become offensive, into streets or alleys, or

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10. Annual Report of the Board of Health 1878, pp. 78-81.

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to allow such matter to remain on one's own premises.[11] The new act regulated the erection of privies and cleanliness and removal of contents of privies, as well as the removal of dead animals from the city. Failure to comply with the regulations made offenders liable to fines. The act provided for the election by the Board of a meat inspector. The law defined the sanitary duties of the Board of Health, including the power to order nuisances abated, and the right of the Board to employ scavengers to remove garbage.[12] Sanitary measures, once the concern of private individuals, had entered the public domain.

A supplement to the Act of 1872 provided for the registration of all dairies and milk depots. It became unlawful to sell watered milk, adulterated milk or milk from diseased cows.[13]

In order to implement its new health regulations, and to arrest the spread of disease by creating healthful conditions in the city the Board of Health needed the following: 1. a more rational administrative apparatus; 2. a dedicated professionally oriented corps of health workers; 3. the backing of the community (especially industrial and civic leaders); 4. and a spirit of social reform. Unfortunately the latter two prerequisites did not appear until

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11. Offensive matter was enumerated: beef, pork, fish, hides of any kind, or any offal or filth, dead animals, vegetables, oyster shells, or other unsound or offensive matter.

12. Annual Report of the Board of Health 1878, pp. 81-84.

13. Ibid., p. 86.

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the twentieth century.[14]

Public health workers had stressed the necessity for reliable statistical information since the early 1850's. Without reliable vital statistics it was almost impossible for a community to chart a course of public health action. The Board of Health in the first twenty years did not have reliable statistical data; a sanitary survey had never been made of the city. In 1865 the newly founded Allegheny County Medical Society resolved, "that a committee be appointed to draw up a sanitary report of Allegheny County to be presented to the society at their meeting in April and to the state medical society at its next meeting."[15] The resolution was never acted upon. The American Public Health Association also tried, without success, to survey Pittsburgh's health conditions. Indeed, a health survey was not available until 1914 when the Pittsburgh Survey was published. An 1870 supplement to the 1851 act to establish a Board of Health in Pittsburgh provided only for the registration of births, deaths and marriages.

In 1872 the Pittsburgh Board of Health published its first annual report. It included statistical data about births, deaths and marriages and data related to the causes of death.

The annual reports of the Board of Health evidenced

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14. See Roy Lubove, Twentieth Century Pittsburgh for an interesting analysis of the Pittsburgh Renaissance.

15. Allegheny County Medical Society, The First Hundred Years, Allegheny County Medical Society, 1965, p. 14.

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a new rational approach to public health in Pittsburgh. The reports were usually divided into 5 parts: 1. the report of the health officers, 2. vital statistics, 3. report of sanitary inspectors, 4. report of the meat and milk inspector, 5. and occasionally an attorney's report. These reports represent a major innovation for the city of Pittsburgh.

The new annual reports fulfilled the first prerequisite for improvement of health conditions, i.e. a more rational administrative apparatus. The second prerequisite, a dedicated, professionally oriented corps of health workers, required a long time for development, but for the first time candidates appeared on the scene. Crosby Gray served the Board as Health Officer until 1888 when that board was reorganized. After the reorganization in which the Board of Health became the Bureau of Health, Gray served the Department of Public Safety until 1895 when he returned to the Bureau of Health as Chief. Gray was neither a physician nor an engineer.

Table V indicates the Board members, their profession or livelihood and their period of service during the time 1872-1887. Board of Health members were also members of city councils, and often physicians, presumably motivated by their professional interest in health matters. Physicians accounted for fourteen of the thirty men who served the Board of Health between 1872 and 1887, or less than half the Board members. It is difficult to determine the sincerity or depth of interest of the non-physician Board members in health matters, but their listed professions or means of livelihood

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Table V

City of Pittsburgh:

Members of The Board of Health 1872-1887

Their Professions or Means of Livelihood; The Number of Years of Service; and the Years They Served on The Board of Health

Member	Years on The Board of Health	Total # of Yrs. on Bd.	Profession or Livelihood
A. H. Gross	'72, '73	2	Physician
J. J. Albietz	'72	1	Tobacconist
Wm. B. Hays	'72 - '74	3	Coal Dealer
A. G. McCandless	'72 - '74	3	Physician
W. J. Gilmore	'72, '73	2	Physician
Matthew Edwards	'72 - '74	3	Oil Dealer
John D. Fleming	'72 - '75	4	Mfg. of Japanned Ware, Tin Dealer
Edward House	'72 - '75	4	Wholesale Grocer
Addison Arthurs	'72 - '75, '77 - '80, '87	9	Physician
M. A. Arnholt	'73, '74	2	Physician
T. P. Graham	'74, '77 - '80, '87	6	Physician
George W. Bachofen	'74, '75	2	Book Seller, Homeopathic Medicines
J. F. Slagle	'75, '77 - '80, '85 - '87	8	Attorney
James McCann	'75, '77 - '81, '85 - '87	9	Physician

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Table V (Continued)

Member	Years on The Board of Health	Total # of Yrs. on Bd.	Profession or Livelihood
J. D. Thomas	'75, '77 - '81, '85 - '87	9	Physician
W. J. Asdale	'75, '77 - '81, '87	7	Physician
Thomas Mitchell	'75	1	Stone Mason
J. P. McCord	'77, '78	2	Physician
Jared Brush	'77 - '81, '87	6	Boiler Mfg., Sup't City Poor Farm
W. W. Logan	'77 - '79, '87	4	Grand Receiver AOUW
Nathan S. Brokaw	'79, '80, '87	3	----------
J. D. Grimes	'81	1	Physician
R. H. Wilson	'81	1	Painter
James Dunn	'81, '85, '86	3	Physician
A. B. Davis	'81	1	Clerk
Henry P. McCullough	'85, '86	2	----------
Nicholas Jones	'85, '86	2	Furnace Builder
W. C. Reitz	'85, '86	2	Manager Bindley Hardware Company
J. J. Greene	'85, '86	2	Physician
Julius Voetter	'85, '86	2	Live Stock Dealer

Years included: 1872-1875, 1877-1881, 1885-1887.

i.e. tobacconist, coal dealer, oil dealer, manufacturer, grocer, book seller, attorney, stone mason, painter, clerk, livestock dealer, furnace builder, represent a wide variety of occupations. None of these occupations was related to health matters, which raises doubts about the comprehension, by a majority of Board members, of the health problems facing the Board. The occupations listed indicate that members of the Board belonged to the middle class.

Only six men served the Board of Health for five years or more; the longest period of service was nine years. Most Board members served for less than five years. Because the nine member Board was chosen from members of the city councils achievement of continuity in Board policies must have been difficult with the continuous rotation of members.

In the seventies the Board, composed of members of city councils, also employed a corps of paid workers. Table VI indicates the executive officers of the Board of Health for the years 1872-1887, the number of years of service, and the previous means of livelihood. Professional health workers, such as the health physician, Dr. Snively, the attorney, H. H. McCormick, and the health officer, Crosby Gray served the Board almost continuously from 1872 to 1887. Other executive officers of the Board served for shorter periods of time ranging from one to three years. In all but one case, the previous means of livelihood was directly related to the Board position held by the executive officer. Crosby Gray was the only officer whose previous means of livelihood had

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Table VI

City of Pittsburgh: Executive Officers of The Board of Health 1872-1887;*

Profession or Livelihood of Officer Before Working for The Board of Health; The Number of Years Employed by The Board of Health; Previous Means of Livelihood

Title	Name	Years Served on Board	Total # of Yrs. Service	Previous Means of Livelihood or Profession
Health Physician:	J. Guy McCandless	'72	1	Physician
	W. Snively	'73-'75,'77-'81,'85-'87	11	Physician
Health Officer:	Crosby Gray	'72-'75,'77-'81,'85-'87	12	Oil Broker
Meat Inspector:	Thomas Lindsay	'72-'75,'77-'81,'86,'87	12	Drover
Attorney:	M. Swartzwelder	'72	1	Attorney
	H. H. McCormick	'73-'75,'77-'79,'86,'87	8	Attorney
	McFarland	'80,'81,'85	3	Attorney
Registration Clerk:	John G. Little	'72-'75	4	Clerk
	J. Geary Logan	'77-'79,'80,'87	5	
	F. C. Dorrington	'81	1	Clerk
	T. R. Ross	'85,'86	2	Clerk
	A. J. Brush	'85,'86	2	Clerk

*Years included: 1872-1875, 1877-1881, 1885-1887.

no relation to his job as health officer. Yet he served the Board of Health and the Bureau of Health for more than twenty-five years.

The nucleus of health workers shown in Table VI exerted great influence, if only by maintaining continuity of organizational policies and practices associated with the Board of Health. Their existence made the Board of Health a permanent organization with daily public health responsibilities. It was no longer an organization characterized solely by emergency expansion and contraction of responsibilities and functions, the latter stimulated by the waxing and waning of epidemic disease.

Table VII indicates the sanitary inspectors employed by the Board of Health, the number of years each man worked for the Board of Health and, where possible, his previous means of livelihood. The Pittsburgh City Directory often did not list the names of many of the sanitary inspectors before they were employed by the city. It is possible that employment by the Board raised a man's status. The previous employment of a sanitary inspector had little relevance to health. One might surmise that political patronage was associated with the appointments of sanitary inspectors. Twenty-two men served as sanitary inspectors between 1872 and 1887. Only four served for five or more years. Continuity of employment and professionalism are far more apparent among the executive officers of the Board of Health than among the sanitary inspectors.

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Table VII

City of Pittsburgh: The Sanitary Inspectors Employed by The Board of Health 1872-1887; The Number of Years Employed by The Board of Health; Previous Means of Livelihood

Sanitary Inspector	Years Employed by Board	Total # of Yrs. with Bd.	Previous Means of Livelihood
Albert Marlatt	'72-'75	4	Clerk
Lewis Walther	'72-'74	3	-----
George Henry	'73	1	-----
Thomas Fording	'73-'75,'77,'78	5	-----
J. J. Lawson	'73-'75,'77-'81,'87	9	Stone Mason
George Rogers	'73	1	Tobacconist
John Becker	'74	1	-----
Nicholas Jones	'74,'75	2	Furnace Builder
George Bracey	'75,'77-'81,'85-'87	9	Machinist
Peter Pierce	'75	1	-----
Charles Havis	'79-'81,'85-'87	6	-----
F. C. Obrien	'79-'81,'87	4	-----
W. C. McCord	'79-'81,'87	4	-----
M. S. Brobeck	'79,'81,'85,'86	4	-----
John McKee	'85,'86	2	-----
H. J. Willey	'85,'86	2	-----
James E. McKeever	'85	1	-----
P. M. Ullam	'85,'86	2	-----
James Patterson	'85,'86	2	-----
H. Mechelberg	'85,'86	2	-----
David Price	'85,'86	2	-----
E. M. McKenna	'86	1	-----

In 1872 the new laws, the collection of vital statistics, the employment of a professional corps of workers and sanitary inspectors by the Board of Health and the limited, but nevertheless important, new attitudes toward the community's responsibility for health transformed the Board of Health into a more rational organization. However the crisis mentality lingered and we will see that the Board and city officials could not, either because of ignorance or negligence, keep pace with the growing health problems of Pittsburgh. The earlier governmental posture vis'-a-vis' provisions for the public health did not rapidly change as evidenced by the final unequivocal criterion, public health expenditures.

Table VIII shows the allocation of funds to the Board of Health during the period 1870-1886. The maximum allocation to the Board in any single year during the period under discussion was $30,000 in 1884, which represented approximately 1.0% of the total funds allocated to city government in that year. Note that in 1874 scarlet fever prevailed. In 1877 diptheria prevailed. In 1881 smallpox prevailed. These epidemics account for the rise in allocations to the Board of Health in the years following prevalence of disease.[16] However, even epidemic conditions did not result in large allocations to the Board. Table VIII indicates that city councils responded to epidemics of disease by allocating more funds to the Board of Health in time of crisis,

16. Annual Report of the Bureau of Health 1889, p. 65.

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Table VIII

City of Pittsburgh

Dollar Allocations to The Board of Health, 1870-1886
And Total Amount of Money Allocated in the City Budget[17]

Year	Amt. Allocated to Board of Health	Total Amt. to City Gov't	Amount to Board of Health as % of Total
1870	$ 2,000	$ 699,700	0.29 %
1871	3,000	202,000	1.5
1872	4,000	867,283	0.46
1873	10,000	1,319,000	0.76
1874	10,000	2,168,000	0.46
1875	18,000	1,569,824.63	1.1
1876	8,000	1,543,750	0.52
1877	12,000	1,314,805	0.91
1878	------	----------	----
1879	12,000	3,731,240.50	0.32
1880	12,000	2,479,953.42	0.49
1881	11,000	2,498,357.88	0.44
1882	20,000	----------	----
1883	30,000	2,865,336	1.0
1884	25,000	2,712,060.76	0.92
1885	15,000	2,479,253.59	0.61
1886	20,000	2,595,411	0.77

17. Figures from Ordinance Books 3, 4, 5 City of Pittsburgh.

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but those allocations did not cause a major drain on the city budget.

