

◆ A terrible toll of life

THE IMPACT OF THE 'SPANISH INFLUENZA' EPIDEMIC ON BRIGHTON 1918–19

By Jaime Kaminski

In 1918–19 Brighton was hit by three waves of the 'Spanish influenza' pandemic. A comparatively mild outbreak in July and early August 1918 was followed in October and November by a devastating and lethal outbreak. The epidemic culminated in a less deadly recrudescence in February and March 1919. As with much of Britain, the Brighton press generally played down the magnitude of the epidemic. But the high morbidity caused both social and economic disruption. This article considers how Brighton was affected by the pandemic and how the local authorities responded.

The pandemic which has just swept round the earth has been without precedent. There have been more deadly epidemics, but they have been more circumscribed; there have been epidemics almost as widespread, but they have been less deadly.¹

INTRODUCTION

At the close of the First World War, between spring 1918 and early summer 1919, the world was gripped by a catastrophic influenza pandemic. The so-called 'Spanish Influenza' was the first influenza pandemic of the twentieth century, during which three waves of the disease spread across the globe within months, causing widespread morbidity and mortality. The first was a mild outbreak in the spring of 1918 (the herald wave), which was followed by an extraordinarily lethal eruption in the autumn. The final outbreak or recrudescence early in 1919 was less deadly than the autumn influenza, but more deadly than the spring 1918 outbreak.² The disease was characterized by a tendency toward pneumonic complications, and caused unusually heavy mortality in the 20- to 40-year-old age range.

Pandemics occur when an epidemic becomes extremely widespread and affects an entire region, continent or, as with the Spanish Influenza, the world. Influenza pandemics are not a new phenomenon. There were two in the eighteenth century, four in the nineteenth, and three in the twentieth. In the nineteenth century major pandemics occurred in 1830–33, 1847–8, 1857–8,

and culminated in the Great Pandemic of 1889–90.³ This outbreak has been labelled the 'Russian' or 'Asiatic' flu, and it caused an estimated 250,000 fatalities across Europe.⁴ There were further increases in influenza fatalities in the UK in 1895, 1900, 1909 and 1915.⁵ In 1915 there were 89 influenza fatalities in Brighton, compared to a usual annual death toll numbering in the 30s (see Fig. 6).⁶

The 1918–19 strain of influenza was both highly virulent and highly transmissible. In addition, two further factors facilitated the rapid explosion of the disease: the movement of troops across the world during the final stages of the First World War and its aftermath and the efficient regional and global transport networks that existed at the time. For example, between 12 November 1918 and 22 February 1919, over 2,340,000 soldiers and returning prisoners of war were transported through British and French ports. This provides some indication of the magnitude of the human movement at the time.⁷

This article considers the effects of the Spanish influenza pandemic on Brighton in 1918–19. Ninety years after the outbreak, it assesses how the seaside resort coped with the epidemic and the impact it had on the town.⁸

BRIGHTON IN 1918–19

In 1919 Brighton covered 2536 acres and encompassed 25,551 dwellings, giving rise to a housing density of 10 houses per acre (2471 per km²), and a mean population density of 5.5 people per dwelling⁹ (see Fig. 1).¹⁰ With 55 people

