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# THE GREAT INFLUENZA EPIDEMIC OF 1918

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## Introduction

In 1918, during World War I, a mysterious epidemic shocked people all over the world. The disease was influenza and it devastated and alarmed the American military and citizenry because so many people died from it at such a rapid rate; it was a strange epidemic in that it killed young adults, even the soldiers fighting in the war. The public—including the medical community—had little idea of what was happening.

Amidst a time of war and apparent medicinal improvements, the American people responded to this sudden, strange killer flu with confusion, panic, and new, often useless measures. An epidemic as great in magnitude as this one had not occurred since the Black Death of 1348-1349.[1] It affected the whole world and has been dubbed "one of the world's worst short-term demographic disasters."[2]

In the United States, the first wave of the flu is speculated to have begun at Fort Riley, Kansas in March of 1918. There, on the 9th of March, 9,000 tons of horse manure were burned. A dust

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the adults earning the bread were either sick or dead. In Philadelphia, fortunately, volunteers brought food to these hungry families and there were soup kitchens for those who were well enough to come out of their houses.[56]

Since the adults between the ages of 20 to 40 were most vulnerable to the Spanish flu, many young fathers and mothers died, leaving behind many orphans. In Philadelphia, the Bureau of Child Hygiene was overwhelmed with hundreds of children whose parents were either ill, dying, or already dead. The bureau did not send these children to orphanages because it feared that these children might have the flu; instead, it asked the children's neighbors to take care of them.[57] In New York, as of November 9, 1918, approximately 21,000 children were "made half or full orphans by the Spanish influenza epidemic. In 7,200 families either one parent or both had died."[58]

The public did not know what to do, doctors did not know what to do, and so people concocted false, useless remedies for the flu. According to historian Crosby, "neither physicians nor laymen knew more than a few scary rumors about Spanish influenza, providing a perfect climate for confusion, panic, and proliferation of quack remedies."[59] People were incredibly desperate; they wanted medicine but there was none. Some turned to folk remedies. John Deleno, who lived through the flu epidemic, wore camphor balls around his neck, while Harriet Ferrell's family—with her mother caring for seven sick people—"used turpentine on sugar...kerosene on sugar."[60] In describing people's various homemade medications, she says, "So many people had these different type medications until we were all smelling bad."[61] There were many other "cures," including those made of red peppers, chloroform, strychnine, asparagus, and onions.[62] Some suggested wearing a bid of asafetida—which smelled terrible—around the neck. Some believed whiskey had medicinal properties—in Louisiana, for example, the price of whiskey rose to twenty dollars a quart because it was considered to be so valuable.[63]

Horrifyingly, the number of deaths was so great that there was a shortage of coffins, undertakers, embalmers, and grave

diggers. In fact, coffins were in such great demand that sometimes they were stolen.[64] On a few occasions, Philadelphia's city morgue had ten times as many corpses as coffins, and before the pandemic ended, Philadelphia needed five supplementary morgues.[65] Death carts rambled through the city but even so, many corpses lay in houses for days before people came around to collect them; sometimes the dead lay abandoned in gutters. At times, undertakers charged high prices for their coffins, claiming that all coffins except the most expensive ones had already been used.[66] Washington attempted to overcome this problem by seizing two railroad cars of coffins heading toward Pittsburgh. Philadelphia's Council of National Defense turned several local businesses into coffin-making shops, and the city government of Buffalo started making coffins, promising that coffins would be inexpensive and perhaps free.[67]

Grave diggers were also scarce compared to the number of people dead. Several city departments sent men to dig graves. Volunteers also helped. In Philadelphia, the Bureau of Highways donated a "steam shovel to dig trenches in Potter's Field for the burial of the poor and friendless."[68] People were buried so quickly that they were tagged with identification in case relatives would later want to move them to family plots or other cemeteries.

Thus, the lives of civilians were chaotic. People were afraid of each other because nobody knew who was going to die next; people were even frightened to speak with each other. As writer A.A. Hoehling states, "No one knew what to do, or in what direction to turn."[69]

## Measures Taken to Prevent Spread of Influenza

During the influenza epidemic of 1918, measures were taken to try to prevent the spread of flu. People were required to wear gauze face masks. Dr. William Hassler, the chief of San Francisco's Board of Health (who had been predicting that the flu would not even reach his city) announced, "Every person appear-

ing in any public place...shall wear a mask or covering except when partaking of meals."[70] The Red Cross managed to distribute thousands of these masks. In ads, a jingle could be found:

Obey the laws
And wear the gauze
Protect your jaws
From septic paws[71]

There were newspapers ads that declared: "WEAR A MASK and save your life! A mask is 99 percent proof against Influenza."[72] People who did not wear masks were called "Mask slackers"; they could be fined $100 or isolated in a jail for two days.[73] Almost everyone wore masks: policemen, soldiers, nurses, mail carriers, workers in offices and factories; people wore them at weddings, at trials, while voting, and even while they were celebrating the armistice in November.[74] There were even three styles of masks: the "Agincourt"—which looked like a snout, the "Ravioli"—which policemen usually wore, and the "yashmak"—which was a scarf-like type worn by women.[75] Unfortunately, these gauze masks were not very effective against the flu virus. As Iezzoni states, "It was like trying to keep out dust with chicken wire."[76]

