Positive Consequences of 19th Century Cholera Outbreaks within London

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During the Victorian Era the wealthy city of London was suffering from overpopulation, producing horrible living standards for the poor. As vividly explained by the Science Museum, at this point in time London was "a city overwhelmed by the waste products of its ever-growing population. Overcrowded into decaying, stinking slums, the poorest citizens were literally surrounded by their own filth. Piled up in courtyards or overflowing from basement cesspits, into which toilets were drained, raw sewage was everywhere, and so was its stench".[1] These horrid conditions fueled the outbreak of cholera in the 19th century.

Figure 1: How Charles Dickens, an English writer and social critic, depicted the streets of Victorian London. Taken From: Dalzell, Rebecca. *How Charles Dickens Saw London.* Smithsonian, 5 June 2011. https://www.smithsonianmag.com/travel/how-charles-dickens-saw-london-13198155/ [Accessed 29 May 2018.]

[1] Science Museum. *Brought to Life: Exploring the History of Medicine.* Science Museum, 2016, http://broughttolife.sciencemuseum.org.uk/broughttolife/themes/publichealth/cholera. [Accessed 30 May 2018]

Great Britain's National Health Service corporation describes cholera as an infectious disease that causes severe diarrhea and is most commonly found in areas with poor sanitation, crowding, war, and famine. Cholera can be contracted by drinking unclean water, eating food (particularly shellfish) from unclean water, or eating food that has been handled by an infected person. Infected water contains a bacterium, *vibrio cholerae,* found in food or water contaminated by feces from an individual with the infection. When the bacterium is ingested it releases a toxin in the intestines that produces severe diarrhea. To avoid contracting cholera it is best to practice good hygiene; habits poor Londoners during the Victorian Era were unable to practice due to the lack of clean water available to them. Thus, empowering cholera's rapid spread in the 19th century. Londoners were unaware of these conditions until Dr. John Snow, an English physician, showed convincingly that cholera was waterborne in 1854.

This essay provides evidence to support the argument that the 19th century cholera epidemics were a necessary disaster in London's history. To support this claim, the reader will be introduced to the living standards of the poor prior to the first cholera epidemic. After a description of the poor's living conditions, the essay will recount memorable milestones London overcame between the 1830's and 1870's. The milestones chosen are based on their significance to sanitary reform within London. The essay will then depict post cholera-living conditions. To depict the conditions properly, prior knowledge will be used to support the argument that the years London endured the epidemics had a positive influence on London as a whole. By the end of this essay the reader will be educated on cholera and the impacts of the cholera outbreaks.

Living Standards Prior to Cholera Outbreaks

A.N. Wilson, an English writer and newspaper columnist, asserted that the overcrowding of London in the Victorian Era led to appalling living conditions and widespread disease.[2] Roy Porter, a British historian, further describes the awful conditions stating "Population rise had never been more explosive, industry never more polluting, disruption, demolition and building more frenzied. Air-, water- and bug-borne diseases multiplied, and London was visited four times by Asiatic cholera. The teeming masses presented a pandemonium of misery".[3] Porter later quotes James Hole, a sanitary reformer, in 1866 commenting on the fate of Kentish Town stating "The inhabitant whose memory can carry him back thirty years recalls pictures of rural beauty, suburban mansions and farmsteads, green fields, waving trees and clear streams where fish could live – where now can be seen only streets, factories and workshops, and a river or brook black as the ink which now runs from our pen describing it".[4] This quote demonstrates just how terrible it was for both the rich and poor to reside in everchanging Victorian London.

Prior to the first cholera epidemic many British citizens still used well water or watercourses. Once the first epidemic occurred the usage of well water or watercourses became rare. British citizens no longer trusted local water resources, and now preferred to have an intermittent water supply. As best described by Joseph Hillier, an artist and researcher, an intermittent water supply was a service delivered at set times to users who paid for the service.[5] British citizens suspected well water or watercourses may have caused the widespread illnesses

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[2] A.N. Wilson, *London – A History* (New York City: Modern Library, 2006), 103.