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IV. THE SANITARY CONDITION OF PITTSBURGH

During the Board of Health's period of maturation all the previously encountered problems of public health also grew to maturity in Pittsburgh. Infectious and contagious diseases remained the major health issues of the nineteenth century, but the problems associated with street cleaning, refuse removal, sewerage and water supply grew like baobabs.[1] This ubiquitous problem, the sanitary condition of the city of Pittsburgh, increasingly diverted a major portion of the Board's energies. Performance is the only measure we have of the ability of the Board of Health to keep the city of Pittsburgh clean. According to that criterion the Board never really solved the major problems of municipal cleanliness during the nineteenth century. I have singled out the sanitary condition of the city of Pittsburgh because it was a measure of the effectiveness of the Board. Of course dirt and disease were to a large extent concurrent evils.

The basic function of the Board of Health in its first twenty years was control of epidemic disease. In the decades of the seventies and eighties, although the Board placed a new emphasis upon control of the environment, the threat of filth continued to increase rather than decrease

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1. "A baobab is something you will never, never be able to get rid of if you attend to it too late. It spreads over the entire planet. It bores clean through it with its roots. And if the planet is too small, and the baobabs are too many, they split it in pieces." Antoine De Saint-Exupery, The Little Prince, Reynal and Hitchcock, New York, 1943, p. 22.

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as Pittsburgh expanded, with the sanitary condition of the city degenerating rather than improving.

Table IX shows the steady increase in population in Pittsburgh between 1870 and 1900, including the immigrant population and the increase due to annexation. The increasing rate of industrialization added a large number of laborers and factory workers to the population of Pittsburgh. Low wages and poor working conditions added to the health problems already in existence. The need for public control over congested dwellings brought about by population growth and the large number of low paid workers who lived in unsanitary tenements did not become responsibilities of the Bureau of Health until the twentieth century. Nevertheless such conditions appeared in Pittsburgh and made health conditions deteriorate further.

Although the Act of Assembly, passed in 1871, had provided for general sanitary measures, during the 1870's and 1880's, city councils passed only a few sanitary ordinances. If one considers the rapidity of Pittsburgh's population expansion in these years, sanitary laws were decidedly limited.[2]

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2. Six city ordinances passed during a ten year period (1870-1880) related to sanitary measures. They were: 1. 1871 Ordinance to erect a new water works. (Ordinance Book III, p. 138); 2. Ordinance making it illegal to drop any matter in a sewer drop. (Ordinance Book III, p. 399); 3. 1875 Ordinance prohibiting throwing broken glass, nails, cuttings or tin or iron sheets into public streets. (Ordinance Book IV, p. 151); 4. Ordinance relating to the public market, making it illegal to bring the carcass of any animal into city markets to be flayed or fish to be cleaned, providing for removal of garbage and refuse from the market and prohibiting dogs, horses and

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Table IX

City of Pittsburgh:

Increases in Total Population and in Foreign Born Population (including increases due to annexation)[3]

Year	Total Pop.	Incr. in Total Pop.	% Incr. in Total Pop.	Foreign Pop.	Incr. in Foreign Pop.	% Incr. in Foreign Pop.
1860	49,221			18,063		
1870	86,076	36,855	75.0	27,822	9,759	54.1
1880	156,389	70,313	81.9	44,605	16,783	60.2
1890	238,617	82,228	52.6	73,289	28,684	64.3
1900	321,616	82,999	34.7	84,878	11,589	15.8

wagons from entering the public market during market hours (Ordinance Book IV, p. 190-191); 5. 1880 Ordinance prohibiting the placing or dumping of any earth, rubbish or other material on wharfs of the city (Ordinance Book IV, p. 236); 6. 1879 Ordinance providing for the cleaning of paved avenues, streets, lanes and alleys by contract with the city. The contract provided for continuous and regular cleaning of all dust, filth, rubbish, offal, carrion, snow and ice from the public streets including gutters, sewers and sewer drops (Ordinance Book IV, p. 259).

3. Paul Kellog ed., The Pittsburgh District Civic Frontage, Russel Sage Foundation, Surrey Associates, Inc., New York, 1914, p. 47.

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The few ordinances passed were not sufficient to alleviate the severe sanitary problems of filth, inadequate water supply, poor sewerage and the need to remove all kinds of garbage and refuse that harassed the citizens of Pittsburgh.

Non existence of planning, lack of clear cut authority to enforce existing laws and meager funds hampered the Board's activities to keep Pittsburgh clean. Health officers consistently requested more money and more enforcement power for the Board. Too often citizens failed to realize the necessity for urban cleanliness and Health officers instituted numerous suits against citizens who refused to abate nuisances in the last years of the nineteenth century.[4] The Board often invoked the assistance of the courts because of the "...unaccountable indifference and obstinacy of others who assumed that we were interfering with private rights, and who would rather deter than assist in performing a duty due alike to themselves and families as well as the community at large..."[5]

The following are descriptions of sanitary conditions, by district, in the city of Pittsburgh. They include every ward of the city and indicate that filth and dirt could be

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4. The following is a list of the nuisances that sanitary inspectors sought to abate: 1. all types of filth in the city, i.e. damp infected houses, filthy streets, filthy water courses, filthy slaughter houses; 2. dead animals; 3. defective drainage; 4. garbage in the streets and vacant lots; 5. hog pens; 6. manure heaps; 7. infected bedding; 8. ponds of water; 9. offal; 10. foul,dangerous and full privies.

5. Annual Report of the Board of Health 1873, p. 13.

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found in every area of Pittsburgh, although some districts were worse than others. The sanitary inspectors sought to abate a variety of nuisances. Many of the conditions they encountered, such as poor sewerage and drainage, dumping of refuse into the rivers and an inadequate water supply led directly to a high incidence of disease. The descriptions are based upon the reports of 1875, but the Annual Reports of the Board of Health and the Bureau of Health repeat the same descriptions of the city's sanitary conditions in subsequent years, indicating that the problems remained unsolved.

The first district (the 1st ward, parts of the 2nd and 3rd wards and wards 4, 9, 10 and 12), bounded on the north by Thirtieth Street, east by Liberty and Smithfield, south by the Monongahela River and west by the Allegheny River included one of the dirtiest areas of Pittsburgh, the Point.[6] The Point had long been a dumping ground and although the sanitary inspector stated the area had been cleaned, still, "In summer months when the river is low, there is not sufficient depth of water to carry off the refuse and rubbish dumped here and in consequence offal and filth remains at the bottom of the chute dump boat."[7]

The public market in the first district also presented a problem; "It is impossible to impress upon the minds of the hucksters, gardeners, proprietors of stands, etc. in and about the market houses of my district that clean streets,

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6. "The Point" is now referred to as the "Golden Triangle."
7. Annual Report of the Board of Health 1875, p. 23.

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clean gutters, etc. are of the utmost importance."[8] Pittsburghers strewed garbage all over the streets and used vacant lots for garbage, slops, filth and ashes. Dwelling houses were generally in good condition, but tenement houses caused problems because privies were improperly constructed: not deep enough and not emptied until they overflowed.[9]

The second district (parts of the 2nd and 3rd wards and wards 5, 6, 7, 8, 11, 13 and 14), bounded on the south by Smithfield and Liberty Avenues and the track of the Pennsylvania Railroad, east by Neville Street and southwest by the Monongahela River, was partially rural. It also included manufacturing, dwelling houses and business houses. The sanitary inspector for this district said most dwelling houses were good but the tenements were too small and poorly ventilated for multi-dwelling structures.[10]

The third district (wards 15, 16, 17 and 18), bounded on the north by Morningside Road, east by the Pennsylvania Railroad, south by Thirtieth Street and west by the Allegheny River presented a variety of sanitary problems, including twenty-nine slaughter houses. Those situated in "Skunk Hollow" were constructed over the run with openings in the floor to collect all refuse and offal for feeding hogs.[11] Yards, alleys and vacant lots became nuisances because people deposited slops, garbage and all kinds of rubbish

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8. Ibid.
9. Ibid., p. 24.
10. Ibid., p. 26.
11. Ibid., p. 30.

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on them. The sanitary inspector cited drainage, unpaved streets and alleys, improperly constructed privy vaults, stables and manure heaps as creating nuisance in the district.[12]

The fourth district (wards 19, 20, 21, 22, 23), mainly suburban, began at the mouth of Haights Run on the Allegheny River, went up the river to the city line then to the Monongahela River, down the river to the mouth of Four-mile Run and along the run to Neville Street. The boundary followed Neville Street to the line of the Sixteenth Ward and to Liberty Avenue. The inspector considered the general sanitary condition of his area good. Active businesses and manufacturing in the area included the manufacture of iron, glass, white lead and refining of petroleum. The inspector cited slaughter houses as nuisances. Many streets were unpaved and undrained, and sewers did not exist.[13]

The Monongahela River, on the north, St. Clair Township on the east and south, and the borough of Beltzhoover on the west (wards 24, 25, 26, 27, 28, 31) defined the fifth sanitary district. Drainage problems existed in some parts of the district. Dumping of garbage on vacant lots created a major sanitary problem. An insufficient supply of water hindered sewer operation, and in parts of the district there were no sewers at all.[14]

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12. Ibid., p. 31.
13. Ibid., p. 32.
14. Ibid., p. 35.

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The sixth district (wards 29, 30, 32, 33, 34, 35 and 36), comprised the southwest portion of the city. The topography in this district ranged from hilly to low and marshy. Iron, glass,oils, soap and lead were manufactured and coal was mined in this district. The sanitary inspector described the sanitary condition of that area as "tolerably good," but he cited many streets as unpaved and called the tenement houses a disgrace to the city and to the owners. "They are constructed in some localities one above the other; one family occupying the first floor, another the second, etc. The odors of cooking and washing from the lower apartments rise through all the buildings, as also unpleasant odors from bed chambers, and often from the filth of the family. Not only do those compelled from necessity to live over such persons suffer from noxious gases, but often they are compelled to inhale the fumes from loathsome diseases."[15] As in other sections of Pittsburgh, vacant yards and alleys served as receptacles for garbage, drainage was poor, and adequate sewerage did not exist. There existed a total absence of water closets in the district and nuisances arose from poorly constructed privies.

These and subsequent reports continuously stressed the inadequacies of the sewerage system, the problems of an inadequate and impure supply of water and the inability of the city to cope with the amounts of garbage that increased as the population expanded.

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15. Ibid., p. 38.

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The sanitary conditions described appeared in every section of the city of Pittsburgh although the degree varied from area to area. In general the city of Pittsburgh was an unhealthy place in which to live, if one judges by the number of incidences of infectious diseases. In the nineteenth century health officials classified only smallpox, scarlet fever, cerebro-spinal fever, measles, whooping cough, diphtheria and typhoid fever as infectious diseases, omitting consumption, pneumonia, bronchitis and other diseases we now consider infectious, from their lists.

A combination of population characteristics and physical environment determined the death rates for the city of Pittsburgh which was divided into three areas; the Old City including the first through twelfth wards, the East End including the thirteenth through twenty-third wards, and the South Side including the twenty-fourth through thirty-sixth wards.

Table X is a summary of mortality rates from infectious disease in the Old City, East End and South Side sections of Pittsburgh for the years 1884-1887 and 1890. The total number of deaths from infectious disease, as well as the death rates per 1,000 inhabitants are included. The death rate was highest on the South Side for all the years except 1890. Although it is not entirely clear why death rates decreased for the South Side in 1890, a partial explanation can be found in the fact that the sewerage system had been extended on the South Side. Many of the diseases prevalent in that area, for instance typhoid fever, could be

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Table X

City of Pittsburgh

Mortality from Infectious Diseases*
by Section of City 1884-1887, 1890[16]

	Estimated Population	No. of Deaths from Infectious Disease	Rate of Deaths from Infectious Disease per 1,000
1884			
Old City	68,000	148	2.18
East End	63,000	173	2.75
South Side	54,000	340	6.30
1885			
Old City	69,586	205	2.95
East End	77,061	219	2.84
South Side	55,930	250	4.47
1886			
Old City	70,000	201	2.87
East End	79,000	286	3.62
South Side	56,000	317	5.66
1887			
Old City	71,000	195	2.75
East End	82,000	244	2.98
South Side	57,000	331	5.81
1890			
Old City	75,000	162	2.16
East End	100,000	319	3.19
South Side	65,000	139	2.14

*Infectious diseases included: measles, whooping cough, diphtheria, scarlet fever, typhoid fever, cerebro spinal fever.

16. Data from Annual Reports of the Board of Health 1884-1887. Annual Report of the Bureau of Health 1890

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traced to the inadequate sewerage system and unhealthy water supply. The table also indicates that deaths from infectious disease occurred in every section of Pittsburgh, as did the unhealthy sanitary conditions.