Another preventive measure that was taken was the campaign against spitting, coughing and sneezing. "Open-faced sneezers" were now considered to be America's greatest public enemies and doctors who did not report new cases of the flu were faced with fines of $250 or more. In New York City, there were large signs warning that coughing and sneezing in public were unlawful; violators were threatened with fines of up to $500 and imprisonment; within a few days, 500 people were in court for sneezing and coughing.[77] In Cincinnati, 40,000 cases of spitting were reported and 21 offenders were fined a dollar each. In Chicago—which also had an ordinance declaring public sneezing and coughing illegal —the crime rate in October was reduced by 43 percent.[78]

In New York City, the telephone company begged people to call only for true emergencies because the epidemic had

jammed the circuits with real and imagined emergencies. It had also killed off telephone operators; 2,000, or 25 percent, of the operators were sick.[79]

On October 4, Surgeon General Rupert Blue of the United States Public Health Service dispatched telegrams to every state health official recommending that "all public gathering places" that were threatened with the flu be closed.[80] Across the nation, cities literally "shut down" as cinemas, pool halls, dance halls, libraries, red-light districts, ice cream parlors, saloons, and theaters went dark; in some cities, churches and schools were also closed.[81] Businesses were halted, club meetings and conventions were canceled or postponed, and funerals were limited to fifteen minutes—or sometimes even banned.[82] Public gatherings were prohibited in some places, arousing angry protests. One of the *Philadelphia Inquirer*'s editorial writers saw this limitation as unnecessary and illogical:

> Since crowds gather in congested eating places and press into elevators and hang to the straps of ill-ventilated street cars, it is a little difficult to understand what is to be gained by shutting up well-ventilated churches and theatres. The authorities seem to be going daft. What are they trying to do, scare everybody to death?[83]

The bizarre advice given to the public about how to stop the spread of the Spanish flu was often contradictory, exacerbating the feeling of panic in the public. According to Hoehling, there were orders such as: "Take castor oil! Don't take castor oil! Exercise as often as you can! Remain home and rest! Don't ride the subways! Travel under the surface if possible, there are less germs. Wear a veil! Don't wear a veil!"[84] People were confused. There was other advice including orders to wear fresh pajamas, stop shaving, stop circulating books, and avoid shaking hands. A *Science* magazine reporter listed the "119 chances for contact," that had the potential of spreading the flu; among these were turning doorknobs, paying trolley fares, paying the grocery bill, and shaking hands.[85]

Indeed, nobody knew what to do. Now, when one looks back at the civil ordinances being passed at the time, they seem

absurd. However, in 1918, there was so much confusion and panic that any semblance of order was probably welcomed.

## The Medical Community

When the flu epidemic struck, the medical community was baffled. The years preceding 1918 were a time of confidence in the medical community, as vaccines were discovered for diseases such as smallpox, tetanus, rabies, anthrax, and diphtheria; yellow fever, cholera, and malaria were under control. The city of New York "was well on the way to establishing a record for low mortality in 1918, when the influenza epidemic swept the country and destroyed hopes."[86] Infectious diseases were no longer a terrible threat...until the Spanish Lady came.

Right before the epidemic struck, prominent physicians Victor Vaughan, William Henry Welch, Rufus Cole, and Simeon Walbach, having just finished inspecting Army camps in the South, declared that the American troops were surprisingly healthy. Indeed, "they were flush with the success of the public health effort that seemed to have made disease in the military almost a thing of the past."[87]

Then the flu struck Camp Devens and the four doctors were asked by the U.S. Surgeon General—Dr. Willian C. Gorgas—to visit the camp and see what was wrong with it. The doctors were appalled with what they saw. The flu was ruthless in the overpopulated camp: during the day preceding the four doctors' visit, 66 men had died, and on the day the doctors arrived, 63 died. The camp's hospital, which was built for 2,000 men, was crowded with 8,000. Even so, some men still had to be placed outside on cots.[88]

Vaughan, who was the Surgeon General of the Army, had witnessed the typhoid fever—as well as other epidemics—and its ability to destroy men during the Spanish-American War. However, he had never seen anything like what he saw at Camp Devens:

> ...hundreds of stalwart young men in the uniform of their country coming into the wards of the hospital in groups of ten or more. They

> are placed on the cots until every bed is full yet others crowd. Their faces soon wear a bluish cast; a distressing cough brings up the blood stained sputum. In the morning the dead bodies are stacked about the morgue like cord wood. This picture was painted on my memory at the division hospital, Camp Devens, in the fall of 1918, when the deadly influenza virus demonstrated the inferiority of human inventions in the destruction of human life.[89]

Welch was seventy-one years old at the time and he was a greatly honored and respected scientist, physician, and pathologist. He was the doctor who gave others courage and strength, but even he was shaken when he saw the horrifying scene of Fort Devens. After Welch had done an autopsy and observed the "blue swollen lungs" with "wet, foamy surfaces with little real consolidation" on the inside, he turned and said, "This must be some new kind of infection. Or plague."[90]