[3] Roy Porter, *London: A Social History* (Cambridge, Harvard University Press, 1994), 257.

[4] Ibid., 259.

[5] Joseph Hillier, "The Rise of Constant Water in Nineteenth-Century London". *University College London, UK.* Vol. 36 No. 1, (2011): 38.

and believed the water provided by their new intermittent water supply system was more pure and reliable. The collective shift in trust between British citizens and their water companies meant only those capable of paying for an intermittent water supply system received clean drinking water. By endorsing an intermittent water supply method, London's vast poor population was unable to receive reliable continuous access to clean drinking water. London was drowning in its misery, and very few were able to swim. Crime rates were at an all time high and their once beautiful city was now overrun by the homeless sleeping side-by-side with rodents. These horrid conditions enhanced the rapid outbreaks of cholera and led to protests of social and sanitary improvements, with gentlemen like James Hole, John Snow and Thomas Wakley (an English social reformer and surgeon) at the forefront.[6]

Cholera and its Outcomes

There were four recorded outbreaks of cholera in 1832, 1848, 1854 and 1866. Cholera killed thousands of individuals in every one of these outbreaks. The 1832 cholera outbreak resulted in a death rate of 25.2% per thousand individuals within London, and 22.5% per thousand individuals within England as a whole. In poor districts one in three children died before reaching the age of one.[7] In 1849 fourteen thousand Londoners died of cholera, ten thousand in 1854 and six thousand in the 1866 outbreak.[8] With these deaths came rectifications, all of which had to be passed by Parliament. This section will discuss impactful decisions made in history and explain how these decisions positively impacted London.

[6] A.N. Wilson, *London – A History* (New York City: Modern Library, 2006), 103.

[7] Roy Porter, *London: A Social History* (Cambridge, Harvard University Press, 1994), 260.
[8] A.N. Wilson, *London – A History* (New York City: Modern Library, 2006), 104.

After the first outbreak in 1832 a man by the name of Edwin Chadwick secured the Poor Law Amendment Act.[9] Edwin Chadwick was an English social reformer, who used his position to persuade the government to invest in public health ventures. The Poor Law Amendment Act formalized the workhouse system. Workhouses were created for individuals who were unable to support themselves. Workhouses were meant to provide such individuals with both accommodations and employment. Prior to the passing of this Act in 1834, anyone was able to take advantage of workhouses. The Poor Law Amendment ensured only those in need of assistance could take advantage of the opportunities workhouses offered such as: employment and a place to reside. The whole point of building the workhouses was so the poor received assistance in supporting themselves, not just any individual.

The Poor Law Amendment was the first positive impact cholera had on London. The passing of the Poor Law Amendment was essential because if the cholera epidemic had not occurred, Edwin Chadwick would not have had the required evidence to prove it was necessary for the Poor Law Act to pass. Prior to the passing of this act London was combating its first cholera epidemic with charities, infirmaries, Bible missions and anti-vice societies. Parliament was under the impression these resources would provide support to the public better than expensive reforms to their inexistent sanitation unit. Parliament was convinced otherwise once the Poor Law Act was passed and all communities were positively affected. The Poor Law Act placed a spotlight on workhouses, allowing Parliament to take notice that a high percentage of their workmen were in fact sick and dying. This realization placed in motion the building of more infirmaries with specialized fever and isolation wards, as well as the ability to appoint authorized guardians as medical officers. All those who supported and took part in the implementation of the Poor Law

[9] Roy Porter, *London: A Social History* (Cambridge, Harvard University Press, 1994), 259.

Amendment now found themselves involved with sanitation reform. This act forced Parliament to register that disease threatened social collapse, and the only way to assist in reform was to save the poor from their own filth.[10]

The Poor Law Amendment allowed for the poor to have more control over their medical care and opportunity for help. Laborers could now appoint medical officers and visit the new infirmaries, with specialized wards. As time passed, unions began to employ several doctors. These doctors were able to visit laborers in either their home or workhouse. The intervention of Parliament provided laborers with more options for healthcare that are still carried on today.