The question of whether or not death rates from infectious disease correlate well with population density can be answered from the data presented in Table XI. This table indicates ward populations and population densities expressed in persons per acre and also includes a description of the area and the population characteristics found in the 11th United States Census. The average population density in the South Side was less than one half the average population density in the Old City yet South Side death rates were higher. These facts lead to the conclusion that population density alone did not determine the death rate from infectious disease. The same conclusions can be reached by examining the average death rates for wards as shown in Table XI. The number of persons per acre does not, in general, correlate with the average death rate. In fact some of the highest population density areas in Old City have the lowest average death rates. Other factors that did affect mortality rates are shown in the table. There was often a correlation between disease rates and the employment of people living in an area, for example death rates were high in ward 12, an area comprised of mechanics and laborers. Wards described as tenement areas had high death rates, for example the second ward. Topography also was related to disease rates; unhealthy areas were low and marshy and the healthiest areas were on

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Table XI

City of Pittsburgh

Description by Ward and Section

Ward	Rates/1,000 Population: Avg. Death Rate in City	Rates/1,000 Population: Avg. Death Rate for Ward	Ward Popul.	No. of Acres in Ward	No. of Persons per acre	Descr. of Popul. (in 1890 Census)	Description of Area
1	21.56	22.28	3,732	75	49.76	Immigrant, Irish, Italian	
2	21.56	40.12	3,695	69	53.55	3695 nat. whites 841 foreign born 305 colored	Tenement dist.
3	21.56	14.49	2,090	52	40.19	good class	Business section
4	21.56	17.66	3,114	86	36.56	good class	Business section
5	21.56	18.68	5,131	40	128.28	Immigrants, Russian, Italian	
6	21.56	31.59	9,129	143	63.84	good class	Residential sect. mod. circumst.
7	21.56	20.50	5,902	43	137.26	good class	Residential sect.
8	21.56	16.33	7,022	70	100.31	good class, and foreigners	Tenements, and good residences
9	21.56	21.56	4,277	63	67.89	mechanics and laborers	Mfg. dist. (iron mills, glass)
10	21.56	21.13	3,602	63	57.17	mechanics and laborers	Mfg. dist. (iron mills, glass)
11	21.56	13.32	9,884	126	78.44	good class	High ground
12	21.56	42.00	10,335	242	42.71	mechanics and laborers	Mfg. dist. (iron mills, glass)
Total			67,943	1,068	63.6		

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EAST END

Table XI (continued)

Ward	Rates/1,000 Population: Avg. Death Rate in City	Rates/1,000 Population: Avg. Death Rate for Ward	Ward Popul.	No. of Acres in Ward	No. of Persons per acre	Descr. of Popul. (in 1890 Census)	Description of Area
13	21.56	17.56	11,109	823	13.50	good class	Well built houses high ground
14	21.56	23.19	15,521	952	16.30		Cheap tenements and good residences
15	21.56	22.30	5,758	172	33.48	mechanics and laborers	Mfg. dist. (iron mills, glass)
16	21.56	23.65	10,810	241	44.85	Immigrants, Germans	Tenements, breweries
17	21.56	21.89	12,335	429	28.75	good class of mechanics and laborers	Principally residential
18	21.56	24.35	6,995	1,131	6.18	good class	High ground, sparsely settled
19	21.56	16.29	7,996	1,349	5.93	wealthy people	Good residence, high ground
20	21.56	15.05	10,012	1,099	10.02	wealthy people	Good residence, high ground
21	21.56	17.91	11,276	1,766	6.39	wealthy people	Good residence, high ground
22	21.56	13.27	3,259	3,488	6.29	wealthy people	Good residence, high ground
23	21.56	18.57	7,020	1,892	3.71	wealthy people	Good residence, high ground
Total			101,091	13,334	7.60		

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SOUTH SIDE

Table XI (continued)

Ward	Rates/1,000 Population: Avg. Death Rate in City	Rates/1,000 Population: Avg. Death Rate for Ward	Ward Popul.	No. of Acres in Ward	No. of Persons per acre	Descr. of Popul. (in 1890 Census)	Description of Area
24	21.56	23.78	5,809	200	29.05	mechanics and laborers	Mfg. dist., iron and glass, low ground
25	21.56	21.59	7,379	138	53.47	mechanics and laborers	Mfg. dist., iron and glass, low ground
26	21.56	23.20	7,762	92	84.37	mechanics and laborers	Mfg. dist., iron and glass, low ground
27	21.56	25.23	10,898	423	25.76	good class of mechanics and laborers - own their houses	High ground
28	21.56	20.27	5,120	63	81.27	mechanics and laborers	Mfg. dist., iron and glass, low ground
29	21.56	20.11	4,836	65	74.40	mechanics and laborers	Mfg. dist., iron and glass, low ground
30	21.56	25.57	3,402	80	42.53	mechanics and laborers	Mfg. dist., iron and glass, low ground
31	21.56	17.70	4,823	161	29.96	good class - own their houses	High ground
32	21.56	15.60	6,791	627	10.83	good class	High ground
33	21.56	21.32	1,079	74	14.58		Iron works, low ground, river front, tenements

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SOUTH SIDE (continued)

Table XI (continued)

Ward	Rates/1,000 Population: Avg. Death Rate in City	Rates/1,000 Population: Avg. Death Rate for Ward	Ward Popul.	No. of Acres in Ward	No. of Persons per acre	Descr. of Popul. (in 1890 Census	Description of Area
34	21.56	18.58	2,422	87	27.84	poor class of Irish	Iron works, low ground, river front, tenements
35	21.56	13.90	3,630	788	4.61	good class	High ground
36	21.56	20.81	3,632	138	26.32	mechanics and laborers	Mfg. dist., iron glass, low ground
Total			74,385	2,936	25.3		

17. 11th Census 1890, Report on Vital and Social Statistics in the United States, Part II, United States Government Printing Office, 1896, pp. 293-311.

high ground. There was also a relationship between death rates and the type of manufacturing engaged in in the area. Topography, manufacturing and the population characteristics all affected the death rates in an area. The sanitary condition of the area also related to the above mentioned factors.

Thus it can be seen that in many instances high rates of disease were linked to sanitary conditions. An inadequate and impure water supply, an inadequate sewerage system and an inability by the municipality to remove and dispose of huge amounts of garbage increased the amounts of dirt in Pittsburgh as the population expanded.

In the years when Pittsburgh grew in size and population and, because of this growth needed to build an adequate, well designed sewer system, little was accomplished. The municipality continued to extend old sewers and build new ones but always in a haphazard and piecemeal manner. The Western Pennsylvania Engineer's Society complained that Pittsburgh was fifty years behind other American cities in sewer building and said that Pittsburgh needed a well planned sewerage system, designed by engineers and paid for by the city.[18]

Health officials considered the lack of sewers a major reason for the outbreaks of diphtheria and typhoid fever. A Board of Health report of 1889 stated: "Several severe outbreaks of diphtheria and other filth diseases have

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18. Daily Pittsburgh Gazette, May 18, 1881.

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been unerringly traced to this neglect. We are pleased to be able to say, however, that during the past ten years, and at the present time, rapid strides in the direction of thorough and systematic drainage and sewerage have been taken, which although not nearly completed, have already had a decidedly beneficial influence upon the health of the community."[19]

Pittsburgh's water supply came from three sources, the Allegheny River, the Monongahela River, and wells and springs (mainly on the South Side and in the East End of Pittsburgh). The Board of Health considered the water from the Allegheny of excellent quality. Monongahela River water, furnished to South Side residents and citizens on the south banks of the Monongahela and Ohio Rivers, was bad. Numerous artificial dams obstructed the procurement point for the water, which made it a catch basin for the filth of populations along the upper banks of the river. In 1887 an epidemic of typhoid fever was traced to this source. The well water from thickly populated areas such as South Side was also dangerous. Many wells had been abandoned by 1889 by order of the Board of Health. The practical solution to the problem of acquiring pure water eluded the city until the twentieth century when Pittsburgh water was finally filtered.

Garbage, another problem that required a solution, also plagued Pittsburgh for most of the latter part of the nineteenth century. It has already been noted that Pittsburgh

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19. Annual Report of the Board of Health 1889, p. 63.

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citizens dumped their garbage in the rivers, on vacant lots and in alleys and yards or cellars. Sometimes garbage was removed at irregular intervals to scarcely less objectionable places, at the insistence of the Board of Health. Entries of abatement of nuisance in the Board of Health records contained many garbage reports.

The city built a garbage furnace, Pittsburgh's answer to the garbage problem, on Hill Street in the sixth ward in 1887, and the Board of Health assumed responsibility for its operation. The furnace operated day and night at an average capacity of sixty tons per twenty-four hours,[20] but it was not adequate to meet the needs of the city. The Board of Health asked for, but did not receive additional funds to build more furnaces in other parts of the city.

The Board competed with local industries for available fuel because the garbage furnace burned natural gas, as did industry. The Health Officer's report in 1891 noted that an immense quantity of garbage was burned each day but that it was becoming very expensive, "...and besides we have to frequently almost close down, on account of the scarcity of gas, until night comes and the mills close, then we have plenty, but are compelled to force the furnace all night on account of the accumulation of garbage during the day."[21] The inability of the Board of Health to compete with Pittsburgh industries for the use of natural gas illustrates the

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20. Ibid., p. 62.

21. Annual Report of the Bureau of Health 1891, p. 6.

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priorities assigned industrial productivity and civic cleanliness during Pittsburgh's years of industrial gorwth. Because only one furnace operated, garbage was still dumped on vacant lots, alleys and even in the streets, or put on boats, taken a short distance from the landing and dumped into the rivers.[22]

Although the reorganization of the Board of Health in 1872 did provide the Board with a skeleton upon which to build a public health program, attempted to achieve administrative and practical effectiveness, and even exhibited the beginnings of a sense of community responsibility for health, the Board was not able to exert enough influence to control the major environmental problems that besieged Pittsburgh. The limited funds allocated to the Board of Health deterred solution to environmental problems.[23] The allocation of governmental funds reflect the priorities of a society. Health remained low on the priority list in nineteenth century Pittsburgh. Little pressure to create a more healthy, less filthy atmosphere came from the citizens, and even less came from the city councils.

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22. Annual Report of the Bureau of Health 1893, p. 15.

23. Appropriations for the Board of Health in the 1870's and 1880's can be found in Table VIII, Chapter III.

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V. THE RESPONSE TO EPIDEMIC DISEASE IN PITTSBURGH 1873-1895

During the nineteenth century there was a discrepancy between the diseases people feared most and the diseases that caused the greatest amount of sickness and death. The vital statistics for the years 1872-1895 indicate that ever present tuberculosis, diphtheria, typhoid fever, pneumonia and bronchitis killed many more people than cholera or smallpox. Yet public concern over diphtheria, typhoid fever, tuberculosis, pneumonia and bronchitis appeared only when the death rates were extraordinarily high. At the same time that health officials and the public accepted the "normal" incidence of disease as a fact of life, the possibility of smallpox or cholera appearing in Pittsburgh engendered worry and fear among the citizens. This attitude toward infectious disease was another manifestation of the crisis mentality. Although health officials were aware of the high incidence of disease in Pittsburgh they made only limited attempts to decrease those death rates. The Board's inability to control disease in Pittsburgh stemmed from social attitudes which accepted disease as "normal," lack of funds, and until 1895, an inability to use new scientific knowledge to prevent the outbreak of disease.

The action that municipal authorities did take when confronted with either cholera or smallpox as contrasted with diphtheria, tuberculosis, typhoid fever, pneumonia and bronchitis also illustrates the social attitude toward disease

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in Pittsburgh in the nineteenth century.

The apprehension caused by smallpox and cholera is understandable because both struck quickly and caused horrible and untimely deaths. The difference between smallpox and cholera in the nineteenth century was that cholera was little understood until late in that century. Smallpox on the other hand, was a pestilence that man knew how to conquer.

In 1854 John Snow, an English physician had already made a significant contribution to the understanding of the spread of cholera. He systematically investigated the causes of a cholera epidemic in London and concluded that the cholera infection was water-borne, that the poison of cholera entered the alimentary canal by mouth, and that the infection was probably derived from the excreta of cholera patients. He demonstrated that cholera could be transmitted through soiled hands or contaminated food and water, and that wastes from cholera patients could pollute wells and other community water supplies. Although Snow's views pointed to a theory of a living organism that produced disease, he was unable to identify the agent of infection.[1] This occurred in the 1850's, but the views of Snow were not readily accepted either by physicians or the general public. In 1883 Koch isolated and cultured the micro-organism that caused cholera and proved the essential validity of Snow's views. Yet in 1891, after the discovery of the disease vector by Koch, the causes of cholera were still vigorously debated.

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1. John Snow, On Cholera, [illegible]

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Though vaccination against smallpox was generally accepted, Pittsburgh health authorities feared an outbreak of smallpox. Indeed, smallpox was responsible for numerous deaths in 1877, 1878 and-1882.

Table XII shows the number of deaths attributed to smallpox in the city of Pittsburgh for the twenty-three year period 1873-1895. The statistics illustrate that despite widespread fear and dread of the disease, smallpox incidence, as measured by mortality, was restricted to a minimum of two deaths per year in the period 1885-1895. In spite of the low death rate from smallpox, the citizens of Pittsburgh and health officials continued to fear a new epidemic of the disease in their city. Many who had previously experienced the ravages of epidemic smallpox remembered the havoc the disease had caused. Thus the glaring disparity between the incidence of smallpox after 1882 and the panic that fear of smallpox created.