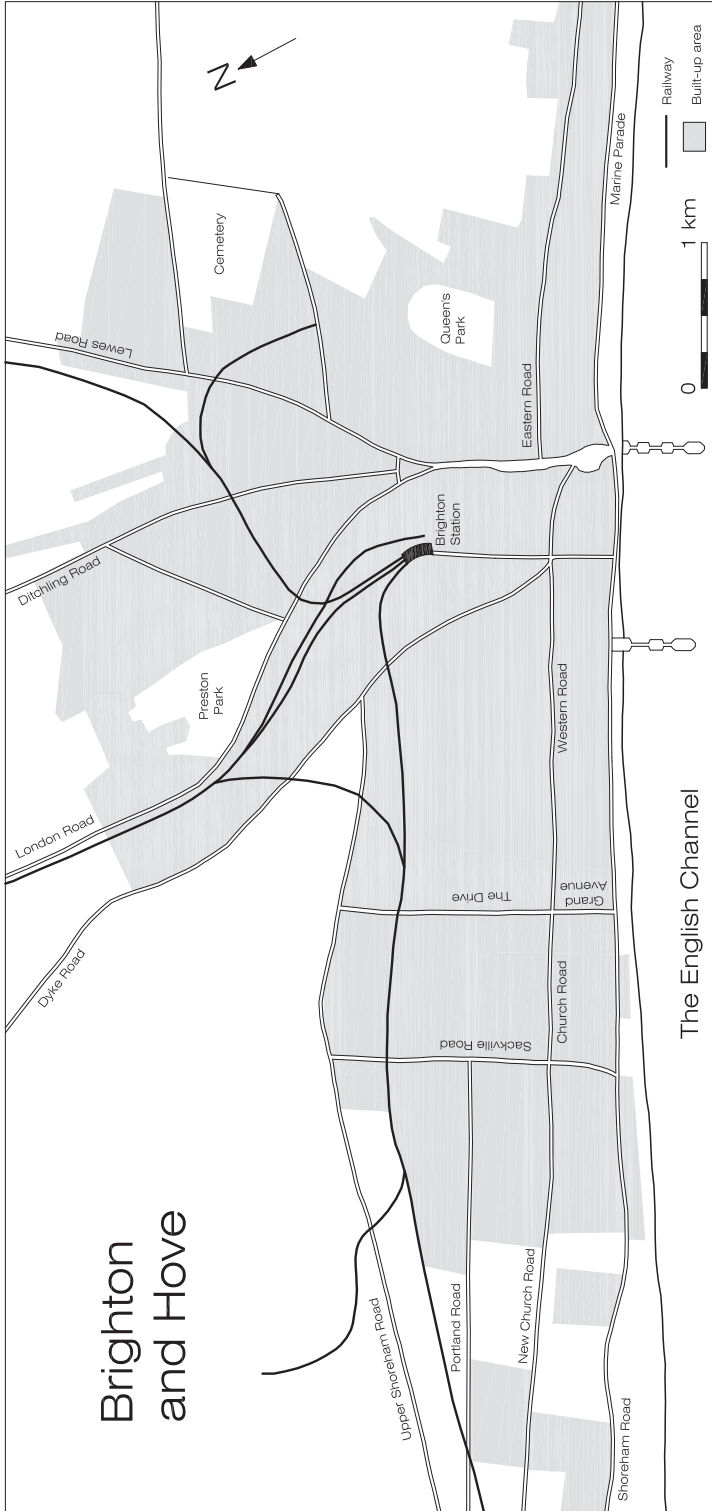


Fig. 1. The extent of Brighton and Hove in 1908.

per acre in Brighton, the borough was the second most densely populated in England by 1921.¹¹ This population density would prove to be ideal for the spread of influenza.

Of course, estimating the population of Brighton during 1918-19 is problematic. Even the Medical Officers of Health noted 'the very great difficulty in arriving at an approximately correct estimate of the population in these days'.¹² Large numbers of residents would have been away on military service as part of the war effort; correspondingly, military personnel would have been stationed in and around Brighton, wounded soldiers would have been treated there, and numerous visitors stayed in the town.¹³ The Registrar General estimated the civilian population of Brighton in 1918 to be 121,656 which rose to 132,409 in 1919 after the end of the Great War, although these national estimates sometimes conflict with population estimates from local authorities. For example, in 1919, Brighton's Food Controller estimated that the population of the town (excluding Hove) was 141,000, of whom 138,000 were considered to be 'permanent population'. This was extrapolated from the pre-war population count of 133,936 in 1914.¹⁴

As would be expected from a seaside resort many employment opportunities derived from the provision of services for visitors. In 1919 there were 1487 women directly employed in hotels, boarding houses and the provision of apartments for let. Brighton was also a shopping centre for the central Sussex catchment employing 7663 men and 6400 women. A further 7977 women were employed as domestic servants, supporting domestic life in the middle and upper classes. The London Brighton and South Coast Railway Company had locomotive construction and repair shops in Brighton and Lancing which employed 3106 in 1919, most of whom lived in Brighton.¹⁵ The town also had an electrical accessories factory that employed 1156, the Diamond Works that employed 500 discharged, disabled soldiers, and also boasted 332 fishermen.¹⁶

During the 1914-18 war, Brighton was economically buoyant. The reduced opportunities for travel abroad was a stimulus to the town's tourist economy, while within the country the increase in train fares during the war added considerably to the cost of all long-distance travel. This favoured the shorter route to the South Coast from the capital.¹⁷

Furthermore, German air raids on London caused a number of the capital's residents to take flight to Brighton, which was perceived to be safer. All of this contributed to the crowding of the town's hotels and lodging houses.¹⁸ On the eve of the Great Pandemic Brighton was harbouring ideal conditions for the spread of epidemic disease.

THE INFLUENZA PANDEMIC IN BRIGHTON

The Spanish influenza struck Brighton in three distinct waves.