The Victorian Age was a transitional period for how important hospitals were to the medical field. As described by Graham Mooney, an author and history Professor at John Hopkins University, "During the nineteenth century the hospital was transformed from a risky space occupied by the feckless and friendless who had no option but to place themselves under the care of strangers into a place that could promote itself as a scientific shrine with diagnostic laboratories and clinical technologies".[11] As author Julia Jarman describes, the modernization of hospitals altered the negative connotation individuals had towards hospitals, believing they were a place people went to die.[12] Mooney later states the rise of the modern hospital in Britain can be owed to changing social and economic conditions, industrialization, urbanization, and increased social mobility to developments in medicine itself.[13] The modernization of hospitals made it so patients – rich and poor alike - were no longer responsible for their recovery, instead doctors were. Hospital

[10] Roy Porter, *London: A Social History* (Cambridge, Harvard University Press, 1994), 259.
[11] Graham Mooney, "Diagnostic Spaces: Workhouse, Hospital, and Home in Mid-Victorian London", *Cambridge University Press*, Vol. 33, No. 3, (2009): 2.

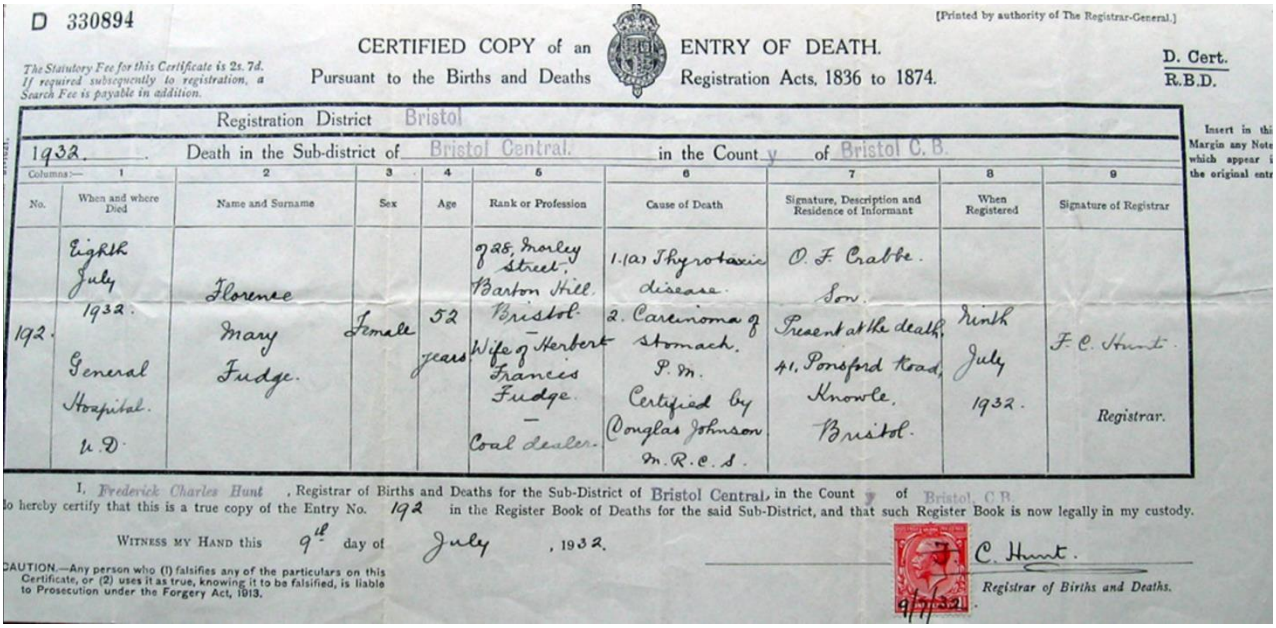
[12] Julia Jarman, *The Sewer Sleuth* (London, Franklen Watts, 1997), 63.