From its inception in 1851 a major responsibility of the Board of Health was control of epidemic disease. Table XII demonstrates that smallpox was one infectious disease on which the Board exerted some measure of control. The methods they used to control smallpox deserve further discussion.

During an epidemic of smallpox in 1871-72 the Board of Health made provisions for free vaccination. In 1871 when 400 deaths resulted from smallpox the Board of Health gave 4,322 free vaccinations.[2] The Board continued to

2. Annual Report of the Board of Health 1872, p. 8.

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Table XII

City of Pittsburgh:

Deaths from Smallpox 1873-1895

Year	# Deaths	Year	# Deaths	Year	# Deaths	Year	# Deaths
1873	25	1879	1	1885	--	1891	--
1874	--	1880	--	1886	--	1892	2
1875	29	1881	448	1887	2	1893	--
1876	86	1882	300	1888	--	1894	1
1877	269	1883	17	1889	2	1895	--
1878	113	1884	12	1890	--		

3. Statistics for number of deaths from smallpox from Annual Reports of the Board of Health and the Bureau of Health.

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provide free vaccinations for the citizens of Pittsburgh annually.

However, from the inauguration of the free vaccination policy until 1895, when a compulsory vaccination law was passed, vaccination was not legally compulsory. Although the Board of Health and the Bureau of Health assumed the responsibility for vaccination they consistently lacked the funds to do a thorough job. In 1888 the Bureau of Health sought from city councils additional vaccination funds of $10,000 to vaccinate 50,000 people.[4] The Bureau again sought funds in 1889. In 1890 Thomas W. Baker, the Superintendent of the Bureau of Health, feared that smallpox was threatening Pittsburgh inhabitants and asked for a thorough vaccination program. He stressed the fact that large population growth and immigration made it necessary to vaccinate 10,000 more people. Although a rule existed prohibiting unvaccinated school children from entering school, Baker claimed the school authorities did not comply with the rule, and he suggested that a physician visit the schools to check children for vaccinations and to prohibit all unvaccinated children from entering.[5] The health agency also reported and placarded smallpox cases, and maintained the smallpox hospital erected in 1875.

This brief discussion of the methods used to control smallpox suggests that funds for gratuitous vaccination were

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4. Annual Report of the Bureau of Health 1888, p. 8.
5. Annual Report of the Bureau of Health 1890, p. 9.

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consistently inadequate and that the proportion of the population vaccinated each year was small. These facts together with the sporadic outbreaks of smallpox in 1877, 1878 and 1882 further suggests that the control of smallpox in Pittsburgh may have stemmed more from the decreased entry of the disease into the area than from the adequacy of the control methods adopted by the health agency.

Cholera, malignant and rapidly fatal, was as dramatic and feared in 1891 as it was in 1851. In Pittsburgh, almost a decade after Koch discovered and isolated the cholera bacillus, the existent knowledge of this disease was not commonly accepted. The medical profession certainly did not unanimously accept new bacteriological knowledge. This highly contagious, spectacular and misunderstood disease crowded the less dramatic, yet ever present communicable diseases out of public consciousness. Response to cholera vividly illustrates the crisis mentality toward disease in Pittsburgh in the nineteenth century. I demonstrated earlier that fear of cholera prompted the formation of the Board of Health in 1851, goaded the citizens of Pittsburgh into sporadic efforts at municipal cleanliness, and more than once caused the city councils to raise the level of appropriations for health purposes.

In 1892 fear of cholera once again became the impetus for improvement of health conditions. In the summer and fall of 1891 the citizens of Pittsburgh were threatened by an invasion of the disease which originated in the northwest provinces of India and with unprecedented rapidity traveled

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overland to Russia, Germany, England and the United States. The daily newspapers of Pittsburgh followed the spread of cholera. The Bureau of Health responded as health officials had previously done in 1851 and 1856 by trying to place Pittsburgh in the "best possible sanitary condition."[6]

Medical officers met arriving trains to prevent diseased persons from entering Pittsburgh and to take them outside the city limits to a camp established for the diseased. All suspected cases of cholera received careful examination in a newly created laboratory. The municipality erected a special hospital for the reception and care of cases of cholera and provided for the establishment of additional hospitals in different sections of the city. There were provisions to staff the hospitals (when built) with competent members of the medical profession who volunteered their services. A number of physicians met and discussed the prevention and care of cholera and appointed a sub-committee to prepare a report with suggestions.[7]

The sub-committee suggested disinfecting. It recommended burning as the only "perfect" disinfectant, and suggested printing and distributing a circular with instructions for disinfecting. Other recommendations included better garbage collection and a liberal appropriation, in the form of an emergency fund, to prepare for the onslaught of cholera. The sub-committee even recommended that the state legislature

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6. Annual Report of the Bureau of Health 1892, p. 27.

7. Ibid., p. 27-28.

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end all immigration from countries where cholera prevailed.[8]

In response to the cholera threat, the Bureau of Health more than doubled the size of its sanitary force,[9] intending to reach all parts of the city quickly and effectively. The Chief Sanitary Inspector James M. McEwen, reflecting upon this crisis, said, "It was gratifying to find the great bulk of the people seconding our efforts in this regard. Instead of meeting our officers with a frown and avoiding them altogether, as is frequently done at other times, they seemed to anticipate their coming and generally met them cheerfully and more than halfway."[10]

The Chamber of Commerce appeared on the health scene and offered its cooperation to health officials.[11] Business and civic leaders had organized the Chamber of Commerce in 1874 "to protect, foster and develop the commercial, manufacturing and business interests of Allegheny County by joint and concerted action."[12] In 1892, for the first time since the founding of the Chamber of Commerce, the organization played an active role in health affairs. It is possible that the same people who ignored the less spectacular diseases, yet responded to the threat of cholera, did so because they did not associate the less spectacular diseases with a business decline, but did fear the adverse influence of cholera

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8. Ibid., p. 32.
9. Ibid., p. 53.
10. Ibid., p. 54.
11. Ibid., p. 27.
12. Stefan Lorant, Pittsburgh The Story of an American City, Doubleday and Company, New York 1964, p. 160.

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upon commerce and industry in Pittsburgh.

Deaths due to cholera were not recorded in the Bureau of Health's vital statistics for 1891 and 1892 or in subsequent years. The cholera panic waned and few of the recommendations of the sub-committee were inaugurated.

At the same time that the citizens of Pittsburgh responded with such activity to an impending epidemic of cholera they neglected the daily, less spectacular health problems of the city. During the same year that forces were mustered to combat cholera, the Bureau fo Health sought but did not receive funds for better hospital facilities. Indeed, a pending ordinance in city council provided for the sale of the existing smallpox hospital and its grounds. With the smallpox hospital in danger of removal and without a municipal hospital for the care of infectious diseases such as diphtheria and scarlet fever, the Superintendent of the Bureau of Health stated, "It is a lasting disgrace upon the name and fame of this great usually benevolent city, that it has no hospital in which to care for its poor and needy citizens who may be stricken with these contagious diseases."[13] Other serious health related problems, for example, the sale of adulterated or disease carrying milk, the ever present garbage collection and disposal problem and the unhealthy and inadequate water supply remained unresolved in the decade of the nineties.

Table XIII illustrates further the significant

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13. Annual Report of the Bureau of Health 1892, p. 10.

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disparity between the diseases people worried about, such as cholera and smallpox, and those causing the most deaths; and points out that while citizens and officials dissipated their energies worrying about cholera, ever present whooping cough, measles, diphtheria, scarlet fever and typhoid fever continued to take a high toll in human life. For instance, in 1883, a non-smallpox year (17 deaths due to smallpox) diphtheria caused 170 deaths, typhoid fever 188, whooping cough 80, measles 42 and scarlet fever 50 deaths. In 1881, a smallpox epidemic year (448 deaths due to smallpox), scarlet fever caused 332 deaths, typhoid fever 248, and diphtheria 210. Despite these mortality statistics Pittsburghers accepted as normal the deaths attributable to diseases other than smallpox. There was cause for dismay only when mortality rates showed a marked increase for a specific disease as in 1877 and 1878 when diphtheria prevailed in Pittsburgh, and in 1887 when typhoid fever prevailed.

Health officials could easily be moved to action by fear of cholera but their responses to diphtheria and typhoid fever for instance, diseases which were ever-present and did claim many lives, illustrates that the Board of Health responded to health problems only when they believed a crisis was impending because the disease was on the rampage or death rates were extraordinarily high.

Diphtheria caused numerous deaths in the period under discussion, and reached epidemic proportions from August 1877 to July 1879. 401 persons died from diphtheria in 1877 and 383 in 1879. Only during these two peak years did diphtheria

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Table XIII

City of Pittsburgh:

Deaths from Infectious Disease, 1873-1895[14]

	Disease						
Year	Measles	Whooping Cough	Diphtheria	Smallpox	Scarlet Fever	Typhoid Fever	Cholera
1873	47	57	73	25	122	194	-
1874	71	79	53	--	313	149	-
1875	15	55	64	29	208	121	-
1876	37	24	77	86	93	84	-
1877	39	136	401	269	95	71	-
1878	4	53	483	113	94	115	-
1879	54	62	354	1	95	91	-
1880	89	102	311	--	220	211	-
1881	46	37	210	448	332	248	-
1882	91	96	185	300	63	268	-
1883	42	80	170	17	50	188	
1884	69	35	321	12	71	130	-
1885	46	65	243	--	153	154	-
1886	117	109	249	--	182	140	-
1887	180	43	281	2	46	269	-
1888	55	64	126	--	45	191	-
1889	66	37	213	2	85	218	-
1890	157	18	206	--	33	315	-
1891	33	114	301	--	59	248	-
1892	24	55	285	2	114	256	-
1893	175	98	171	--	204	294	-
1894	34	117	128	1	81	152	-
1895	42	24	132	--	114	213	-

14. Statistics from Annual Reports of Board of Health and Bureau of Health Reports, 1873-1895.

concern health officials, although recorded deaths from diphtheria were always high.

There existed a diversity of views about the etiology of diphtheria until the last decade of the nineteenth century. A consistent method of prevention and control of the disease eluded health officials until the etiology of the disease was clarified. Some physicians and health officials considered the contagious character of diphtheria to be its paramount cause. Many others believed that the local unsanitary conditions, filth and dampness, spread diphtheria. Another group of physicians and health officials thought that the complex causes of contagion and local conditions facilitated the spread of diphtheria. Crosby Gray, the Health Officer of the Board of Health stated in 1877 that the sanitary condition of the city was not good, and he associated the prevalence of diphtheria with improper drainage and sewerage. "From the most reliable information and data available it was due [diphtheria] in great measure to improper and insufficient drainage and sewerage. This matter is not considered of sufficient importance by the public or by the city authorities. Although theoretically it is a subject which has engaged the attention of the Board of Health for a number of years, yet practically it has done and could do but little more than recommend. These recommendations I regret to say were not always upheld, much to the detriment of public health."[15] The Board of Health believed that lack of proper drainage,

15. Annual Report of the Board of Health 1877, p. 7.

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faulty receptacles for night soil, and badly constructed sewers and sewer connections contributed to the prevalence of diphtheria in Pittsburgh. They offered a resolution to city councils to clean the sewers and sewer traps, and city councils in turn referred the resolution to the commissioner of the South Side district for an estimate of cost. After numerous delays, a resolution to clean the sewers and sewer traps on the South Side was passed, "but not until the disease had played sad havoc among residents of that locality and spread to other portions of the city."[16] Because many regarded diphtheria as only mildly infectious, they did not employ isolation and disinfection as weapons against the spread of the disease. Dr. Sniveley, the physician to the Board of Health noted that diphtheria in Pittsburgh struck children among whom the average age of death was four years eleven and one half months and that the outbreak of the disease was sudden and initially restricted to an area lacking adequate sewerage. "The evidence furnished by the disease during its prevalence in this city sustains the opinion entertained by a majority of professionals in Great Britain and on the continent of Europe, vis. that it is a decidedly miasmatic or infectious, and moderately contagious disease."[17] This stress upon the relationship between the high incidence of deaths from diphtheria and the inadequate sewerage system of Pittsburgh led the Board to counteract the epidemic with

16. Ibid., p. 16.

17. Annual Report of the Board of Health 1878, p. 66.

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recommendations for better sewers, which was done only when death rates from diphtheria were high.

The reaction to typhoid fever was equivalent to that of diphtheria. Except that health officials employed an economic argument in an appeal to city councils to act to stop the spread of typhoid fever. Epidemics of typhoid fever affected the working force (adults) while diphtheria was a disease that mainly affected children.

Numerous yearly deaths resulted from typhoid fever in Pittsburgh (see Table XIII), but this disease, despite a "normal" high rate of incidence, did not command the attention of the Board of Health until epidemic conditions existed. In 1887, when typhoid fever caused 269 deaths the Board of Health appointed a special committee to examine the South Side water supply and to inquire into an epidemic in that section.[18] The Board of Health employed Hugo Black, Professor of Chemistry at Western Pennsylvania Medical College, and two chemists, Mr. Hunt and Mr. Clapp, to make a chemical analysis, and Dr. E. A. Mundorff and Professor J. H. Logan, both on the faculty of West Penn Medical College, to make a microscopic examination of the South Side water supply. Both studies proved the water impure, associated the typhoid fever epidemic with impure water supply,[19] and blamed the character of the South Side water supply for the high incidence of typhoid fever.