At first, health officials—since they had no idea about what was happening or what to do—denied that anything was happening. According to the *New York Times*, Health Commissioner Royal Copeland, along with other members of the New York Board of Health, believed that "there [was not] the slightest danger of an influenza epidemic breaking out in New York."[91] In Baltimore, a health commissioner declared, "There is no special reason to fear an outbreak of disease in our city," while in Chicago officials announced, "We have the Spanish influenza situation well in hand."[92] Dr. Hassler of San Francisco's Board of Health predicted that the flu would not even reach his city, believing that San Francisco's "ideal climate" would not allow flu to spread there.[93] The chief health officer of Los Angeles said, "If ordinary precautions are observed, there is no cause for alarm."[94]

The federal government's early response to the flu was similar to health officials' responses. It ignored the advice of Surgeon Generals Gorgas and Blue and the concerns of Doctors Vaughan and Welch, choosing not to take action; in the eyes of the federal government, the war was more important. Troop trains remained overcrowded, and rowdy, patriotic liberty bond parades continued to take place.[95]

There was a severe shortage of medical personnel. Many nurses and doctors were away assisting the military. Flu patients overflowed the hospitals and emergency hospitals were set up in state armories, parish houses, auditoriums, gymnasiums, dance halls, county jails, and hayracks.[96] Hospitals could be equated to death houses at times; in Boston, for instance, the hospital death rate rose to an awful 50 percent. The rapid increase of hospital facilities exacerbated the shortage of medical personnel. Nurses and doctors were overworked and tired. Authorities began asking for "any person with two hands and willingness to work."[97] Few doctors were fully certified; many who were helping to combat the flu were without much training—medical students abruptly assumed the responsibilities of trained doctors.[98] The Red Cross employed the aid of the trained and the untrained. Since doctors and nurses were frequently exposed to the disease, they often became sick themselves and, as Crosby states, "became problems instead of problem solvers."[99]

Many medical mistakes were made. Physicians were so busy and tired that most cases of flu were not reported. Doctors who were exhausted and sick often signed death certificates without ever seeing the actual bodies. Sometimes, people who were barely alive were thought to be dead, resulting in several cases of people being buried alive.[100]

Disturbingly, the medical community was fundamentally mistaken. Doctors believed that the flu was caused by a bacteria called Pfeiffer's bacillus. The *Philadelphia Inquirer* assured the public that this discovery had "armed the medical profession with absolute knowledge on which to base its campaign against this disease."[101] Of course, the flu was actually caused by a virus, but viruses were too small for the optical microscopes at the time. Doctors would not be able to see viruses until the electron microscope was invented years later. Thus, the vaccines the doctors made (with the bacteria) were useless. Doctor C. Y. White, Philadelphia General Hospital's chief bacteriologist, created a vaccine in October, which was promptly distributed to hundreds of doctors, who in turn inoculated thousands of Philadelphians.[102]

This vaccine—although not very effective—served the purpose of calming the public's nerves.[103] Crosby, curious about what the 1918 flu vaccines contained, interviewed a doctor who had helped make them. The doctor informed him that the "vaccines" were just a "soup made of blood and mucus of flu patients that had been filtered to get rid of large cells and debris." When people were inoculated with it, they thought it worked because their arms became sore.[104] Doctors later realized that they had not been able to isolate the true flu-causing agent.[105]

The medical community was conflicted and doctors "cures" were contradictory. Some claimed that morphine would slow down breathing while others said that it would dry up the secretions of lungs. Some claimed that strychnine and quinine were effective, while others believed it would just cause a flu patient to become more delirious. In Alexandria, Virginia, each day two doctors (the only ones left) distributed their own "flu cure"—consisting of atropine capsules and whiskey—to hundreds of patients. In Castleton, Ohio, Dr. A. Chriton made a medicine called "Grippura," which supposedly cured flu, in addition to also curing whooping cough, scarlet fever, rheumatism, and typhoid fever. Some doctors doused their patients with icy water. Some doctors believed whiskey helped, others were more skeptical. Dr. James B. Herrick, witnessing the medical community's uncertainty and confusion, warned, "this is poly-pharmacy run riot."[106] Some doctors began performing surgery and draining the accumulating pus around the ribs. Some employed the ancient method of venesection, bleeding their patients. Surgeon General Blue warned the public that "remedies now being recommended do more harm than good. There is as yet no specific cure for influenza."[107]

Unsurprisingly, when health officers of the American Public Health Association met on December 12, 1919 to create a plan for fighting influenza, they were unable to agree. Dr. Charles Hastings of Toronto, Canada conceded, "We cannot expect to draw up a definite program for combating influenza epidemics when we see so wide a divergence of opinion among medical authorities as is shown here."[108]

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Thus, although the public desperately needed the medical community to find a successful way of fighting the epidemic, the doctors could not do much because they themselves were unsure. Because doctors did not know much about this unprecedented, strange Spanish flu, they invented false cures and vaccines (without even knowing the correct causative agent of the flu) haphazardly, hoping to at least feel like they were doing *something*. The medical community was as baffled and confused as the general public. In the end, it was clear that scientists had not solved the problem. Dr. Alexander Lambert, who had served in France as the Director of the Medical Department of the Red Cross during the war, praised the medical community and the effectiveness of "preventive medicine" during the war: "The death rate from disease has been held down as never before. Statistics show conclusively that the great scourges and plagues of former armies have been held in check."[109] However, he also stated that "Influenza, with pneumonia sweeping over both hemispheres, stands out as the one uncontrolled epidemic."[110]

## Conclusion

The relentless flu epidemic of 1918-1919 was one unlike any other. It was most distinct in its tendency for striking the young, robust adults of society. The mortality curves, usually U-shaped for epidemics, were W-shaped. Furthermore, there was generally a lack of true knowledge and an abundance of false rumors about the flu, exacerbating the public's alarm.