THE FIRST WAVE

In the spring of 1918, the 'first wave' of the Spanish influenza began to spread across the world. It is unclear when and where it first emerged on the British mainland, but certainly the British Fleet at the naval bases at Scapa Flow and Rosyth was affected in late May and this was followed by an outbreak in the civilian population of Glasgow at the beginning of June.¹⁹ The disease quickly spread south and by July 1918, the first wave reached Brighton.²⁰

Influenza attacks often came on suddenly, usually causing victims to sicken with chills and fevers for about three to five days. Occasionally, opportunistic bacterial infections such as pneumonia could be fatal.²¹ Many victims were completely debilitated, but the mortality rate was low. Between the beginning of July and the end of the third week of August, 16 fatalities were attributed to influenza in Brighton and a further four fatalities occurred in Hove.²² The most striking feature of the influenza was its long-term effects (*sequelae*), which would be felt for weeks afterwards.²³ Ironically, those who were 'lucky enough' to contract and survive the mild influenza in the summer of 1918 in some cases gained some degree of immunity to the deadly strain that emerged in the autumn.²⁴

With so few deaths attributable to influenza the first wave of the epidemic attracted little attention. The year 1918 was the most costly of the war for Allied casualties. With all eyes focused on the heavy war losses, the comparatively non-lethal first wave of the epidemic went by almost unnoticed in the media.²⁵ In fact, the first wave of the epidemic was sufficiently mild to encourage decidedly light-hearted commentary in Brighton's press. Under the

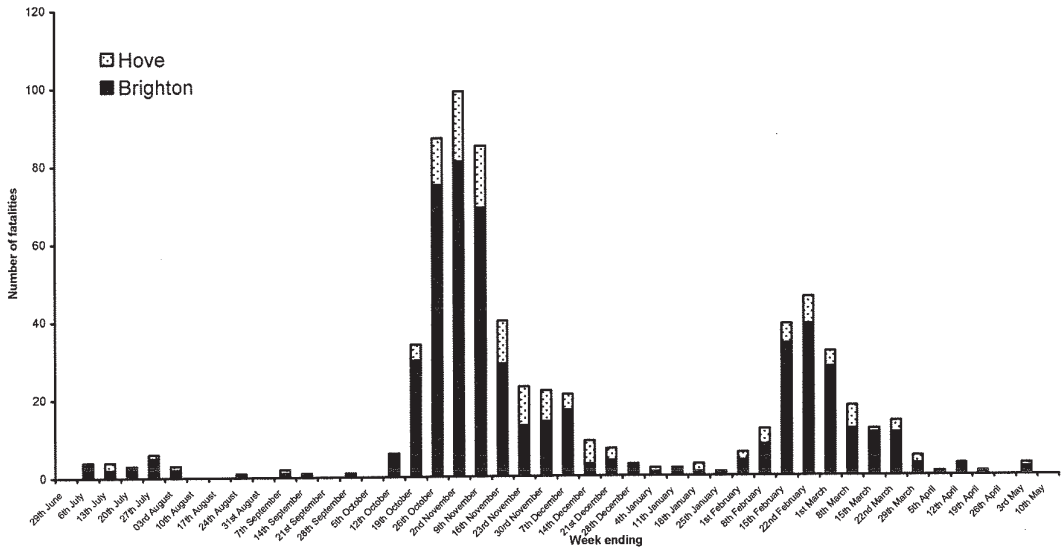


Figure 2. Influenza-related deaths recorded in Brighton and Hove in 1918-19.

title 'A cure for influenza' Hannington's department store placed the following advertisement in the *Brighton Gazette* in July 1918:

A London doctor has recently suggested a very pleasant and economical remedy for the present epidemic of influenza and the idea is sufficiently good for presentation to Brighton ladies. Even in the event of its failure to achieve the purpose of a cure, the benefits accruing to it will justify a trial ... Briefly the cure is 'Sales!' ... But like all other remedies there is a standard of excellence that must be attained for the cure to be a real one, and in the case of local ladies the word to the wise is sufficient, but to those not familiar with the House of Hannington, of North and East Street, Brighton, we would suggest an early visit, before the influenza germ develops, and bargains decline.²⁶

Ironically, this advertisement would be portentous. The 'germ' did develop and within three months the second and most devastating wave of the Spanish Influenza would arrive in Brighton. By the time it had run its course, the epidemic would have caused the highest number of influenza fatalities seen in any Sussex town.²⁷

THE SECOND WAVE

By late August the influenza had metamorphosed from a comparatively mild disease to a far more

lethal one.²⁸ As with most of Britain, Brighton and Sussex sustained the brunt of the epidemic between October and November 1918 (see Figs 2²⁹ & 3). The first week of October saw no recognized influenza deaths, but by the week ending 12 October, the first six recorded fatalities had occurred. A week later this had increased to 30, doubling to 75 in the week ending 26 October. The epidemic peaked with 81 fatalities in the week ending 2 November. The first signs of decline in the numbers were witnessed in the week ending 9 November, when only 69 deaths were recorded. This dropped to 29 in the week ending 16 November. It only took four weeks from the first fatalities of the second wave for the disease to peak. There was a longer tail of five weeks, followed by low mortality throughout the winter.³⁰ As would be expected, the mortality figures for Hove closely mirror those of Brighton, although on a lesser scale.³¹