Action was not taken to purify the South Side's water

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18. Annual Report of the Board of Health 1880-1887, p. 58.

19. Ibid., p. 59

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supply. Apparently the use of experts in the field of chemistry and microscopy did not convince the city councils of the need for pure water. The Board of Health tried another line of reasoning, an economic argument. "A continuation of such a water supply for twenty years to come, with the yearly increase in contamination that in the nature or character of the surroundings is inevitable, means to the South Side and to the city at large, leaving out all sentiment and taking only a business view of it, a great loss in production on account of sickness and disability. It means a great loss in the increase of wealth that would accrue from this production. It means thousands of deaths, the money value of which, if added to the loss in production, would be more than sufficient to procure a good water supply, if it be brought a hundred miles."[20] Members of a special committee of the Board of Health, J. C. Dunn, James McCann and Crosby Gray calculated the economic loss from typhoid fever. If 260 people died and each life was worth $1,275, the total value would be $331,500. Burial expenses were estimated a $50 per person, totaling $1,300. They then estimated a probable 2,600 people ill and therefore unemployed for 30 days, a total of 78,000 days lost, deducted fifteen percent and were left with 66,300 days of lost labor. They calculated that the average value of a day's labor in 1887 was $1.25 and assumed that $82,875 would be lost in that manner. The cost of nursing was calculated at one quarter of the total of $82,875

20. Ibid., p. 64.

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or 31¢ a day. Therefore the money spent in nursing equalled $20,718. The cost of medicine at $2 a person totaled $5,200. The value of production lost was estimated at one-third of a day's wages or 42¢, totaling $27,625. The grand sum of lost wealth caused by typhoid fever thus equalled $480,916.[21]

There is further evidence that other diseases exacting a high toll in human life did not receive the full attention of the Board of Health, especially during periods of an impending cholera or smallpox epidemic. They were simply not crisis diseases. Tables XIV, XV, XVI display yearly deaths from infant mortality, pneumonia and bronchitis and consumption, respectively.

Mortality records from 1873 to 1895 for the city of Pittsburgh indicate that infant mortality was always high. Statistics for each of these years attribute at least forty percent of the total mortality to deaths of children under five years of age. Bronchitis and pneumonia, neglected by health officials, also took a high toll in human life.

Health officials accepted consumption or tuberculosis, a major killer, as a factor in the lives of the people in industrial cities. In the nineteenth century, although consumption appeared in all major cities, physicians considered the disease constitutional rather than contagious. Because they believed that the disease was not highly contagious, physicians and health officials did not associate the disease with the spread of industrial society which created conditions

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21. Ibid., p. 65.

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Table XIV

City of Pittsburgh:

Infant Mortality, Expressed as Percentage of Total Mortality 1877-1895[22]

Year	% of Total Mortality	Year	% of Total Mortality
1877	51.29	1887	45.5
1878	47.13	1888	46
1879	-----	1889	41
1880	-----	1890	43
1881	-----	1891	42
1882	46	1892	----
1883	40	1893	41
1884	48.5	1894	----
1885	44	1895	40
1886	49.5		

22. Statistics from Annual Reports of the Board of Health and the Bureau of Health, 1877-1895.

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Table XV

City of Pittsburgh:

Deaths from Pneumonia and Bronchitis 1880-1895[23]

Year	Deaths from Pneumonia	Deaths from Bronchitis
1880	203	92
1881	221	71
1882	306	106
1883	261	68
1884	357	120
1885	349	125
1886	418	143
1887	408	163
1888	304	222
1889	447	153
1890	556	153
1891	704	---
1892	---	---
1893	680	---
1894	526	159
1895	556	184

23. Statistics from Annual Reports of the Board of Health and the Bureau of Health, 1880-1895.

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Table XVI

City of Pittsburgh:

Yearly Deaths from Consumption, 1873-1895[24]

Year	Number of Deaths	Year	Number of Deaths
1873	326	1885	372
1874	331	1886	380
1875	345	1887	408
1876	341	1888	363
1877	301	1889	309
1878	315	1890	350
1879	261	1891	437
1880	314	1892	435
1881	349	1893	449
1882	316	1894	455
1883	353	1895	366
1884	355		

24. Statistics from Annual Reports of the Board of Health and the Bureau of Health, 1873-1895.

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that facilitated the spread of consumption. They were either unable or unwilling to associate one with the other. The successful control of tuberculosis took time, new bacteriological knowledge and a new set of values.

Mortality records for contagious diseases in Pittsburgh in the second half of the nineteenth century, when viewed in the context of the activities of the Board of Health, have revealed the prevailing social attitude toward disease by pointing out the discrepancy between diseases that took the highest toll in human lives and those causing the most activity on the part of city health authorities. The crisis mentality added only one component to social attitudes. The other component, neglect of the crowd diseases which we now associate with the spread of urbanization and industrialization, inhibited activities to create a healthy, disease free city. Evidence does not exist to show that civic leaders or health officials questioned the high incidence of endemic illness in Pittsburgh until the twentieth century.

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VI. THE 1888 REORGANIZATION OF THE BOARD OF HEALTH

By the eighth decade of the nineteenth century it was clear that the provisions of the 1816 charter no longer met the needs of the people of Pittsburgh. In 1887 a new charter was granted to the city by the state legislature which apparently recognized the stresses and strains placed upon the machinery of Pittsburgh government during a period of rapid urbanization.

In 1816 Pittsburgh was a small community of 6,000 people. The city, once rustic and dominated by its natural surroundings of rivers, hills and forests, in 1888 had for its dominant environmental components factories and their by-products, including tenements, overcrowding, dirt, rapid growth, dirty rivers and a smoky atmosphere. Complex urban growth undermined the pure air, clean water and open space of the once-sylvan setting of Pittsburgh.

Together with phenomenal industrial expansion the population grew steadily and the area of the city increased. The population in Pittsburgh increased from 7,248 in 1820, to 238,617 in 1890. Table XVII shows the increase in population in Pittsburgh from 1820 to 1890 in ten year periods. In 1868 the city extended its boundaries by annexing the townships of Pitt, Peebles, Liberty, Collins, and Oakland. In 1872 the boroughs of South Pittsburgh, Monongahela, Allentown, St. Clair, Lawrenceville, Temperanceville, Birmingham, Sigo, Mt. Washington, West Pittsburgh and Ormsby

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Table XVII

City of Pittsburgh Population, 1820-1890[1]

Year	Population
1820	7,248
1830	12,568
1840	21,515
1850	46,601
1860	49,221
1870	86,076
1880	156,389
1890	238,617

1. Stephen Lorant, Pittsburgh The Story of an American City, Doubleday and Company, Inc., New York, 1964, pp. 462-471.

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were annexed.[2] These changes created the necessity for a better, more rational municipal organization to keep pace with the growing community.

The new charter attempted to rationalize the administration of city government. For this reason it was bound to have some effect upon the Board of Health. Provisions of the charter and its effect upon the operation of the Board of Health are the subjects of this chapter.

When the city councils of Pittsburgh enacted an ordinance to effectuate the Pennsylvania Act of Assembly that granted the new charter they abolished all boards and commissions. The ordinance went into effect on February 1, 1888. It transferred the powers and authority of the former boards and commissions to departments and subdivisions called bureaus and gave executive power to the Mayor and five newly established departments: Public Safety, Public Works, Charities, Awards and Law. The Department of Public Safety had responsibility for the protection of public health and municipal cleanliness.[3] The Bureau of Health, a subdivision of the Department of Public Safety consisted of a "Superintendent and such other officers, clerks and inspectors as shall be authorized in persuance of the provisions of this ordinance."[4] Thus

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2. Ibid., pp. 467, 468.

3. The ordinance read, "The Department of Public Safety shall embrace the care, management, administration, supervision of Police affairs and matters relating to public health, to the fire and police force, the city's telegraphs and the inspection of buildings including plumbing, gas fittings and house drainage." Ordinance Book VI, City of Pittsburgh, p. 228.

4. Ordinance Book VI, City of Pittsburgh, p. 230.

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the old Board of Health ceased to exist and its powers, duties and authority became those of the Bureau of Health.

The desire to improve administrative efficiency, rather than the desire to alleviate deteriorating environmental conditions of Pittsburgh, as reflected in health statistics, was the key to the change in the organization for providing health services. Therefore the new Bureau of Health did not receive new duties or responsibilities. Neither public health workers or city councilmen expounded a new philosophy or viewpoints. The most articulate spokesman for health reform in Pittsburgh, Crosby Gray, was not an officer of the new Bureau of Health although he had served as Health Officer of the Board of Health since 1869 and had been consistently active in seeking public health reform. In 1888 Gray was promoted to the position of Chief Clerk of the Department of Public Safety. He later returned to again serve the health needs of the people of Pittsburgh as Superintendent of the Bureau of Health in 1895.

Despite the reorganization of the government of Pittsburgh in 1888, the day-to-day operation of the new Bureau of Health exhibited few changes from those under the old Board of Health. The membership of the new Bureau of Health represented the major change that occurred. From 1851 to 1887 the nine-member Board of Health, chosen from city councils, often changed with city elections. Moreover the elected Board members had three responsibilities: first, as members of the Board of Health: second, as members of the Select or Common Councils: third, in their own profession or

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business. Thus the health affairs of the city of Pittsburgh were not always the primary concern of members of the Board. The Board had added a number of salaried employees to its staff in 1872, and they in turn added some continuity to operations.

The major difference between the Bureau of Health and the Board of Health was that the Bureau did not have elected members chosen from councils. The direction of the Bureau of Health's activities came from the Department of Public Safety and the Superintendent of the Bureau of Health, all paid employees of the city.

The professional staffs of the Board of Health and the Bureau of Health had many similarities. The Board of Health had six officers: the Health Officer, the Physician and Registrar of Vital Statistics, the Attorney, the Meat and Milk Inspector, the Registration Clerk and the Sanitary Inspector. The Bureau of Health had almost the same organization; Superintendent of the Bureau of Health, Physician and Registrar, Registration Clerk, Chief Sanitary Inspector and the Meat and Milk Inspector. Both the old and new health agencies employed a number of other workers, such as sanitary inspectors, clerks, workers at the smallpox hospital, and workers at the garbage furnace.

In 1888 a change in personnel occurred both in the ranks of the executive officers and in the corps of sanitary inspectors. Although the divisions were similar, few men remained at their old jobs. Table XVIII shows the members of the professional staff of the Bureau of Health, the years

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Table XVIII

City of Pittsburgh:

Professional Staff of Bureau of Health 1888-1895

Name	Title	Year Employed by Bureau of Health	Previously Employed by Bd. Health	Means of Livelihood Before Employed by Bureau of Health
Wilber F. McKelvy	Superintendent Chief Clerk	'88 '89-'92		Attorney, Real Estate
W. Sniveley	Physician and Registrar	'88	Yes	Physician
John W. McKee	Registration Clerk Chief Clerk	'88-'92 '93-'95	Yes	Health Inspector
James M. McEwen	Chief Sanitary Inspector	'88-'93,'95		Laborer or Printer
G. W. McCutcheon	Meat and Milk Inspector	'88-'91		Contractor
Thomas W. Baker	Superintendent Vegetable Insp.	'88-'93 '95		Cigar Maker and Dealer
J. G. McCandless	Physician and Registrar, Head Div. Vital Statistics	'89-'93,'95		Physician
J. N. Watters	Vegetable Inspector	'89		
Samuel Kilgore	Vegetable Inspector	'90,'91		Real Estate
David Price	Meat and Milk Insp.	'92,'93	Yes	Sanitary Inspector
Crosby Gray	Superintendent	'95	Yes	Health Officer
Katherine Flinn	Transcribing Clerk	'91-'93,'95		Teacher
William B. Evans	Night Clerk	'91-'93,'95		Watchman at Court House
Jesse W. Young	Registration Clerk	'93-'95		Health Inspector

*Bureau of Health records are missing for the year 1894.

each man was employed, the men who had been previously employed by the Board of Health, and their means of livelihood before working for the Bureau of Health. Of the fourteen people noted only four had previously worked for the Bureau of Health. The most striking feature of Table XVIII is the conspicuous absence of physicians. One supposes that physicians would have contributed to the Bureau of Health by virtue of their depth of interest in health matters. Physicians had been well represented on the Board of Health. The previous occupations of Bureau of Health members had little relationship to health matters. It is possible that political patronage helped many Bureau employees to receive their jobs.

Table XIX shows the sanitary policemen employed by the Bureau of Health. Only three men employed by the Bureau as sanitary policemen had previously been health inspectors; the rest were new to the health organization. The range of previous occupations is similar to those listed for the sanitary inspectors of the Board of Health.[5]

The duties and powers of the Bureau of Health remained the same as those of the Board of Health. City councils did not pass new health laws in 1888 nor did they extend the Bureau's powers to enforce the old laws. The ideas of the sanitarians which equated municipal cleanliness with public health, remained the dominant theme of public health in Pittsburgh. The application of new technology to specific

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5. Tables V, VI and VII describing members of the Board of Health, the Executive Officers of the Board of Health and the Sanitary Inspectors of the Board of Health can be found in Chapter III.