This flu epidemic is similar to the AIDS epidemic in the 1980s. During this time, AIDS had just been discovered and the result was also public confusion and panic. Since the time it was discovered in the United States in 1981, it has appeared increasingly in other countries around the world. The 1918 flu epidemic was also a worldwide disease—the difference was that it only lasted for a short time (several months) and killed millions of people in that time period. AIDS, which still exists today, is more insidious and kills people more slowly. However, public reactions to both these diseases were similar. Nobody—not even doctors—knew

storm swept up, creating a malodorous yellow haze and leaving Fort Riley covered with dirt and ash. Two days later, a camp cook —Private Albert Gitchell—reported at the camp's hospital, sick with flu. By the middle of the day, 107 others had contracted the flu and by the end of the week, 522 men were sick. Within five weeks, 1,127 men had the flu and 46 of these died.[3]

In May, some of the men at Fort Riley, having completed their training, sailed to France. Soon after they arrived, people in France, England, Germany, and most of Asia were stricken by influenza.[4] As the first wave of Spanish influenza was subsiding in the U.S., it was beginning to appear in Europe.

The first wave of the Spanish flu in the spring and summer of 1918 was very contagious but caused few deaths.[5] Although the spring wave affected many and spread to civilian and military populations across the nation, the war attracted most of the public's attention, since this first wave was relatively innocuous. Because influenza was not a reportable disease when the Spanish flu began, the only evidence of the flu that was registered in the public health department records were deaths, and most of these deaths were attributed to pneumonia; dying from pneumonia was not unusual before sulfa and penicillin drugs were discovered.[6]

The spring flu was marked by "fever, aches, and pains" and was called "three-day fever" by troops because usually its symptoms went away within three or four days.[7] The rest of the world called it the "Spanish flu" because in 1918, Spain was still a non-belligerent and so it did not censor its health reports during wartime, unlike the belligerents.[8]

During the summer of 1918, the U.S. was free of the Spanish flu. However, the flu soon returned in a deadly second wave. In the U.S., this wave first struck in Boston at Commonwealth Pier on August 27, 1918, and by September 8, 1918, had spread to Fort Devens. In four months, this second wave killed approximately twice as many people worldwide as had been killed in combat in the four years of World War I: over 21 million.[9] The epidemic moved rapidly and traveled far; even Eskimo villages and

what was going on. People knew there was something terribly wrong but they could not pinpoint what exactly was the problem. Also, often carriers of the diseases looked healthy. This caused people to fear each other because who would know who had the disease? There were many misconceptions. Those without AIDS were afraid to touch those who had AIDS. People came up with various remedies, hoping to find a cure. However, to this day, no vaccine has been found for either of these viral diseases, since the viruses of both diseases frequently mutate and are thus elusive.

One result of the 1918 flu epidemic was that the flu became a reportable disease. Also, it sparked intensive research on influenza. The flu still kills people today, but our technology and medical knowledge have expanded tremendously since the 1918 epidemic. Doctors are more methodical in their approaches to curing and researching disease. In 1918, methods were crude at best; doctors were often guessing and hoping that what they did would work. Today, the medical community is much more careful in what treatments are used, and doctors test cures in the laboratory before applying them to patients. Research has improved because of our technological advances; the electron microscope, for example, allows us to see tiny microbes such as viruses.

People wonder: Could the epidemic of 1918 repeat itself? Since viruses mutate so frequently and randomly, it probably could if a particularly virulent strain (like the virus of the Spanish flu) formed. However, society could probably handle it much more effectively and efficiently than it did the 1918 epidemic, because our knowledge has expanded and techniques have improved dramatically. Thus, there might be a killer strain of the flu, but we would be more capable of battling it and there would not be as much confusion and panic as there was with the great 1918 influenza epidemic.