The first indication received by Brighton's Medical Officer of Health, Dr Duncan Forbes, that influenza was affecting great numbers came from the schools. In these confined environments, the spread of the disease was very rapid. In the case of Preston Road infant school the attendance on Thursday 10 October was 155, by Monday 14 October, it had dropped to 73 because of the epidemic.³²

The low number of fatalities in the first two weeks of October initially allowed the press to

downplay the outbreak, despite the increasing number of deaths in London and around the world.³³ By the second week of October, when the first deaths had occurred in Brighton, the press were still writing about the fatalities outside of the town both in the UK and abroad. A number of commentaries initially took a light-hearted perspective. The *Sussex Daily News* joked that 'ingenious persons have discovered a new argument against a General Election, which they say would mean a great number of public meetings and a rapid spread of the disease'.³⁴ The same humour was seen in the article titled 'The Germ-Hun' in the *Gazette*, which compared the advance of 'pseudo-democracy' in central European politics with the advancing influenza epidemic.³⁵ However, as the deaths and sickness began to increase the tone in the press slowly began to change. On 16 October the *Gazette* stated that 'the return of the "Spanish Flu" epidemic is proving to be much more serious than its first appearance'.³⁶ By the third week of October, the *Brighton and Hove Society* stated that 'the new influenza is as bad as the old if not worse, and ... it is everybody's duty to take precautions'.³⁷ However, they were less forthcoming about what these precautions could be. Even at the height of the Brighton epidemic, the press was still focusing on the effects of the influenza in other cities, especially London.³⁸

On the afternoon of Tuesday 22 October, the Brighton education committee elected to close all elementary schools in the town because of the influenza epidemic. Based on advice from the Medical Officer of Health, the schools were closed for a month until 18 November. Sunday schools voluntarily closed for the same period.³⁹ The secondary schools remained open during the epidemic.

On Saturday 26 October, in the week prior to the peak of the epidemic, the 'Our Day' pageant was held in Brighton, Hove and Preston to support the British Red Cross and the St John's Ambulance Brigade. The event, which raised £2235, was attended by thousands of people.⁴⁰ The timing could not have been worse and the pageant undoubtedly led to the infection of more individuals. The influenza peaked with 81 fatalities in the next week.

By now the sheer magnitude of the death toll, in conjunction with the increasing number of sick staff, began to affect the ability of Brighton's

cemetery authorities to bury the dead. The *Herald* noted that 'the unprecedented sight has been witnessed of funerals in the gathering shades of night, if not in actual darkness. One of the cemeteries at least has had to get the assistance of soldiers in digging graves'. Special measures were required to deal with the large number of people coming to the Registry Offices to register deaths.⁴¹

On Tuesday 11 November the Armistice with Germany was signed, signalling the end of the Great War. The subsequent Armistice celebrations caused 'tens of thousands' to take to the streets of Brighton.⁴² While this mass celebration almost certainly caused further transmission of the disease, the influenza had already peaked in Brighton. Influenza deaths fell to 29 in the next week. By 23 November, the *Brighton Herald* could report that 'children are back at school and no new cases have been reported from the schools'. By the end of November 1918 the worst of the epidemic was over. As was to be expected, intermittent fatalities occurred through the winter months, but the disease had peaked. The country's Medical Officer of Health summed up the epidemic when describing the second wave by saying 'in its duration it has taken a terrible toll of life'.⁴³

THE THIRD WAVE

January 1919 saw about one death a week from influenza, which corresponds to the average winter mortality seen in Brighton prior to the epidemic. It was not until the end of the month that the third wave of the pandemic began to manifest itself in the mortality figures. The week ending 1 February witnessed four influenza deaths, followed by eight the week after, and then thirty-four in the week ending 15 February. By this time the press began to pick up on the recrudescence of the disease. An editorial in the *Sussex Daily News* stated that 'whether or not the influenza is coming back, as some people would have us believe, I am by no means sure, but if it is it would hardly appear to be so virulent a type as that which we experienced towards the close of last year'.⁴⁴ The third wave of the epidemic peaked in Brighton with 39 deaths in the week ending 22 February. The disease gradually declined although intermittent deaths were evident until the first week of May. In the third wave a further 162 Brightonians had lost their lives to the influenza, but Brighton's brush

Table 1. Brighton's influenza and other respiratory disease mortality compared to ward and population density in 1918.

