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## INTRODUCTION

# AN ILL WIND



AS THE SUN sank over a windswept Yorkshire churchyard in September 2008, a battered lead-lined coffin was reburied hours after being opened for the first time in eighty-nine years. The familiar words of the burial service resounded through the twilight as samples of human remains were frozen in liquid nitrogen and transported to a laboratory with the aim of saving millions of lives.<sup>1</sup> Medical researchers had exhumed the body of Sir Mark Sykes (1879–1919) in order to identify the devastating ‘Spanish flu’ virus which killed 100 million people in the last year of the First World War. Sir Mark, a British diplomat, had succumbed to Spanish flu during the Paris Peace Conference of 1919, dying in his hotel near the Tuileries Gardens. Like many victims of Spanish flu, Sir Mark had been fit and healthy, a man in his prime at just thirty-nine years old.

Sir Mark’s remains had been sealed in a lead-lined coffin, befitting his status as a member of the nobility, and transported to Sledmere House, the Sykes’ family seat in east Yorkshire. Sir Mark was buried in the graveyard of St Mary’s church, which adjoined the house. If his body had not been hermetically sealed by a thick layer of lead, his life might have passed quietly into history. But an accident of chemistry meant that the lead dramatically slowed the decay of Sir Mark’s soft tissue, giving

scientists investigating the H5N1 ‘bird flu’ virus a unique opportunity to study the behaviour of its predecessor. One theory of the cause of the 1918–19 epidemic was that it originated with an avian virus, H1N1, which is similar to H5N1. Researchers believed Sir Mark’s remains might hold valuable information about how the influenza virus leapt the species barrier from animals to humans.<sup>2</sup>

In 2011, there were only five useful samples of the H1N1 virus around the world and none from a well-preserved body in a lead-lined coffin. H1N1 had already been sequenced by scientists using frozen remains found in Alaska, but many questions remained about just how the virus killed its victims and the way it had mutated by 1919, when it killed Sir Mark Sykes.<sup>3</sup>

Professor John Oxford, the eminent virologist who led the team investigating Sir Mark’s remains, told reporters that the baronet ‘died very late in the epidemic, when the virus had almost burnt itself out. We want to get a grip on how the virus worked both when it was at its most virulent and when it was coming to the end of its life. The samples we have taken from Sir Mark have the potential to help us answer some very important questions’.<sup>4</sup>

After a two-year process of gaining permission from the Diocese of York to carry out the exhumation, involving a special hearing presided over by a High Court judge, Professor Oxford’s team, wearing full bio-hazard kit and accompanied by medical experts, clergy, environmental health officers and Sir Mark Sykes’ descendants, finally exhumed his grave. After a short prayer, the gravestone was removed and the coffin uncovered inside a sealed tent before researchers wearing protective suits and breathing apparatus opened the casket. After so many months of preparation, it was a tense and exciting moment. But the investigation seemed

doomed to failure. A crack was discovered in the top of the lead lining, meaning that the chances of finding a pristine sample of the virus were remote. The coffin had split because of the weight of soil over it, and the cadaver was badly decomposed. Nonetheless, the team were able to extract samples of lung and brain tissue through the split, with the coffin remaining *in situ* in the grave during this process to avoid disturbing the body any further. Although the condition of the cadaver was disappointing, a study of the tissue samples taken from the remains eventually revealed valuable genetic imprints of H1N1 and its condition when Sir Mark died.<sup>5</sup>

The exhumation of Sir Mark Sykes' body represented just one attempt to find an explanation for the deadly disease that had devastated the globe during the last year of the Great War. In three successive waves, from spring 1918 to summer 1919, the phenomenon that became known as 'Spanish flu' killed an estimated 100 million people worldwide. The disease was not classified as 'Spanish flu', or the more fanciful soubriquet 'Spanish Lady', immediately. The shape-shifting creature that was Spanish flu was a slippery beast, difficult to define beyond the common characteristics of acute breathing difficulties, haemorrhaging and fever. As it progressed, many doctors and civilians would wonder whether this apocalyptic disease was actually influenza at all.

In terms of national identity, there was nothing inherently Spanish about Spanish flu. At first, in the early months of 1918, the majority of doctors believed they were dealing with nothing more serious than a particularly aggressive outbreak of common or garden influenza. But as the epidemic continued, and King Alfonso XIII of Spain fell victim along with many of his subjects, this virulent strain of influenza was discussed freely in the Spanish

press. Debate of this nature was possible as Spain was a neutral country during the First World War. Elsewhere, in Britain and the United States, censorship made such speculation impossible beyond the pages of medical journals such as *The Lancet* and the *British Medical Journal*. Under 'DORA', or the Defence of the Realm Act, newspapers were not permitted to carry stories that might spread fear or dismay. As the term 'Spanish flu' entered the language in June 1918, *The Times* of London took the opportunity to ridicule the disease as little more than a passing fad. By the autumn of 1918, when the deadly second wave of Spanish flu was hitting populations worldwide, the implications of the disease proved impossible to ignore. The United States recorded 550,000 deaths, five times its total military fatalities in the war, while European deaths totalled over two million. In England and Wales an estimated 200,000, 4.9 per 1,000 of the total population, perished from influenza and its complications, particularly pneumonia.