Endnotes

[1] Ralph D. Arcari and Hudson Birden, "The 1918 Influenza Epidemic In Connecticut" Connecticut History (Fall 1977-Spring 1999): p. 28; "Appeal for Nurses to Fight Influenza," Bigchalk (29 January 1919, 13 March 2002) <http://www.bigchalk.com/setup>

[2] Don C. Ohadike, "Diffusion and Physiological Responses to the Influenza Pandemic of 1918-1919 in Nigeria," Social Science Medical Journal 32.12 (1991) p. 1392

[3] Joseph E. Persico, "The Great Swine Flu Epidemic," American Heritage (June 1976) p. 28

[4] Ibid., p. 30

[5] Gina Kolata, Flu (New York: Farrar, Straus and Giroux, 1999) p. 8; David K. Patterson and Gerald F. Pyle, "The Geography and Mortality of the 1918 Influenza Pandemic," Bull History Medical Journal 65.1 (1991) p. 8

[6] Alfred W. Crosby, America's Forgotten Pandemic (Cambridge, England: Cambridge University Press, 1989) p. 18

[7] Kolata, pp. 9-10

[8] Crosby, p. 26; Kolata, p. 10; Patterson and Pyle, p. 7

[9] Persico, p. 84; Kolata, p. 49; Crosby p. 12; Arcari and Birden, p. 28

[10] A. A. Hoehling, The Great Epidemic (Boston: Little, 1961) pp. 8-9

[11] Crosby, p. 40

[12] Persico, p. 81

[13] Ibid., p. 81

[14] Kolata, pp. 47-48

[15] Ibid., p. 46

[16] Ibid., p. 48

[17] Persico, p. 30

[18] qtd. in Kolata, p. 47

[19] Ann Reid, Jeffrey K. Taubenberger, and Thomas G. Fanning, "The 1918 Spanish Influenza: Integrating History and Biology," Microbes and Infection 3.1 (2001) p. 81

[20] Crosby, p. 205; Kolata, pp. 5-6

[21] Crosby, pp. 205-206

[22] "Worldwide Flu Pandemic Strikes," A Science Odyssey: People and Discoveries PBS (4 April 2002) <http://www.pbs.org/wgbl/aso/databank/entries/dm88.html; Kolata p. 44

[23] "Influenza Chief Cause of Deaths in Home Camps," Bigchalk (26 January 1919, 13 March 2002) <http://www.bigchalk.com/setup>

[24] Crosby, p. 25

[25] Ibid., pp. 39, 57

[26] Kolata, p. 15

[27] Crosby, p. 62

[28] Hoehling, p. 13; Iezzoni, p. 22

[29] Molly Billings, "The Influenza Pandemic of 1918," (June 1997, Stanford University, 7 Apr. 2002) <http://www.stanford.edu/group/virus/uda>

[30] Persico, p. 82

[31] Crosby, p. 160

[32] Ibid., p. 161

[33] Ibid., p. 163

[34] Billings

[35] qtd. in Hoehling, p. 153

[36] Persico, p. 82; Crosby, p. 49

[37] Crosby, p. 49

[38] Persico, p. 82; qtd. in Hoehling, p. 63

[39] Kolata, p. 7

[40] Reid, Taubenberger, and Fanning, p. 83

[41] Lynette Iezzoni, Influenza 1918 (New York: TV Books, 1999) p. 65

[42] Johnson and Mueller, p. 108

[43] "Think Influenza Came in U-Boat," Bigchalk (19 Setember 1918, 13 March 2002) <http://www.bigchalk.com/setup>

[44] Kolata, p. 1; Iezzoni, p. 67

[45] Iezzoni, p. 67

[46] qtd. in Iezzoni, p. 68

[47] Iezzoni, p. 68

[48] Ibid., p. 68

[49] Ibid., p. 63; Crosby, p. 72; Influenza 1918 n.p.

[50] Crosby, p. 73

[51] Influenza 1918 n.p.

[52] "F.D. Roosevelt Influenza Grip Victim," Bigchalk (20 September 1918, 13 March 2002) <http://www.bigchalk.com/setup>; "President Escapes Influenza Attack," Bigchalk (6 April 1919, 13 March 2002) <http://www.bigchalk.com/setup>

[53] Influenza 1918 n.p.

[54] Ibid., n.p.

[55] Ibid.; Persico, p. 83

[92] Iezzoni, p. 60
[93] Ibid., p. 60
[94] Ibid., p. 60
[95] Ibid., pp. 60-62
[96] Crosby, p. 75; Iezzoni, p. 169
[97] Crosby, p. 75
[98] Ibid., p. 81
[99] Ibid., p. 75
[100] Iezzoni, p. 169
[101] Kolata, p. 19
[102] Crosby, p. 84
[103] Ibid., p. 84
[104] Kolata, p. 23
[105] "Influenza Germ Elusive," Bigchalk 14 June 1919, 13 March 2002 <http://www.bigchalk.com/setup>
[106] Iezzoni, p. 117
[107] Ibid., pp. 116-119
[108] "Health Officers Split on Influenza Scourge," Bigchalk 13 December 1918, 13 March 2002 <http://www.bigchalk.com/setup>
[109] "War Diseases Banished," Bigchalk (11 June 1919 13 March 2002) <http://www.bigchalk.com/setup>
[110] "War Diseases Banished"

Works Cited

Arcari, Ralph D., and Hudson Birden, "The 1918 Influenza Epidemic in Connecticut," Connecticut History Fall 1977-Spring 1999: 28-43

Billings, Molly, "The Influenza Pandemic of 1918," June 1997, Stanford University, 7 April 2002 <http://www.stanford.edu/group/virus/uda>

"2000 Children Need Care," Bigchalk 9 November 1918, 13 March 2002 <http://www.bigchalk.com/setup>