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Table XIX

City of Pittsburgh:

Sanitary Policemen 1889-1895

Name of Sanitary Inspector	Year He Served as Sanitary Inspector	Total Years as Sanitary Insp. Bureau of Health	Served Bd. of Health as Sanitary Inspector	Means of Livelihood Before Working for Bureau of Health
E. M. McKenna	'89-'93,'95	6	Yes	Inspector Bd. of Health
Henry Barlow	'89-'93,'95	6		Tinsmith
David Price	'89-'91	3	Yes	Health Inspector Board of Health
George W. Moore	'89-'91	3		Engineer
James McCandless	'89-'93,'95	6		
Jesse W. Young	'89-'92	4		Carpenter
M. S. Brobeck	'89,'90,'92-'93, '95	5		
John F. Jones	'89-'92,'93,'95	6		
Charles Havis	'89-'92,'95	5	Yes	Health Inspector Board of Health
Earl H. Black	'89	1		Clk. Prothonotory's Ofc.
Walter R. Black	'90-'92	3		Painter
Wm. Angloch	'92,'93,'95	3		Salesman
Joseph D. Jones	'92,'93,'95	3		Brass Roller
Theodore Heineman	'92,'93,'95	3		Bottler
H. J. Pace	'93	1		
R. W. Scott	'93	1		Porter
John C. Conner	'93	1		
John Blenning	'95	1		
Henry S.Ley	'95	1		Clerk
Jesse M. Morris	'95	1		

*The name of some sanitary policemen were not listed in City Directory before they were employed as sanitary policemen.

disease problems did not engage the Bureau of Health at this time. The removal of nuisances, removal and disposal of garbage, inadequate and unhealthy water supply and control, and not prevention of disease, remained the major health concerns of health authorities in Pittsburgh.

Before and during this period of reorganization to provide better city government, the annual per capita expenditure for health, as judged by appropriations to the Board of Health and the Bureau of Health, was increasing and the total city budget allocated to the Bureau of Health was also increasing. Table XX shows the year, the appropriation for the health agency, the population, the amount appropriated per capita during three decennial years and the percent of the total city budget allocated for health purposes in 1870, 1880 and 1890. The per capita expenditure for health increased from $0.0233 in 1870 to $0.228 in 1890, approximately a tenfold increase. In terms of total city appropriations for all purposes, these expenditures represented 0.285% and 1.35% of the city budget, respectively. Increased amounts of money allocated for public health purposes reflects increased population and increased responsibilities for public health by the municipality.

In the remaining years of the nineteenth century a crisis mentality still pervaded the actions of the Bureau of Health. The new charter and the subsequent changes in the Board of Health hardly affected governmental attitudes and policies or the attitudes of Pittsburghers toward community health problems.

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Table XX

City of Pittsburgh

Budgetary Data 1870-1890[6]

Year	Approp. for Bd. or Bureau of Health	Total Approp. for City Gov't.	Population	Amt. Per Capita for Health in Dollars	% of Total City Approp. for Health
1870	2,000	699,700	86,076	0.0233	0.285
1871	3,000	202,000			
1872	4,000	867,238			
1873	10,000	1,319,000			
1874	10,000	2,168,000			
1875	18,000	1,569,824			
1876	8,000	1,543,750			
1877	12,000	1,314,805			
1878					
1879	12,000	3,731,240			
1880	12,000	2,479,953	156,389	0.077	0.485
1881	11,500	2,498,357	165,000		
1882	20,000		170,000		
1883	30,000	2,865,336	170,000		
1884	25,000	2,712,060	185,000		
1885	15,000	2,479,253	202,559		
1886	20,000	2,595,411	205,000		
1887			210,000		
1888	29,500	3,271,560	220,000		
1889	39,500	3,514,762	240,000		
1890	54,500	4,045,475	238,617	0.228	1.35

6. Appropriations from City Ordinance Books for 1870-1890. Pop. statistics from Board of Health reports, except for 1870, 1880, 1890. Those are from the decennial census. Note that there is a small disparity between population statistics from census and Board of Health Reports.

VII. TRANSITION TO USE OF BACTERIOLOGICAL SCIENCES FOR COMBATTING DISEASE IN PITTSBURGH

The bacteriological discoveries of the late nineteenth century and the techniques for their application led to a new concept of public health, responsibility for prevention rather than merely arrest or cure of disease. Knowledge of the mechanisms that caused specific diseases enabled public health authorities to integrate their existing responsibilities for sanitary measures with new ones for preventive measures provided by the new science.

The Pittsburgh experience gave credence to the essential belief of the sanitarians that dirt caused diseases because the relationship between poor sanitary conditions and high death rates from infectious disease proved their point. Therefore, the health authorities in Pittsburgh consistently concerned themselves with the improvement of drainage and sewerage, the need for an adequate and satisfactory water system, and the removal and disposal of garbage and other nuisances. The responses of the Board of Health to epidemics of diphtheria and typhoid fever in this period illustrate the reliance on municipal cleanliness as their most effective tool for control of infectious disease. As soon as an epidemic of typhoid fever or diphtheria occurred health authorities blamed the inadequate sewers, and resolved to clean or extend the sewers. If cholera was anticipated in Pittsburgh, health authorities immediately organized cleanup campaigns. The need for filth removal grew, while the city's expansion

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created immense problems of garbage removal and highlighted the inadequacy of the sewer system. The growing city served to emphasize the need for sanitary reform.

In the forty years between 1851 and 1895 medical knowledge contributed very little to the efforts directed at the control of infectious disease in Pittsburgh. In the two decades prior to 1895 the science of bacteriology progressed, but the application of new scientific knowledge lagged behind its acquisition.

Evidence rapidly accumulated toward the end of the nineteenth century that specific microscopic organisms, rather than miasmas, caused infectious disease. Table XXI, a chronological listing of laboratory identifications of organisms responsible for specific diseases, indicates how rapidly the new knowledge accumulated. The table shows fourteen different pathogenic organisms identified in the short span of nine years. These investigations proved the relationship of bacteria to disease by identifying the modes of action of micro-organisms responsible for specific diseases. The logical outcome of these discoveries was control of infectious disease on a more rational basis.

A new public health institution, the diagnostic laboratory for the application of bacteriological knowledge to public health problems, had its roots in the bacteriological discoveries of the late nineteenth century.

It took time to transplant the new knowledge from the laboratory to the world of public health, and Pittsburgh was

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Table XXI[1]

Investigator and Year of Identification of Pathogenic Organisms

Year	Disease Organism	Investigator
1880	Typhoid (bacillus found in tissues)	Eberth
	Leprosy	Hansen
	Malaria	Laveran
1882	Tuberculosis	Koch
	Glanders	Loeffler and Schutz
1883	Cholera	Koch
	Streptococcus (erysipilas)	Fehleisen
1884	Diphtheria	Klebs and Loeffler
	Typhoid (bacillus isolated)	Geffky
	Staphlococcus)	Rosenbach
	Streptococcus)	
	Tetanus	Nicolaier
1885	Coli	Escherich
1886	Pneumococcus	A. Fraenkel
1887	Malta Fever	Bruce
	Soft Chancre	Ducrey
1892	Gas Gangrene	Welch and Nuttal
1894	Plague	Yersin and Kitasato van Ermengem
1898	Dysentery Bacillus	Shiga

1. George Rosen, A History of Public Health, M. D. Publications Inc., New York, 1958, p. 314.

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not the first city to use the new scientific techniques. In 1887 Jospeh J. Kinyoun of the Marien Hospital Service established a diagnostic laboratory at the Marine Hospital on Staten Island in New York City. In 1888 Charles V. Chapin established a laboratory in Providence, Rhode Island; and in 1890 laboratory analysis to isolate cases of diphtheria was applied at the Emperor and Empress Frederick Children's Hospital in Berlin. New York City authorities applied the knowledge of bacteriology to public health in 1892 and instituted procedures to control diphtheria epidemics. In 1892, three years before the Division of Bacteriology was formed, the Pittsburgh Bureau of Health purchased a bacteriological outfit to diagnose possible cases of cholera.

In January, 1895 an important innovation occurred at the Bureau of Health, one which introduced a new era in Pittsburgh's organization for public health. City councils passed an ordinance creating in the Bureau of Health a division of bacteriology to produce diphtheria antitoxin, and to make investigations in the interest of public health and sanitary science.[2] This event reflected the belief that proper application of bacteriological science could lead to prevention of disease. Furthermore it meant that the weapons of the sanitarian and the bacteriologist could be used in concert to combat disease more effectively, and to moderate the crisis attitude that had pervaded public health practices in Pittsburgh.

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2. Ordinance Book X, City of Pittsburgh, p. 87.

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Immediately after the ordinance was passed the Director of Public Safety, J. O. Brown, appointed a bacteriologist and an executive committee composed of the Physician of the Bureau of Health, the Surgeon of the Bureau of Police, and the Surgeon of the Bureau of Fire to take charge of the general management of the affairs of the new division. They purchased apparatus, equipped a laboratory and appointed a chemist and other employees. By April 1, 1895, employees of the Division of Bacteriology made the first biological examinations of cultures from suspected cases of diphtheria and in October, 1895 they issued the first antitoxic serum. In addition to the production of antitoxic serum and bacteriological analysis of suspected cases of diphtheria the Division conducted a large number of chemical analyses of water from suspected wells and springs and of milk and other articles.[3] The Division employed a bacteriologist, chemist, clerk and groom.

As soon as the Bureau of Health inaugurated the laboratory diagnosis of diphtheria it made the following announcement, in order to reach all physicians in the city of Pittsburgh. Without the cooperation of physicians the laboratory was useless.

"Department of Public Safety
Bureau of Health
Division of Bacteriology
Ross and Diamond Streets
Pittsburgh April 1, 1895.

The Bureau of Health desires to
announce to the physicians of Pittsburgh

3. Annual Report of the Bureau of Health 1895, p. 80.

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> and to the public the establishment of a Division of Bacteriology.
>
> This division is now prepared to make use of Bacterial Cultures for the purpose of diagnosis in all cases of suspected Diphtheria, including Membranous Croup, occurring in this city, and desires that in every case the attending physician should himself make the innoculations, or have some competent person make it for him."[4]

The Division of Bacteriology established thirty-one stations throughout the city from which physicians could obtain free culture-making apparatus. Physicians were asked to culture every suspected case of diphtheria as soon as possible. After the city's bacteriologist received the cultures he examined them and reported the results of his examination to the physician.

Before the new Division of Bacteriology became really effective it was necessary for the public and the city's physicians to accept the new procedures. The Pittsburgh Medical Review lent its support to the new laboratory. "For a number of months the bacteriological laboratory has been in active operation and has done much good. In the light of our present knowledge no physician is justified in making a diagnosis in case of membranous throat diseases without the aid of the bacteriologist. This aid is furnished by the Department of Public Safety, and the results of the bacterial cultures are furnished him in the shortest possible space of

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4. Ibid.

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time."[5]

Despite the endorsement by the Bureau of Health and the local medical society, antitoxin was not always used in confirmed cases of diphtheria. Reluctant parents often refused to allow physicians to inject their children. "No matter how unprecendented a line of treatment might be, the parents would not even be consulted if it was accomplished by applications to the throat or internal remedies; a hypodermic injection however betrays the novelty of the method, and forces the physician to obtain the consent of the parents. It is obvious that this would have a great influence in causing the mild cases which retain their mild character throughout not to be injected, but what is worse, in others it would cause injection to be postponed until death is imminent."[6] The hesitant physicians tended to reserve antitoxin for severe cases. As one would expect, the new remedy was more often tried only in the face of imminent death rather than during an earlier phase of the disease. The physician faced a dilemma; he feared diphtheria but on the other hand he hesitated to use the antitoxin.

Physicians did not change their views about the spread of disease quickly. While alert to the importance of the new science of bacteriology for the prevention of infectious disease, they apparently could not completely discard the old miasmatic theory. In an article written for the Pittsburgh

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5. The Pittsburgh Medical Review, September 1895, p. 278.
6. Annual Report of the Bureau of Health 1895, p. 165.

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Medical Review about preventive medicine, a local physician Dr. Charles Shaw, stressed the need for knowledge of disease germs and at the same time restated the ideas of the sanitarians. "It is evident that a knowledge of the special qualities and properties that distinguish the germs of the different infectious diseases is necessary before we can combat them successfully. This is the work that almost monopolizes the attention of pathologists at present, and their progress within the last years has been flattering. The results obtained by Pasteur and Koch and a host of other laborers not only demonstrate the value of this work, but also indicate an ultimate success and promises the happiest effects in preventive medicine. But until complete success has crowned their labors the health of mankind will best be preserved by the observance of those rules of correct living summed up in good air, good food, good clothing and good habits aided by such sanitry laws as intelligent quarantine and rigid isolation."[7]

The City Councils and the Bureau of Health also recognized the new scientific aspect of public health while they retained the views of the sanitarians. The Bureau continued to stress the need for municipal cleanliness. The abundance of garbage, the inadequate water supply and limited hospital facilities remained major health concerns in the city of Pittsburgh. At the same time that city councils established the department of bacteriology, they passed a new ordinance

7. Pittsburgh Medical Review, Vol. IV, May 1890, p. 147.

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to provide for the regulation, collection and disposal of garbage, offal, dead animals and condemned meat.[8]

Although it is significant that the new science of bacteriology brough with it, "...a major shift in the program of community health action. From the control of man's environment attention was turned to the control of specific communicable disease."[9] In Pittsburgh the bacteriologists did not eclipse the sanitarians. Both ingredients of a public health program, control of the environment and control of specific disease, contributed to the program of the Bureau of Health.