Ward	Population of ward (est. 1918)	Number of fatalities (influenza)	Number of fatalities (Bronchitis/pneumonia)	Number of fatalities (tuberculosis)	Influenza fatalities as a % of ward (1918 population)	Area of ward	People per hectare	Rooms per person
St John's	10,452	45	43	13	0.43	32 ha	327	0.89
Hanover	9351	39	43	21	0.42	28 ha	334	0.88
St Peter's	5469	21	17	17	0.38	22 ha	249	0.98
Pavilion	3713	13	6	5	0.35	31 ha	120	1.30
Queen's Park	8212	29	33	22	0.35	79 ha	104	1.19
Preston	15,102	48	20	27	0.32	210 ha	72	1.32
Regency	6738	21	16	9	0.31	31 ha	217	1.01
St Nicholas	7727	22	29	14	0.29	31 ha	249	1.02
Preston Park	11,522	32	20	15	0.28	156 ha	74	1.39
Montpelier	5582	14	12	7	0.25	44 ha	127	1.77
Pier	9956	24	26	20	0.24	33 ha	302	1.09
Lewes Road	15,285	35	46	37	0.23	114 ha	134	1.00
Kemp Town	7665	13	10	7	0.17	191 ha	40	1.53
West	4882	5	8	4	0.10	28 ha	174	1.53
Total	121,656	361	329	218	0.30	1030 ha	180	1.21

with 'one of the most massive disease outbreaks in human history' was over.⁴⁵

THE HUMAN RECKONING

During the autumn of 1918, the casualty lists from the Great War were supplemented by the obituaries of those who had succumbed to influenza and its complications. Numerous obituaries hint at the sudden loss and at the human tragedies that were played out in street after street across Brighton. Pitiful stories abounded, like those of Grace Mills who came down with influenza the day after her wedding and died of pneumonia ten days later and of Mrs Ada Wright, daughter of Alderman Wilson of Brighton, who had made the three-month journey home from Bangkok (then in Siam) with her husband and two daughters and whose entire family came down with influenza on their arrival in the UK in November 1918. Ada died in Brighton a week later. Her husband and daughters were too ill to attend the funeral.^{46, 47}

The nature of transmission of the virus meant that it was not uncommon for whole families to come down with influenza simultaneously. The Lacey family of Bond Street was one such example. On Sunday 2 February, 14-year-old Frank Robert

Lacey died of pneumonia brought on by influenza; on Monday, his 23-year-old sister Alice died from the same pneumonic complications, while their mother and another sister lay 'dangerously ill' with influenza.⁴⁸ One Preston doctor described a house with five cases of influenza, three of whom had pneumonia, in one bedroom. The father was fighting in France, and the only support was provided by a neighbour.⁴⁹ The rapidity of the infection could be alarming. On 14 February 1919, the war poet Robert Graves returned from Limerick to his home in Hove. He brought the influenza with him and 'within a day or two everybody in the house had caught it' except his wife's father, their baby and one servant.⁵⁰

With entire families succumbing to the disease simultaneously, the ability of family members to provide nursing care for each other was drastically reduced. Even where family nursing care was provided, it could be a dangerous activity. In mid-October Miss Mabel Guildford became ill with the influenza and was nursed by her devoted sister Alice. Pneumonia supervened and Mabel died within five days. Alice's devotion cost her dearly. She came down with influenza and on the day of her sister's funeral she, too, died.⁵¹

And this is the real impact of the epidemic,

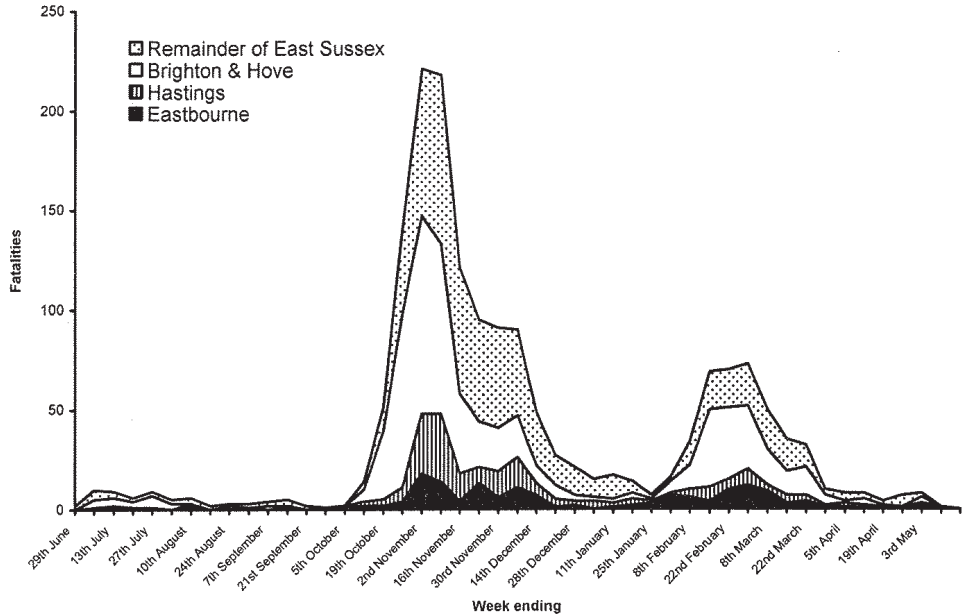


Fig. 3. Recorded influenza related deaths in from the principal East Sussex towns during 1918-19.

often lost among the mortality figures and other statistics: it brought human tragedy.