Crosby, Alfred W., America's Forgotten Pandemic Cambridge, England: Cambridge University Press, 1989

"F.D. Roosevelt Influenza Grip Victim," Bigchalk 20 September 1918, 13 March 2002 <http://www.bigchalk.com/setup>

"Health Head Calls Influenza Inquiry," Bigchalk 5 August 1918, 13 March 2002 <http://www.bigchalk.com/setup>

"Health Officers Split on Influenza Scourge," Bigchalk 13 December 1918, 13 March 2002 <http://www.bigchalk.com/setup>

Hoehling, A. A., The Great Epidemic Boston: Little, 1961

Iezzoni, Lynette, Influenza 1918, New York: TV Books, 1999

"Influenza Chief Cause of Deaths in Home Camps," Bigchalk 26 January 1919, 13 March 2002 <http://www.bigchalk.com/setup>

"Influenza Germ Elusive," Bigchalk 14 June 1919, 13 March 2002 <http://www.bigchalk.com/setup>

"Influenza Spoiled City Health Record," Bigchalk 25 May 1919, 13 March 2002 <http://www.bigchalk.com/setup>

Influenza 1918 Prod. Robert Kenno and Alla Savranskaia, Writ. Ken Chowder, PBS Home Video, 1998

Johnson, Niall P.A.S., and Juergen Mueller, "Updating the Accounts: Global Mortality of the 1918-20 Spanish Influenza Pandemic," Bull History Medical Journal 76 (2002): 105-115

Kolata, Gina, Flu New York: Farrar, Straus and Giroux, 1999

Luk, Jeffery, Peter Gross, and William W. Thompson, Clinical Infectious Diseases 33.8 (2001): 1375-1378

Ohadike, Don C., "Diffusion and Physiological Responses to the Influenza Pandemic of 1918-1919 in Nigeria," Social Science Medical Journal 32.12 (1991): 1393-1399

Patterson, David K., and Gerald F. Pyle, "The Geography and Mortality of the 1918 Influenza Pandemic," Bull History Medical Journal 65.1 (1991) 4-21

Persico, Joseph E., "The Great Swine Flu Epidemic," American Heritage June 1976: 28+

"President Escapes Influenza Attack," Bigchalk 6 April 1919, 13 March 2002 <http://www.bigchalk.com/setup>

Reid, Ann H., Jeffrey K. Taubenberger, and Thomas G. Fanning, "The 1918 Spanish Influenza: Integrating History and Biology," Microbes and Infection 3.1 (2001): 81-87

"Think Influenza Came in U-Boat," Bigchalk 19 September 1918, 13 March 2002 <http://www.bigchalk.com/setup>

"War Diseases Banished," Bigchalk 11 June 1919, 13 March 2002 <http://www.bigchalk.com/setup>

"Worldwide Flu Pandemic Strikes," A Science Odyssey: People and Discoveries PBS 4 April 2002 <http://www.pbs.org/wgbl/aso/databank/entries/dm88.html>

"inaccessible Alaskan regions" were infected.[10] The first civilian with flu entered Boston City Hospital on September 3.[11]

The victims of the second wave of flu were attacked suddenly. Early symptoms included headaches, fever, chills, pain in the legs and back, tortured breathing and coughing, a red color in the mouth and throat. Later complications included paralyzed eye muscles, blood-streaked urine, and swollen ankles.[12] In addition, the face turned a dark brownish purple color, the feet turned black, and the delirious victims coughed up blood, had sudden nosebleeds, and sometimes slipped into comas. Pneumonia frequently followed. A strange aspect of the epidemic was that victims died from drowning in their own fluids. Their lungs would fill with a bloody fluid, causing these vital organs to collapse, and the victims would die from asphyxiation. People could seem healthy one day and be sick the next. If flu-stricken people were not killed by the "Spanish Lady," they were usually better in about a week.[13]

The Spanish flu, coming at a time of confidence in medicine, baffled the medical community. Typhus, one of the worst killers of soldiers, was discovered to be caused by lice and troops were vaccinated against various other common sicknesses. People learned that many diseases were caused by microscopic organisms and that diseases could actually be checked. Also, there was a new public movement, emphasizing important health measures (such as cleaning water) and instructing people in fundamental lessons of health and hygiene—including giving infants milk, not beer, quarantining sick people, and washing one's hands before eating. Indeed, in the early part of World War I, the only epidemic disease of the troops not yet overcome was syphilis.[14]

New scientific discoveries were being made at an astounding rate. Microscope lenses had been improved, resulting in better knowledge of the human anatomy. According to writer Lynette Iezzoni, "Recent medical triumphs had given scientists a sense of invincibility."[15] The "miracles of medicine" had made infectious disease seem no longer a threat and people had become "complacent, almost smug about disease and death."[16] Before the Spanish Lady struck, influenza had ranked tenth as the leading cause of

death in the world.[17] Thus, when the 1918 flu epidemic arrived, scientists were stunned. In his memoir, Dr. Victor Vaughan, a former president of the American Medical Association and one of the group of four eminent doctors (the others were William Henry Welch, Rufus Cole, and Simeon Walbach) who had visited Camp Devens in October at the start of the epidemic, wrote: "I am not going into the history of the influenza epidemic. It encircled the globe, visited the remotest corners, taking toll of the most robust, sparing neither soldier nor civilian, and flaunting its red flag in the face of science."[18] The Spanish flu's multiple waves in a single year, its tendency to strike down the young and healthy, and its severity, "all suggested that this influenza outbreak was unique."[19] Oddly, the flu went away when the war ended.