Unfortunately for the citizens of Pittsburgh neither the program for control of the environment or control of disease were able to create a clean and healthful city. The mechanisms existed to overcome many of the health problems of Pittsburgh, but they were not efficiently or effectively used. Although adverse health conditions were remediable whenever the community thought it worthwhile to remedy them, for the remainder of the nineteenth century the city of Pittsburgh continued to produce wealth on a vast scale alongside physiological misery.

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8. Ordinance Book X, City of Pittsburgh, p. 94.
9. George Rosen, A History of Public Health, p. 247.

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VIII. EPILOGUE

"Each civilization has its own kind of pestilence and can control it only by reforming itself."[1]

The evolution of the idea that the community should be responsible for aspects of public health which are beyond the control of citizens acting individually is the positive aspect of the history of organization for public health in Pittsburgh in the second half of the nineteenth century. Infectious disease, a major health problem of the nineteenth century, and one that earlier had to be dealt with by the individual affected, had become by the end of the nineteenth century a community problem subject to community measures for solution. When environmental conditions in Pittsburgh could no longer be satisfactorily dealt with on an individual basis, the municipality legally assumed those responsibilities. The expansion of responsibilities occurred at three periods: 1851 when the city councils established a Board of Health; 1872, when city councils attempted to rationalize the organization of the Board and provided for a corps of professional health workers and the collection and compilation of vital statistics; and 1895, when health authorities incorporated the use of bacteriological science to prevent disease.

Health regulations did not keep pace with the expanding city; and only the catastrophe of an epidemic of disease

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1. Rene Dubos, Mirage of Health, Doubleday and Company, Inc. Garden City, New York, 1959. p. 163.

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prompted city authorities to assume minimal responsibilities for public health. Inadequate, last minute responses to health problems characterize the activities of the Board of Health in Pittsburgh in the nineteenth century. A pattern of action, taken only in response to a crisis, started early in the nineteenth century and continued to exist until the end of that century. Thus the Board of Health, established in 1851, was a response to the crisis created by fear of cholera; the reorganization of the Board of Health in 1872 was a response to an epidemic of smallpox. Efforts by the Board of Health to arrest an epidemic of typhoid fever in 1887 and diphtheria in 1877-79 also illustrate how the Board responded in periods of stress.

The growing needs of an expanding city created a desire to improve administrative efficiency in the city's health agency. They led to innovations in public health practices such as the employment of a corps of professional health workers, the collection of vital statistics and the printing and publishing of records of the health agency. These efforts to rationalize the activities of the Board of Health contributed most to moderating the crisis philosophy toward public health in nineteenth century Pittsburgh.

The sanitary condition of the city of Pittsburgh deteriorated as the nineteenth century progressed. Inadequate sewerage systems, inadequate pure water and inadequate garbage removal and disposal facilities created conditions that allowed disease to thrive. Municipal uncleanliness, linked to high disease and death rates, remained an unsolved problem

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in the nineteenth century. The growth of the industrial city only emphasized the need for sanitary reform.

The rapid spread of diseases such as tuberculosis, diphtheria, typhoid fever, pneumonia and bronchitis, facilitated by urbanization and industrialization, received little attention from health authorities. Mortality records for contagious diseases in Pittsburgh from 1872 to 1895, viewed in the context of municipal health activities, have revealed the discrepancy between diseases which extracted the highest toll in human life and those which caused the most activity on the part of citizens and health officials. Because health officials accepted as "normal" high death rates from diphtheria, tuberculosis, typhoid fever and pneumonia they did not take steps to arrest their spread until the diseases reached epidemic proportions.

In 1895, for the first time in Pittsburgh, the bacteriological discoveries and the techniques for their application led to a new concept in public health prevention of disease rather than merely arrest or cure.

Hampered by lack of funds, lack of knowledge of how best to combat disease, inattention to health questions by the governing body, and a minimal amount of pressure from citizens for better health conditions, the municipal health agency could not effectively counteract the rapid deterioration of the environment and the accompanying high rates of disease brought to Pittsburgh by industrial and urban expansion.

Public health practices reflect the political and

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social climate of an age. Industrial expansion that transformed Pittsburgh's productive capacity and created an industrial metropolis dominated life in that city. Business ideologies and the material ambitions of men of that era pervaded the city. The acquisitive spirit drawfed humanitarian instincts, resulting in haphazard planning for health alongside of more efficient industrial organization. Even health reformers accepted, unexamined, a society that could create enormous wealth together with physiological misery, unperturbed by the fact that the major health questions of their day were symptomatic of the problems of an emerging industrial society.

City councilmen and civic leaders did not always respond to the needs of the citizens of Pittsburgh. The spoils of politics rather than the welfare of Pittsburghers often assumed importance to political leaders. Beside governmental irresponsibility to the needs of the citizens the cost of unwieldy government kept rising. Although expenditures partially reflected growth of population, other reasons existed for the rising cost of governing Pittsburgh. The rise in the cost of government "had to be set down to the inefficiency with which American cities were customarily governed in the Gilded Age. Not only was the form of government in itself cumbersome, but the motives of the governors were sometimes open to question. City government in Pittsburgh as elsewhere, was not an art, still less a public service, but a business - a business, moreover, conducted not for the benefit of the public but for the servants of the

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public, whose interests did not always coincide with those of their constituents. The reverse, in fact, was usually true, for the same officials who were so niggardly in appropriating money for the support of the police or the upkeep of the streets dispensed funds among themselves with a lavish hand."[2] Lincoln Steffens' expose of the corruption in Pittsburgh city government also revealed how unresponsive government was to the needs of the citizens of Pittsburgh.[3] The government of Pittsburgh, corrupt, expensive and unresponsive to the social needs of its citizens, was ill designed to cope with the growing requirements of an emerging metropolis.

Thus, the low priority for health in nineteenth century Pittsburgh derived from the acquisitive spirit of the age, inept and corrupt city government and an indifferent public. Business leaders and government officials failed to actively promote public health, thus creating a near vacuum in this area of the public domain, if needs are contrasted with the actual developments. No other segment of the population had sufficient power to mobilize the citizens to develop a healthy city.

Because of the unwillingness and inability of municipal government to come to grips with social problems, by the end of the nineteenth century the spread of disease and the

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2. J. Cutler Andrews, "The Civil War and Its Aftermath," Stefan Lorant, ed. Pittsburgh the Story of an American City, pp. 161-162.

3. Lincoln Steffens, The Shame of Cities, McClure, Phillips and Co., 1904, pp. 101-133.

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destruction of the physical environment, results of the industrialization and urbanization process, had progressed too rapidly for the fragmented public health policies of the municipality to control.

Only in the mid-twentieth century did the city of Pittsburgh efficiently organize, through joint effort with Allegheny County, for effective public health and environmental reform. But that is another story.

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IX. MUNICIPAL ORGANIZATION FOR PUBLIC HEALTH IN PITTSBURGH, 1851-1895 IN THE HISTORY CLASSROOM

How can one relate new historical evidence about the past to teaching history? The purpose of this discussion is to consider the effective utilization in the classroom of the new historical material presented in the dissertation Municipal Organization for Public Health in Pittsburgh, 1851-1895. I do not choose to discuss how to organize a course of study, but rather to focus on the possible avenues of study which might be opened by classroom utilization of the dissertation.

One can present a traditionally oriented course or perhaps even use those methods of teaching inspired by the philosophy of John Dewey. Whether the method of teaching is traditional or progressive, the goal of creative teaching is the same -- to enable the student to discover the past, as fully as he is able, and to relate the past to the complexities of the present.

Municipal Organization for Public Health in Pittsburgh, 1851-1895 is restricted to events that occurred in a limited time, the nineteenth century, and in one place, Pittsburgh. With this realization in mind, it is possible to generalize from the Pittsburgh experience. In order to validly generalize, because each historical situation is unique, future historians must write about the specific public health experiences of other American cities. At this point in time documents of this type are rare.

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With the restricted nature of the dissertation subject matter clearly in mind, I have chosen four possible areas in which the material presented should prove useful, illuminating and relevant. They are:

A. A History of Public Health

B. Urban History in the Nineteenth Century

C. Comparative History

D. The Environment

The approach to be used in each of these areas is discussed below. Only section A, A History of Public Health, will be dealt with in great detail.

A. A History of Public Health

I. Rationale

It is rare to find a History of Public Health included among the course offerings in most American universities; nevertheless, it is an appropriate and relevant course in historical studies. George Rosen wrote, "The history of public health must concern itself with two components. One is the development of medical science and technology. Understanding the nature and cause of disease provides a basis for preventive action and control. However, the effective application of such knowledge depends on a variety of non-scientific elements, basically on political, economic and social factors. This is the other major strand in the fabric of public health, and to this component we now turn."[1]

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1. George Rosen, A History of Public Health, M. D. Publications, Inc. New York, 1958, p. 109.

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The growth of a public health institution in Pittsburgh, the Board of Health, illustrates some of the elements of public health referred to by George Rosen. The events which caused the establishment of the Board of Health, and the ensuing attempts to achieve a rational administrative apparatus are pertinent areas for classroom exploration. They reveal more than the technological component of public health history. They reveal the social, intellectual, economic and political factors that caused the Pittsburgh Board of Health to develop in the slow and haphazard manner indicated in the thesis. I would use the evidence presented in Municipal Organization for Public Health in Pittsburgh, 1851-1895 to raise the following questions: What was the role of the Board of Health in Pittsburgh in the nineteenth century? What caused the Board of Health to expand? Why was the effectiveness of the Board of Health so limited? Did the Board of Health fulfill its obligations to the citizens? What was the role played by scientific and technological advancements in the extension of Board of Health responsibilities? What is the impact of disease upon a society?

II. Objectives:

1. To know the early theories about disease and its spread and how these theories influenced the framers of public health policy and the sanitary reformers of the nineteenth century.

2. To know about the early development of a municipal organization responsible for public health in Pittsburgh.

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3. To know that changing urban conditions and increased pressure from expanding population and growing industry led directly to increased municipal responsibility for public health.

4. To know those factors that either helped or hindered the municipal government in the process of assuming responsibility for public health.

5. To know that the new knowledge developed by the science of bacteriology influenced the theory and practice of public health.

6. To be able to generalize about public health theory and practice in nineteenth century United States in general and in the City of Pittsburgh in particular.

7. To develop the following hypotheses:

a) During the second half of the nineteenth century the new complexities of urban living led to enlarged measures to protect community health.

b) When environmental conditions and the spread of disease could no longer be coped with by the individual citizen the municipality assumed responsibility for certain aspects of health and environment. The assumption of responsibilities for community aspects of health beyond control of the citizen became part of the ideology of public health.

c) The assumption of public health responsibilities by the municipality did not always have a rational basis, but during the last half of the nineteenth century (1851-1895) the Pittsburgh Board of Health extended its responsibilities, inaugurated new functions, added new workers to its ranks,

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attempted to rationalize its organization and eventually used new scientific knowledge and techniques to combat disease.

d) The rational development of the Board of Health was hampered because the Board often acted only when a situation was critical, i.e. an epidemic of disease appeared in the city or the sanitary condition of the city could not be ignored. Lack of funds, lack of knowledge of how best to fight disease, inattention to health problems and a minimal amount of pressure from citizens for better health conditions also hampered the work of the Board.

III. Materials

1. Jacqueline K. Corn, Municipal Organization for Public Health in Pittsburgh, 1851-1895.
2. George Rosen, A History of Public Health, Chapters VI, VII.
3. Charles Rosenberg, The Cholera Years.
4. Slides: a) Occurrence of Disease in Pittsburgh, 1872-1895.
   b) Population Growth in Pittsburgh, 1816-1895.
   c) Yearly appropriations to the Board and the Bureau of Health, 1851-1895.