DISTRIBUTION

The distribution of influenza fatalities in Brighton is instructive (see Table 1⁵²). The three wards with the densest occupation also exhibited the highest percentage death rate. In St John's, Hanover and St Peter's, there were only 0.89, 0.88, and 0.98 rooms available per person. Such density of occupation can be seen as a proxy for the poverty of the ward. Correspondingly, those wards with the lowest population density such as Kemp Town, West and Montpellier, with 1.53, 1.53 and 1.77 rooms available per person also exhibited some of the lowest fatality rates. However, the fatality rates in the other wards do not exhibit such a close correlation between density of occupation per room and fatalities.

MORTALITY

According to Brighton's Medical Officer of Health, in the 1918-19 epidemic 526 deaths (0.43% of the 1918 population in the town) were directly attributable to influenza.⁵³ This compares to only 603 influenza deaths in the entire decade between 1890 and 1899 (which itself included the Russian

Influenza pandemic). Although this in itself represents a horrific human tragedy, a number of factors suggest that the epidemic may have claimed the lives of even more Brightonians (Fig. 3⁵⁴).

In 1918 there was no definitive test to determine if a sufferer actually had influenza,⁵⁵ because the human influenza virus was first discovered in 1933.⁵⁶ Influenza leaves victims more susceptible to pneumonic complications caused by secondary bacterial infections. Many deaths, therefore, might have been recorded under these causes, rather than as being a result of influenza (see Table 1). There is certainly a corresponding rise in pneumonia-related deaths in Brighton during 1918-19. As the *Sussex Daily News* noted, 'the serious effect of the "Spanish" 'Flu as we came to know it, was the deadly effect of the pneumonia which so frequently intervened'.⁵⁷ Aside from pneumonia, the Registrar-General of England and Wales, in his account of the 1918-19 outbreak, considered increases in mortality from bronchitis, pulmonary tuberculosis, and heart disease as having been exacerbated by the influenza epidemic.⁵⁸ The Medical Officer of Health especially considered that the Spanish influenza was the cause of 'an increase in the clinically evident cases of pulmonary tubercle'.⁵⁹ The increased death toll of other diseases would

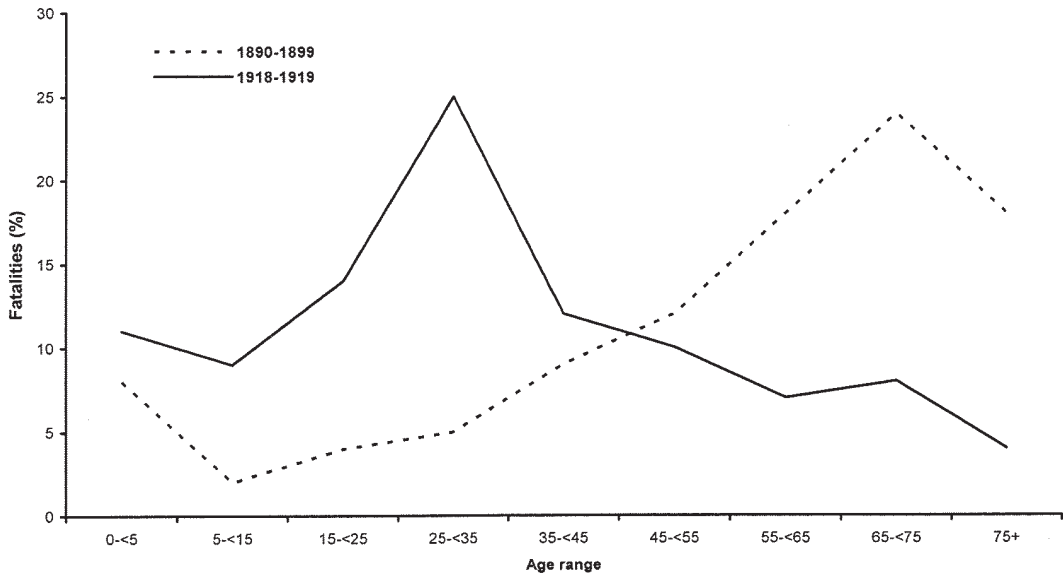


Fig. 4. The age of death from the 1918-19 influenza in Brighton compared with the ages of death from influenza between 1890 and 1899.

have been caused by the influenza, reducing the sufferer's ability to fight other illnesses, and through the diversion of medical resources and the incapacitation of carers who might otherwise have nursed those suffering from other ailments.