Today, despite regular health scares about bird flu, SARS, HIV and Ebola, it is difficult to envisage a scenario in which something as common as influenza could cause widespread illness and death. Although most of us will contract influenza several times during our lifetimes, the influenza vaccination being only approximately 50 per cent effective, the majority will survive with a minimum amount of medical attention. What then was so different about Spanish flu and why did it have such a devastating impact?

To gain some understanding of these factors, we need to define the nature of influenza and consider a brief history of the disease. In general terms, influenza is a complex disease caused by an airborne virus which spreads between individuals in microscopic

droplets, via coughing or sneezing. Bringing people together in close contact aids the spread of the infection, particularly in overcrowded communities such as schools, military camps and hospitals. In many cases, schoolchildren are the first to catch the virus and then transmit it to their families.<sup>6</sup>

Although Spanish flu constituted the most deadly mutation of the flu virus, flu itself is nothing new. References to influenza as an affliction date back to classical times, with Hippocrates witnessing an apparent epidemic of influenza in Greece in 412 BC and Livy recording a similar outbreak in his history of ancient Rome.

THE ACTUAL WORD ‘influenza’ dates from around 1500, when the Italians introduced the term for diseases that they attributed to the ‘influence’ of the stars. Another possible origin was the Italian phrase *influenza di freddo*, the influence of the cold.<sup>7</sup>

By the fifteenth century, the illness was referred to in England as a ‘mure’ or ‘murre’; apparently it killed two monks at Canterbury Abbey, while an outbreak of the *sudor Anglicus* or ‘English sweate’ was recorded after the Battle of Bosworth in 1485.<sup>8</sup> By 1562, Lord Randolph was writing from Edinburgh to Lord Cecil describing the symptoms experienced by Mary, Queen of Scots. Lord Randolph’s account will be familiar to anyone who has witnessed an outbreak of influenza:

*Immediately upon the Quene’s arrival here, she fell acquainted with a new disease that is common in this towne, called here the newe acquaintance, which passed also throughe her whole courte, neither sparinge lordes, ladies nor damoyseells not so much as ether Frenche or English. It ys a plague in their heades that have yt, and a soreness in their stomackes, with a great*

*coughe, that remayneth with some longer, with others shorter tyme, as yt findeth apte bodies for the nature of the disease. The queen kept her bed six days. There was appearance of danger, nor manie that die of the disease, excepte some old folkes.*<sup>9</sup>

By the eighteenth-century ‘Age of Enlightenment’, a spirit of scientific enquiry enabled doctors and scientists to keep better records of epidemics and speculate as to the nature of the disease. As doctors came to realize that influenza was spread via infection, rather than being caused by foul air and mists, recording major epidemics became a matter of note. One particularly virulent outbreak in 1743 originated in Italy, and as it spread across Europe the term influenza became generally used and was recorded in the *Gentleman’s Magazine* in May 1743.<sup>10</sup> In London the epidemic trebled the death rate in one week. Horace Walpole, describing its effects in a letter dated 25 March 1743, stated ‘not a family in London has scaped under five or six ill; many people have been forced to hire new labourers. Guernier, the apothecary, took two new apprentices, and yet could not drug all his patients.’<sup>11</sup> A generation later saw one of the worst influenza outbreaks in history commemorated by Edward Gray as ‘An Account of the Epidemic Catarrh’ in 1782 at the request of the Society for Promoting Medical Knowledge.<sup>12</sup>

The first influenza epidemic of the nineteenth century appeared in Paris, and then Britain and Ireland in 1803, by which time some doctors were investigating the process of transmission by social contact and the possible benefits of isolation or quarantine. In 1831, a lethal strain of influenza swept across Europe, with pneumonia a common complication. This epidemic occurred in three waves, the second wave appearing in 1833 and the third in

1837. The final deadly wave claimed 3,000 lives in Dublin alone and was described by one London doctor as one of the ‘more direfurl scourges’.<sup>13</sup>

In 1847–8, another influenza pandemic claimed an additional 5,000 lives in London over and above a normal influenza season and was compared to cholera. Over a period of six weeks it spread across Britain. Many died of pneumonia, bronchitis, asthma and similar ailments associated with influenza.<sup>14</sup>

Many of the doctors treating patients during the 1918 epidemic could recall the influenza pandemic of 1889–91, which probably came from southern China but was called Russian flu. Russian flu also hit the United States, with poor European immigrants being blamed for bringing it to the New World by steamship.<sup>15</sup> In America, a quarter of a million people died from Russian flu, and it subsequently spread to Japan, Latin America and Asia. Russian flu appeared in Britain four times between 1889 and 1894, killing approximately 100,000 Britons. After 1894, however, there were no further widespread epidemics until Spanish flu was unleashed upon an unsuspecting world in 1918.

Although influenza viruses as such were not isolated until the 1930s, medical scientists were already attempting to understand the nature of influenza. The eminent virologist Jeffery Taubenberger, a leading authority on influenza, has offered a lucid explanation of the stage researchers had reached by 1918:

*Influenza was not known to be caused by a virus at that point – though the idea that viruses existed was beginning to be accepted by the scientific and medical literature. Virus, of course, just means ‘poison’ in Latin. A virus is nothing but a package of genes inside some proteins. So whether it’s alive or not is kind*