[13] Graham Mooney, "Diagnostic Spaces: Workhouse, Hospital, and Home in Mid-Victorian London", *Cambridge University Press*, Vol. 33, No. 3, (2009): 3.

medicine increasingly focused on specific parts of the body and generally reduced the clinical encounter to an impersonal routine examination. The workhouse infirmary, the dispensary, and the mental asylum stood alongside the modern hospital as important institutional diagnostic spaces.[14] The modernization of hospitals and the routine examinations made for a holistically improved hospital, producing a positive impact on the healthcare provided to Londoners. Routines meant doctors were less likely to miss important symptoms and could now pick up on patterns between patients.

In 1837, after the first cholera outbreak, death certificates were introduced in England and Wales. Death certificates contained the individuals name, registration district and subdistrict, precise address (house number and street, or institution), sex, age (sometimes down to hours for infants), occupation, cause(s) of death and duration of final illness.[15] The creation of death certificates was an important moment in history because death certificates are not only still used today, but resources for historians to trace back time as well. Death certificates can offer historians an understanding of the diffusion of medical ideas and the economics of medical practice. Death certificates can also be used as a testament to disease causation, shifting diagnostic practices, and the association between disease and demographic characteristics, social class, and stigma.[16]

[14] Graham Mooney, "Diagnostic Spaces: Workhouse, Hospital, and Home in Mid-Victorian London", *Cambridge University Press*, Vol. 33, No. 3, (2009): 3.
[15] Ibid., 1.
[16] Ibid., 4.



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[Printed by authority of The Registrar-General.]

The Statutory Fee for this Certificate is 2s. 7d. If required subsequently to registration, a Search Fee is payable in addition.

CERTIFIED COPY of an ENTRY OF DEATH.

Pursuant to the Births and Deaths Registration Acts, 1836 to 1874.

D. Cert. R.B.D.

Registration District Bristol

1932. Death in the Sub-district of Bristol Central in the County of Bristol C.B.

Columns:— 1 No.	2 When and where Died	3 Name and Surname	4 Sex	5 Age	6 Rank or Profession	7 Cause of Death	8 Signature, Description and Residence of Informant	9 When Registered	10 Signature of Registrar
192	Eighth July 1932. General Hospital. U.D.	Florence Mary Fudge.	Female	52 years	925, Morley Street, Barton Hill, Bristol — Wife of Herbert Francis Fudge — Coal dealer.	1.(a) Thyrotoxic disease. 2. Carcinoma of stomach. P.M. Certified by Douglas Johnson M.R.C.S.	O. F. Crabbe. Son. Present at the death. 41, Ponsford Road, Knowle, Bristol.	Ninth July 1932.	F. C. Hunt. Registrar.

Insert in this Margin any Note which appear in the original entr

I, Frederick Charles Hunt, Registrar of Births and Deaths for the Sub-District of Bristol Central, in the County of Bristol, C.B. do hereby certify that this is a true copy of the Entry No. 192 in the Register Book of Deaths for the said Sub-District, and that such Register Book is now legally in my custody.

WITNESS MY HAND this 9th day of July, 1932.

C. Hunt. Registrar of Births and Deaths.

9/7/32

CAUTION.—Any person who (1) falsifies any of the particulars on this Certificate, or (2) uses it as true, knowing it to be falsified, is liable to Prosecution under the Forgery Act, 1913.

Figure 2: Example of what a death certificate looked like in England and Wales. Taken From: *Birth, Marriage & Death Records in England and Wales.* Forebears, 2012-2017. http://forebears.io/guides/england-and-wales/birth-marriage-death-records [Accessed 30 May 2018.]