IV. Outline for Presenting Material in Class

Day I:

A. Early Public Health Practices and Policies

1. Early Theories about Disease

a) miasmatic

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c) combination of the two

2. Early Public Health Reformers

a) the sanitarians

3. Epidemics of Disease in the Nineteenth Century

a) cholera

b) smallpox

c) yellow fever

B. Relationship of Industrialization and Urbanization to Public Health

1. Growth of Industry

2. Growth of Cities

3. Rise in Population in the Cities

4. Surveys of Health Conditions

C. Summary

Day II:

A. Public Health Measures in Pittsburgh Prior to 1851

1. Ordinances for

a) markets

b) water supply

c) nuisance

2. 1832 Creation of Sanitary Board

3. All Measures Based upon Miasmatic Theory of Disease

B. Board of Health Established in 1851

1. Reasons

a) fear of epidemic of cholera

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b) poor sanitary conditions of the city

c) growth of the city

d) precedent for Board of Health in other United States Cities

C. Organization and Activities of the Board of Health

D. Summary

Day III:

A. Activities of the Board of Health 1851-1887

1. Early Activities Based on Crisis

a) cholera scare

b) smallpox scare

2. Efforts to keep City of Pittsburgh Clean

3. Efforts to Control the Spread of Disease

B. Social Impact of Disease

1. Different Reactions to "Crowd Diseases" and Diseases such as Cholera and Smallpox

2. Major Environmental Problems

3. Priorities in an Expanding Urban Industrial Society

C. Summary

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Day IV:

A. Efforts to Rationalize the Activities and Organization of the Board of Health 1872-1895

1. Organization of the Board of Health 1872

a) Act of Legislature 1872

b) changes brought about by new law

c) health measures result of external as well as internal factors

2. Efforts Toward a More Rational Administrative Apparatus

a) printing and publishing of Board of Health reports (including vital statistics)

b) corps of professional workers developing

B. Reorganization of the Board of Health 1888

1. Bureau of Health

2. Comparison of Board of Health and Bureau of Health

C. Summary

Day V:

A. Transition to Use of Bacteriological Sciences for Combatting Disease

1. New Knowledge Leads to Transition

2. How the New Knowledge was Used

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a) establish Division of Bacteriology in Bureau of Health

B. Shift in Emphasis in Public Health

1. Importance of Preventive Methods of Disease Control

2. Dualism in Public Health Ideas

a) bacteriological sciences and

b) sanitary measures exist side by side

C. Summary

Day VI:

A. Summary of the Previous Five Days

B. Discussion of Hypothesis and Generalizations About Public Health in Nineteenth Century Pittsburgh

C. Discussion About Public Health and Its Relationship to:

1. Government

2. Social Theory and Attitudes

3. Public Health Theory

4. Existing Knowledge

5. Industrialization and Urbanization

B. Urban History in the Nineteenth Century

Urban history, one of the liveliest and most fertile fields of historical inquiry, has led us to consider the physical, economic, social and political development of cities. The response of city government and citizens to

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community health problems certainly deserves a place in urban studies. Urban growth stimulated citizen demand for community services. Arthur Schlesinger wrote, "To master the new complexities of urban living demanded something more than the easygoing ways of colonial towns. Enlarged populations called for enlarged measures for the community safety and welfare, whether by government or otherwise."[2] W. Stull Holt suggests that a cycle of new urban problems, pressure and expanded political activity took place again and again in the American past. "The earliest instances in the expansion of urban governmental activity were concerned with the protection of health and fundamental utilities."[3] Schlesinger and Holt aptly state the rationale for including a study of public health in a course devoted to urban history. The questions of urban waste disposal, water supply and disease associated with the rising population densities conspired to make community health a public concern and created new needs which puzzled and troubled the growing municipalities. The growth of community responsibility for public health, and the successes and failures of the agencies entrusted with the responsibility for keeping citizens free from infectious disease, illustrate this viewpoint.

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2. Arthur M. Schlesinger, Paths to the Present, Macmillan Co., 1949.

3. W. Stull Holt, "Some Consequences of the Urban Movement in American History," Pacific Historical Review, Vol. XXII, Nov. 1953. p. 345.

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C. Comparative History

It would be interesting and worthwhile to compare the health agencies of two industrial cities in different centuries. For example, because there are many similarities between Saó Paulo, Brazil, a rapidly growing industrial city in twentieth century South America, and the rapidly industrializing nineteenth century city of Pittsburgh, Pennsylvania, they could be compared to each other. Pertinent questions to ask are; How did each city respond to the health problems created in a growing industrial metropolis? What solutions did each city seek for environmental problems created by rapid industrialization? How does the organization of Saó Paulo, specifically with respect to dealing with health and environmental problems, compare with health organization in Pittsburgh during the nineteenth century? What governmental agencies were spawned or redesigned in each city to attend to health and environmental matters? Were the humanitarian goals of good health and a clean, spacious and esthetically satisfactory environment sacrificed to the needs of growing industries? If so, why? Does planning for provision of health services exist in twentieth century Saó Paulo? What is the role of science and technology in decision making processes related to public health matters in Saó Paulo? What was their role in nineteenth century Pittsburgh? Does the experience of an older industrial city such as Pittsburgh have any effect on the developments, in the health related areas, in an emerging industrial city such as Saó Paulo?

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D. The Environment

Today many people, in all areas of the world, are keenly aware of the many environmental problems that plague residents of large urban regions. We are barraged by numerous articles, some scholarly and objective, others ominous, angry and apprehensive, warning human beings that they have befouled the air, filthied the water, abused the planet and brought physiological misery upon themselves. Ecological vandalism is not new. It has historical roots. An exploration of our nineteenth century environmental problems and their relationship to the same problem areas in the twentieth century is in order. The following questions are pertinent: Were citizens aware of environmental problems in the nineteenth century? If so, what measures and mechanisms, both private and communal, were used to cope with the problems? What proportions did environmental problems assume in the minds of our nineteenth century counterparts? If there is a valid analogy between public health problems in nineteenth century Pittsburgh and environmental problems in twentieth century Pittsburgh, what factors inhibited action or change then and now? What is the place of technology in environmental change? What is the role of the business ideology? What is the role of the citizen? What is the role of government?

There is a striking similarity between the sanitary reformers of the nineteenth century and the ecologists of the twentieth century. Their relationship to each other merits historical inquiry. The sanitarians of the nineteenth

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century were health pioneers of their day. Rene Dubos in his book Mirage of Health stated the relationship between the sanitary movement, in this case in England, and our modern environmentalists. He anticipated the ecology movement. "Just as the great epidemics of the nineteenth century were precipitated by environmental factors which favored the activities of pathogenic microorganisms, so many of the disease characteristics of our times have their origin in some faulty factor of the modern environment... ...The significance of the sanitary movement of the 1830's for the history of mankind resides in the fact that it was the first conscious and organized effort not for the treatment of disease, but for the creation of a happier, healthier world...An ideal might again inspire a new pioneering venture to attack the health problems of the present day."[4]

Although there are similarities between Pittsburgh's nineteenth century sanitarians and the modern ecologists, there is also a clear difference which is worthy of mention. The health reformers of the nineteenth century did not question the laissez faire, business ideology of their generation. The modern ecologists question this ideology. They question the motives of the industrial establishment and the many vested interests associated with inhibition or prevention of change.

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4. Rene Dubos, Mirage of Health, Anchor Books, New York, 1959. p. 181.

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BIBLIOGRAPHY

Pittsburgh City Records

1. City of Pittsburgh, Ordinance Books A1, 1-12 (1816-1895).
2. City of Pittsburgh, Annual Report of the Board of Health, 1872-1875, 1877, 1878, 1880-1887.
3. City of Pittsburgh, Annual Report of the Bureau of Health, 1888-1893, 1895.

Professional Journals (19th century)

1. Public Health: Reports and Papers of the American Public Health Association, vols. 1-3.
2. Pittsburgh Medical Journal, vols. I-III, 1881-1883.
3. Pittsburgh Medical Review, vols. I-IX, 1886-1895.

Newspapers

1. Daily Pittsburgh Gazette, 1850-1877.
2. Pittsburgh Commercial Gazette, 1878-1895.

Directories and Biographical Reviews

1. Pittsburgh City Directory 1872-1873, 1874-1875, 1876-1877, 1877-1878, 1878-1879, 1879-1880, 1880-1881, 1881-1882, 1882-1883, 1884, 1885, 1886, 1888, 1889, 1892, 1893, 1894, 1895.
2. Biographical Review XXIV, Pittsburgh and Vicinity, Biography Review Pub. Co., Boston, 1897.
3. Burgone, Arthur G., All Sorts of Pittsburghers, The Leader All Sorts Co., Pittsburgh, Pa. 1892.
4. Smith, Percy F., Notable Men of Pittsburgh and Vicinity, Pittsburgh Printing Company, 1901.

United States Government Documents

1. Federal Occupational Safety and Health Act of 1970, Public Law 91-596, 91st Congress, S.2193. Dec. 29, 1970.
2. 11th Census 1890, Report on Vital and Social Statistics

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in the United States, Part II, United States Government Printing Office, 1896, pp. 293-311.

3. 11th Census 1890, Report on the Population of the United States, Part I, United States Government Printing Office, 1896, p. cxci.

Articles

1. Duffy, John, "Hogs, Dogs, and Dirt: Public Health in Early Pittsburgh," Pennsylvania Magazine of History and Biography, vol. 86, no. 1, 1963, pp. 294-305.

2. Duffy, John, "Medicine and Medical Practice in Early Pittsburgh," Western Pennsylvania Historical Magazine, vol. 45, 1962, pp. 333-343.

3. Duffy, John, "The Impact of Cholera on Pittsburgh, Wheeling and Charleston," Western Pennsylvania Historical Magazine, vol. 47, 1964, pp. 199-211.

4. Holt, W. Stull, "Some Consequences of the Urban Movement in American History," Pacific Historical Review, vol. XXII, Nov. 1953, pp. 337-51.

5. Lubove, Roy, "The Urbanization Process: An Approach to Historical Research," Journal of the American Institute of Planners, vol. XXXIII, no. 1, 1967, pp. 33-39.

6. Parton, James, "Pittsburgh," The Atlantic Monthly, vol. XXI, no. CXXII, Jan. 1868, pp. 17-36.

Books

1. Allegheny County Medical Society, The First Hundred Years: A Century of Medical Progress, Allegheny Medical Society, 1965.

2. Baldwin, Leland D., Pittsburgh, The Story of a City, University of Pittsburgh Press, 1970.

3. Bryant, William Cullen, ed., Picturesque America; or, The Land We Live In, vol. II, Appleton and Co., New York, 1874.

4. Church, Samuel H., A Short History of Pittsburgh 1758-1908, DeVinne Press, New York, 1908.

5. Blake, John B., Public Health in the Town of Boston 1630-1822, Harvard University Press, Cambridge, Mass., 1959.

6. deKruif, Paul, Microbe Hunters, Harcourt Brace and Company, Inc., New York, 1926.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

7. Dubos, Rene, Mirage of Health, Doubleday and Company, Inc., Garden City, N. Y., 1959.

8. Duffy, John, A History of Public Health in New York City 1625-1866, Russel Sage Foundation, New York, 1968.

9. Cassedy, James H., Charles V. Chapin and the Public Health Movement, Harvard University Press, Cambridge, Mass., 1962.

10. Hamilton, Alice, Exploring the Dangerous Trades, Little Brown and Company, Boston, 1943.

11. Handlin, Oscar, and Burchard, W., The Historian and the City, M.I.T. Press, Cambridge, Mass., 1963.

12. Hanlon, John J., The Principles of Public Health Administration, C. V. Mosby Co., St. Louis, 1955.

13. Holt, Michael Fitzgibbon, Forging a Majority; the Formation of the Republican Party in Pittsburgh 1848-1860, Yale University Press, New Haven, 1969.

14. Hungerford, Edward, The Personality of Modern Cities, McBride Nast and Co., New York, 1913.

15. Kellog, Paul Underwood, ed., The Pittsburgh District Civic Frontage, Russel Sage Foundation, Surrey Associates Inc., New York, 1914.

16. Lorant, Stefan, Pittsburgh the Story of an American City, Doubleday and Company, Inc., Garden City, New York, 1964.

17. Lubove, Roy, Twentieth Century Pittsburgh, John Wiley and Sons, Inc., New York, 1969.

18. Owens, James, Recollections of a Runaway Boy (1827-1903) Keystone Label Company Ltd., Pittsburgh, 1903.

19. Powell, Lyman P., ed., Historic Towns of the Middle States, G. P. Putnam's Sons, New York, 1898.

20. Ravenel, Mazyck P., ed., A Half Century of Public Health, Nichols Press, Lynn, Mass., 1921.

21. Rosen, George, A History of Public Health, M. D. Publications, Inc., New York, 1958.

22. Rosenberg, Charles, The Cholera Years, Chicago, 1962.

23. Schlesinger, Arthur M., Paths to the Present, Macmillan, New York, 1949.

24. Shattuck, Lemuel, Report of a General Plan for the Promotion of Public and Personal Health, Boston, 1850. (Reprinted

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1948 by Harvard University Press.)

25. Steffens, Lincoln, The Shame of the Cities, McClure, Phillips and Co., 1904.

26. Stryker, Roy, A Pittsburgh Album 1758-1958, Pittsburgh Post Gazette, 1959.

27. Thurston, George H., Pittsburgh As It Is, W. S. Haven, Book and Job Printers, Pittsburgh, 1857.

28. Thurston, George H., Pittsburgh and Allegheny in the Centennial Year, A. A. Anderson and Son, Book and Job Printers, 1876.

29. Vaughn, Dorothy, A Survey of the History of Public Health in the Pittsburgh District, University of Pittsburgh Masters Thesis, 1955.

30. Wiebe, Robert H., The Search for Order, Hill and Wang, New York, 1967.

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