## The Military

The influenza epidemic killed huge numbers of American soldiers. The Navy and Army estimated that 40 percent and 36 percent of their members, respectively, were stricken with the flu in 1918.[20] Over 621,000 soldiers caught the flu and the total number of American soldiers and sailors who were killed by the flu and pneumonia in 1918 was over 43,000, approximately 80 percent of American combat deaths during World War I.[21] Thus, more soldiers died from flu than from combat during World War I; in total, approximately 57,000 American soldiers died from flu and 53,500 died in battle.[22] In some army units, the flu killed 80 percent of their soldiers, and according to a *New York Times* article, in some camps, soldiers sick with flu filled the hospitals at a rate of 8,000-10,000 men a day.[23] It must be noted that these statistics for the flu are probably underestimated because some cases of flu were not even diagnosed and of the cases that were diagnosed, some were deemed by doctors as "other respiratory diseases."[24]

In its early stages, the fall wave of the flu epidemic was centered on the U.S. Navy. After a summer relatively free of Spanish flu in the U.S., it first appeared—in the form of the second

wave—at Commonwealth Pier in Boston, Massachusetts on August 27, 1918. The next naval station to be hit by Spanish flu was the Great Lakes Training Station located about thirty miles north of Chicago; flu appeared there on September 11, 1918. It was quarantined on September 19, but by then it was too late; from there, it spread to Chicago (the largest rail station in the U.S.) and beyond. The first army station to be stricken with Spanish flu was Camp Devens (which was struck hard); flu appeared there on September 8.[25]

Why were soldiers especially vulnerable to an attack of flu? First, there was a great deal of overcrowding which helped infection to spread rapidly. For instance, Camp Devens, which was supposed to hold 35,000 men, was packed with 45,000.[26] The Army's policy was one of "taking fullest advantage of space available to transport troops. In the day coaches of troop trains men squashed into every double seat, and on the sleepers one slept in the upper berth and two in the lower."[27] A few health officials had voiced concerns about the horrible conditions of the camps before the Spanish Lady struck. For example, before the spring wave of the flu, Surgeon General William Gorgas had "testified before the Senate Military Affairs Committee that overcrowding was rampant in all military camps."[28] Unfortunately, since the war was the public's main focus, few people noticed the spring wave. No steps were taken to prepare people for the possible rebirth of the flu in the fall. Another reason why the soldiers were so vulnerable was because most were between 20 and 40 years old, and this was the age group most susceptible to the Spanish flu.[29]

The epidemic clearly affected the military's fighting ability. For instance, the War Department, having adopted a policy of not sending men with symptoms of flu overseas, declared early in October that "Spanish influenza in camps and cantonments would retard shipments somewhat in the immediate future."[30] In the American Expeditionary Force, about one in every three soldiers with flu died and during the Meuse-Argonne offensive of the war, no division could survive for more than several days without requiring reinforcements.[31] The flu exacerbated the already diffi-

cult task of moving casualties from the battlefield to hospitals. During the Meuse-Argonne offensive, for example, 93,160 soldiers were wounded in the American First Army and to add to that there were 68,700 medical cases—most of them were flu or resulting complications of flu.[32] The epidemic also greatly reduced the number of troops available for fighting and supporting. The Medical Corps's official history declares that the flu did not end military operations "but it slowed them perceptibly."[33] "There were entire fleets [that] were ill with the disease and men on the front were too sick to fight."[34] Major Emerson Gifford Taylor stated:

> The health of the command at this time was seriously impaired by the influenza epidemic. Daily, the men evacuated for sickness reached large numbers so that the effective strength of the units was seriously impaired.[35]

On September 26, while reinforcements were being called for and the war was raging, the Provost Marshal General of the U.S. Army canceled an October draft call for 142,000 men.[36] All of the camps to which these men had been ordered were quarantined and the "call-up of 78,000 additional men in October had to be postponed, and the war ended before most of them ever put on a uniform."[37] The War Department slowed down the war effort, enjoining a decrease of training intensity for all army camps; by the end of October, the epidemic had stopped nearly all draft calls and training. Prodigious amounts of absenteeism of up to 40 percent impeded production at shipyards and arsenals, leading Charles M. Schwab, the Director General of the Emergency Fleet Corporation, to announce, "Ship production is imperiled by the flu."[38]

Besides the human wartime enemy, there was the problem of the flu. The irony was that America's protectors—the Army and the Navy—were now dangerous because many of the soldiers were sick and had the potential of spreading the flu to other citizens.