For example, in "Diagnostic Spaces: Workhouse, Hospital, and Home in Mid-Victorian London", Graham Mooney uses the original death certificates published by the registrar general for England and Wales of more than 13,000 deaths in London, to discover whether there is a relationship between place and medical diagnosis. When death certificates were initially implemented they were not as beneficial as they are now. Death certificates were not as beneficial because there was a lack of consistency in how patients were evaluated and a lack of knowledge on what exactly cholera was. At the time tuberculosis, cholera, and diarrhea were the main causes of death. Yet, what physicians had not realized was that all three of these illnesses have similar symptoms. Today, because our medical knowledge is vast, death certificates are valuable because physicians are capable of pinpointing the exact cause of an individual's death, instead of just their illness. Physicians were not aware of it then, but the modernization of hospitals and implementation of death certificates was a giant leap forward for London.

Public Health Bill of 1848

Edwin Chadwick's implementation of the Poor Law Amendment in 1834 was not the end of his fight for better living standards for the poor. By 1842 Chadwick had written a book named *The Sanitary Condition of the Laboring Population of Great Britain*. This book proposed the creation of a national public health authority to direct local boards of health to provide clean water, drainage, cleansing, paving and worker rates. This book also advocated for a comprehensive new sewage and drainage system, something he felt was a necessity for all.[17] Chadwick believed if Parliament assisted in the improvement of healthcare for the poor, fewer people would seek poor relief. If less people needed poor relief, then Parliament would spend less on the poor in the long run. Except, Parliament was not in agreement; they believed the implementation of such ideas would begin a revolution among the rich. Parliament's mind changed when the second cholera epidemic occurred in 1848 and later that year passed the British Public Health Act. This act created a central authority for both healthcare and sanitation, an important step forward for Parliament. The General Board of Health and town council worked together overseeing sanitation. Both the General Board of Health and town council were now responsible for drainage, water supplies, inspection and were permitted to raise payment rates. They were also able to appoint local medical officers of health, empowered to regulate offensive trades, to remove nuisances, to identify houses unfit for habitation, provide burial-grounds, public parks and baths.[18]

The Public Health Bill positively impacted London because Parliament appointed John Simon, an eminent surgeon and skillful diplomat, as their Medical Officer of Health. John Simon's mission was to make Parliament take into consideration the trenches and horrendous standards in

[17] Roy Porter, *London: A Social History* (Cambridge, Harvard University Press, 1994), 261.
[18] Ibid.

which the poor lived. John Simon had the passion necessary to enforce this law properly and use his power to truly help those in need. Simon had forged a new local medico-sanitary administration for the City, organized weekly returns of deaths, had the city inspectors of nuisances enforce cleansing of privies and suppression of cesspools, and persuaded the New River Company to supply water twice a day instead of once.[19] With the framework produced by Chadwick's book and the passion Simon had for assisting the poor, this act was able to assist and properly prepare London for the next two cholera outbreaks.

Figure 3: An English caricature of death rowing along the polluted Thames river. Taken From: Ksenyia, Barabanova. *The First Cholera Epidemic in St. Petersburg.* Disaster Histories. Arcadia, No. 6, 2014. http://www.environmentandsociety.org/arcadia/first-cholera-epidemic-st-petersburg [Accessed 30 May 2018.]

Doctor John Snow is widely known for suspecting cholera was a water-borne disease in 1849 and further supporting his theory with the Broad Street pump in 1854. Snow had made the

[19] Ibid., 262.

connection between the rate of cholera mortality within a subdistrict and which water company operated within that particular district. Snow was able to make this discovery by utilizing data compiled by William Farr, a British Physician. John Snow combined both his knowledge as well as William Farr's in maps, allowing Snow to pinpoint which districts were most affected by cholera. Farr was originally under the impression that the risk of cholera was inversely related to altitude, until Snow proved Farr wrong. Snow's analysis of the 1853-4 data proved that there was a particular water company providing service within a subdistrict that had a stronger correlation with mortality rate than average subdistrict elevation.[20]