AGE PROFILE

Influenza usually presents a 'U-shaped' mortality profile with elevated fatalities occurring in the very young and in the upper age groups. A review of the death toll from influenza in Brighton between 1890 and 1899, which includes the fatalities from the 1889-90 'Russian influenza' pandemic and its subsequent recrudescences, reveals this characteristic profile (see Fig. 4): a low peak is evident at 8% for children in the 0-5 age range; it drops to 2% for children in the 5-<15 age group, is followed by a steady increase for all age groups and peaks at 24% in the 65-<75 year old age range.

The Spanish Influenza pandemic of 1918-19 caused a very different mortality profile (see Fig. 4⁶⁰). The Medical Officer of Health officially recorded 526 deaths as being attributable to influenza during the epidemic. Children under five sustained 11% of these fatalities, which dropped to 9% for children in the 5-<15 age group. But in 1918-19, it was the 25- to 35-year-old age group who sustained the heaviest mortality. With 25%

of all influenza deaths occurring in this range (see Fig. 5⁶¹), almost as great a percentage of people died in this age group alone as did in all ages above 55 (29%). Once again, in contrast to the usual pattern of mortality, those aged over 45 had a decreasing chance of fatal exposure, with those in the 75+ age range having the lowest death rate of all (4%). It is tragic that the age group most severely affected by the epidemic had already been devastated by losses in the war.

The unusual age profile of influenza fatalities was not lost on the media of the time. The *Brighton Herald* noted that 'the disease this time has been more deadly among those under forty than those over forty'.⁶²

THE MALE/FEMALE MORTALITY RATE

It is also apparent that in Brighton during the second wave of the epidemic women suffered a higher mortality than men (see Fig. 6⁶³). In 1918, 219 women succumbed to influenza, compared to only 148 men. By 1919 this differential was not evident: there were 91 female fatalities, compared to 76 male. The higher proportion of women who succumbed to the influenza is in part a statistical function of the high number of women in the town (56%), because such a large number of men were away on military service.⁶⁴ If these correction

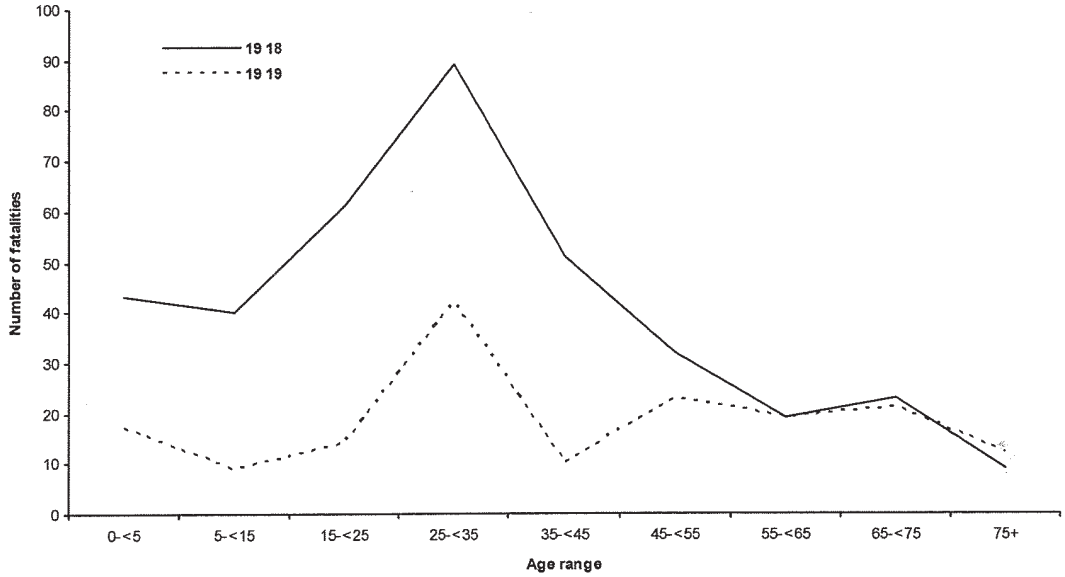


Fig. 5. The ages of death from the 1918-19 influenza in Brighton.