The Civilians

The Spanish flu killed more than 21 million people worldwide and one fifth of the world's population succumbed to it in 1918. The death rates were appalling. Spanish flu was 25 times more lethal than ordinary flu and killed 2.5 percent of its victims—in contrast, usually only 0.1 percent of ordinary flu victims die. In 1918, 28 percent of Americans were stricken with flu. In total, it killed over 600,000 Americans, and the death rates were so high that the average life span in the United States fell by twelve years in 1918. Today, if a plague killed the same fraction of the American population, deaths would number approximately 1.5 million—a number greater than the combined deaths caused in one year by heart disease, cancer, AIDS, strokes, chronic pulmonary disease, and Alzheimer's disease together.[39]

The 1918 flu epidemic killed mostly young adults aged 20 to 40. Nobody knows for sure why this was the case. However, there are speculations that it was because a virus similar to the 1918 one may have circulated before 1850, thus giving the elderly more immunity to the 1918 virus. Young adults of society would "have been exposed to a different set of influenza than people of other ages, perhaps resulting in an anti-influenza immune status particularly ill-suited to the virus of 1918."[40] The cases of Spanish flu were highly underreported, and it is impossible to know the exact total. In no nation was influenza a reportable disease in 1918.[41] In fact, it was not reportable until after the second wave had begun. The war kept people preoccupied and nations' official registration systems were disrupted; incomplete reports, missing records, misdiagnosis, non-medical certification, and confusion when assigning the cause of death (because Spanish flu was often accompanied by pneumonia, cardiovascular problems, and diabetes) were limitations that contributed to the lack of accurate data. According to researchers Niall P.A.S. Johnson and Juergen Miller, there has been "a consistent upward revision of mortality figures" during the last few decades and so "it is generally accepted that

recorded statistics of influenza morbidity and mortality are likely to be a significant understatement."[42]

Americans had various theories for the flu and many were connected to the war. For example, Lieutenant Colonel Philip S. Doane, the head of the Health and Sanitation Section of the Emergency Fleet Corporation, blamed it on the Germans:

> It is quite possible that the epidemic was started by Huns sent ashore by boche submarine commanders. We know that men have been ashore from German submarine boats, for they have been in New York and other places. It would be quite easy for one of these German agents to turn loose Spanish influenza germs in a theater or some place where large number of persons are assembled.[43]

Many newspapers printed Doane's suspicion. Some believed the Spanish flu had been stealthily carried into Boston Harbor on a camouflaged German ship; one old woman claimed to have observed a "greasy looking cloud" floating up from Boston Harbor and diffusing through the city.[44] Another woman believed that the local drinking water had been poisoned by German sympathizers, while a man from Passaic, New Jersey believed that the Germans had placed flu germs in cigarettes.[45] Some rejected the reports of the epidemic: an official from Missouri claimed it was just "Hun propaganda" while the evangelist Billy Sunday declared that Spanish flu was a "German plot" and that "The whole thing is part of their propaganda; it started over there in Spain, where they scattered germs around. There's nothing short of hell they haven't stooped to since the war began. Darn their hides!"[46]

There was also the theory that the Spanish flu was caused by sin. The *New York Post*, for example, claimed that all epidemics were nature's way of punishing those who broke her laws. A Philadelphia neighborhood believed that since sin caused the flu, Christians would probably be spared. Many thought of the Spanish flu—like tuberculosis—as a "lower class disease." Dr. Royal Copeland, the Health Commissioner of New York, incorrectly attributed influenza to malnutrition and "the poor hygiene of Europeans."[47] Billy Sunday soon began claiming that sin caused the flu and prayer cured it; he believed people could "pray down the epidemic."[48]

The war still seemed more important than the flu. Liberty Loan drives were popular events, attracting hundreds of thousands of patriotic Americans; the sick and the well mingled with each other, unknowingly helping to spread the flu. On September 28, 200,000 enthusiastic people linked arms and sang patriotic songs, marching in the twenty-three-block-long Fourth Liberty Loan Drive Parade in Philadelphia; there were similar parades happening all over the country.[49] In the days following the parade, the flu epidemic in Philadelphia exploded: 635 new civilian cases of flu were reported on October 1.[50]

Civilians in America who had not yet been affected went on with their lives, paying little attention to the flu. William Maxwell, for example (before his family was stricken with flu), thought that the epidemic was ravaging only the troops and that it would never affect him or anyone around him.[51] Health officials did not admit that the flu was a growing threat. Soon enough, however, the entire nation would be affected by the epidemic and its horrors. Anyone could be a victim of the flu. Even President Woodrow Wilson and Assistant Secretary of the Navy Franklin D. Roosevelt contracted the disease.[52] Lee Reay was a survivor of the flu. Her town—Meadow, Utah—quarantined itself because its inhabitants feared they would get the flu. However, she says, "But it wasn't enough, the disease came anyway—the mailman brought it."[53] As Dr. Shirley Fannin, an epidemiologist, explains, there was a sense of helplessness and horror because with the flu, "you can't barrier yourself from being exposed, because the person who looks healthy may be the one spreading the disease...We can't get away from respiratory diseases of other people because we all have to breathe."[54] Children began singing a limerick:

I had a little bird
Its name was Enza
I opened up the window
and in-flu-enza[55]

The flu sometimes infected entire families and many families, especially those in slums, did not have an adult healthy enough to prepare food. Some did not have any food at all because