Dr. John Snows discovery was a vital event in history. For starters, the use of maps became a well-respected form of researching and played an important role in nineteenth-century debates over the transmission of cholera. This discovery also saved millions of lives and forced London to implement standardized regulations for water treatment. Prior to this discovery London allowed it's many water treatment companies to provide water to Londoners without any law stating they had to filter their water. Therefore, because Snow discovered how harmful unfiltered water was, Parliament was forced to pass the Metropolis Water Supply Act of 1852. The Water Supply Act required all companies to filter their water prior to distribution and only allowed companies to use covered storage reservoirs. Incidentally, after passing this act there was not another cholera epidemic for fourteen years. In 1866 the last cholera outbreak occurred when the East London Waterworks Company illegally connected its old, uncovered, reservoir at Old Ford to its covered reservoirs containing filtered water.[21] This incident allowed Snow to further prove his theory, by mapping the contaminated water line to the district that received the contaminated water and

[20] Tessa Cicak & Nicola Tynan, "Mapping London's Water Companies and Cholera Deaths," *The London Journal*, (2015): 3.

[21] Ibid., 10.

compared the districts mortality rate to other towns. Snow's discovery positively impacted London because it found the cause of the epidemics, forced Parliament to take control of their water suppliers, and got the ball rolling on London's sewer system.

London's Sewage System

Before the execution of the sewage system, sewage was being sent directly into the Thames river, assisting in the many occurrences of cholera as well as the 'Great Stink of London'. After the third instance of cholera, killing over 10,000 Londoners, Parliament finally decided a sewer system was a necessity. The building process began in 1859 and by 1866 most of London was connected with 82 miles of intercepting sewers, implemented by Joseph Bazalgette. At the time, Joseph Bazalgette was the only chief engineer to London's Metropolitan Board of Works founded in 1856. Prior to implementing the sewage system, Bazalgette decided the cast-iron pipes would be sunk deep beneath London's streets to prevent the two following scenarios: 1) Damage to the pipes if another war was to occur and 2) To ensure that Londoners would be able to receive clean drinking water, no matter what. The only aspect of the sewage system Bazalgette was unable to perfect were the pumps purification process. With the assistance of both Chadwick and Snow, Bazalgette was able to ensure every other aspect was up to par. The implementation of the sewage systems infrastructure saved thousands of lives and improved the daily lives of Londoners. The sewage system solved the problem of filth due to overpopulation and provided a clean constant water supply. Water was now available to every household, as well as to the poor who were homeless. The creation of the sewer system also allowed fire pumps to be created, which provided an added safety measure to communities. By creating this system power was retaken from the individual water supply companies. Each company was now forced to redesign their pipes and

allow one system to be built. The London sewage system has had an important impact on London and is one of the Victorian Era's greatest accomplishments.

Figure 4: London's sewage system being built in 1860. Taken From: Hilton, Nick. *How the East End "fatberg" reveals the visionary brilliance of London's Victorian sewage system.* Prospect. 18 Sept 2017. https://www.prospectmagazine.co.uk/politics/how-the-east-end-fatberg-reveals-the-visionary-brilliance-of-londons-victorian-sewage-system [Accessed 30 May 2018.]

Prior to the 1860's London was failing. London was not providing clean water, basic sanitation or housing for its growing population. The overcrowding and polluted water was bringing disease and death, especially to the third of Londoners who were trapped in poverty. Life expectancy for those born in the capitals slums did not even reach a year, and it was likely if they were not infected with cholera they would eventually fall ill to either tuberculosis, smallpox or

typhoid.[22] London was at an all-time low, until change was enforced. As proven throughout this paper – change was good to London. Change allowed London to reinforce its role as a capital of both nation and empire. Its status as imperial capital was proven with the implementation of both the sewage and railway systems. As well as the involvement Parliament began to play in the healthcare of its people. Thanks to the implementation of both the sewage and railways system, London regained its population through tourism as well as immigration. The systems brought attractions as well as land, meaning London's economy was once again booming.

[22] Museum of London. *Cholera Exhibit.* Museum of London, 2016, https://www.museumoflondon.org.uk/museum-london/whats-on/exhibitions/fatberg. [Accessed 30 May 2018]

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