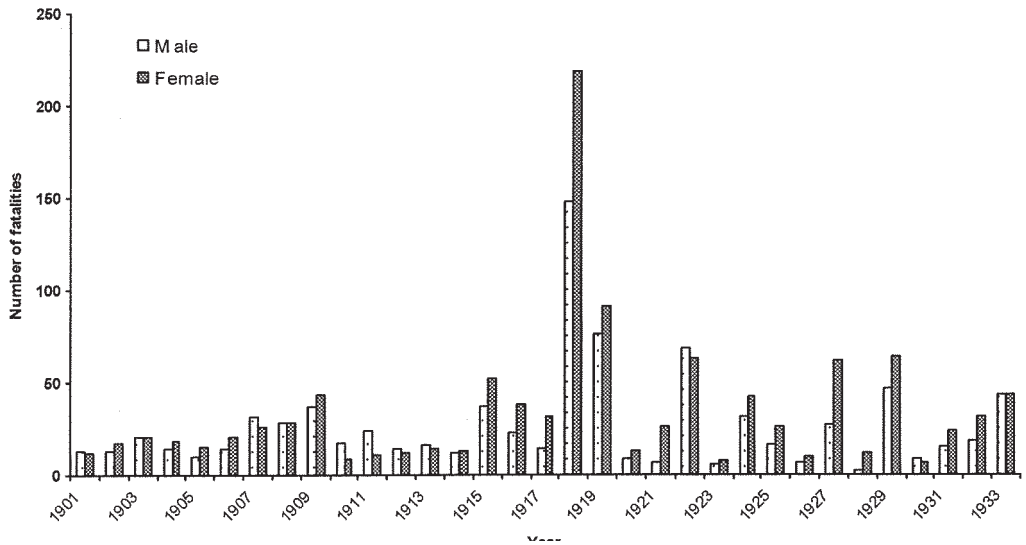


Fig. 6. Brighton's influenza mortality figures for males and females between 1901 and 1933.

factors are applied to the 1918 mortality figures then 3.22 per thousand women died because of the epidemic, compared to 2.77 per thousand men (a differential of 0.45). In 1919, the mortality had dropped to 1.23 per thousand women and 1.31 per thousand men (a differential of 0.08).⁶⁵

MORBIDITY

Of course, the high death toll, which naturally attracts attention, is only part of the impact of the pandemic. The illness would have incapacitated many sufferers for at least a week and many would not recover fully for at least a month.

The true number of Brighton residents who became ill with influenza in 1918–19 will never be known. Not all would have reported the illness or used medical facilities. Not all those visits to medical centres would have been recorded, because staff were overwhelmed, and of course few records have survived. The unusually high virulence of the infection meant that many people were incapacitated by the influenza. The rapid transmission of the 'flu would have caused many people to be incapacitated at the same time. Therefore, in the autumn of 1918, it is likely that there was a period of considerable social and economic dislocation. Of course, the economic impact of the loss of so many key workers would rapidly have been mitigated by the influx of demobilised soldiers coming back from the First World War.

BRIGHTON'S RESPONSE

Leavitt succinctly describes a pandemic as a 'local crisis worldwide.'⁶⁶ This is crucial for understanding the impact of the Spanish influenza outbreak of 1918–19. Many epidemics affect a single locality or region and, as a result, these locales can rely on aid and resources being moved from unaffected regions to mitigate the emergency. In a pandemic, all areas are affected during the same timeframe (see Fig. 3). Help from central government sources cannot be relied upon or will be greatly reduced because of the magnitude and universality of the outbreak.

Moreover, in 1918 central government resources were both scarce and divided. The Ministry of Health was only created in 1919; in 1918 there was no single government department responsible for national health issues. Health issues such as this fell loosely under the jurisdiction of the Local Government Board, then headed by Arthur Newsholme, the former Medical Officer of Health for Brighton.⁶⁷ Furthermore, the country had been embroiled in the Great War for over three and a half years. Large numbers of civilian medical staff had been diverted to the war effort, as well as considerable financial resources. Therefore, the resources that were available to the government to combat the influenza outbreak on the home front were greatly reduced. In 1918, towns like Brighton essentially had to rely on their own resources to deal with the outbreak.⁶⁸

During the 1918–19 epidemic Brighton's authorities under the direction of Duncan Forbes the Medical Officer of Health⁶⁹ attempted to combat the outbreak in the following areas:

- *Schools*: The elementary schools were closed.
- *Public transport*: The manager of the tramways was approached regarding ventilation of the trams and buses, and avoidance of overcrowding. The railway company was also approached.
- *Public entertainment*: An appeal was made to cinema proprietors to keep their halls properly ventilated during performances.
- *Information campaign*: Pamphlets were distributed to the public about how to avoid influenza and what to do if the disease was contracted.
- *Disinfection*: Certain public buildings were disinfected.
- *Sanitation*: A letter was sent to Brighton publicans explaining the importance of thoroughly washing drinking glasses in running water.
- *Vaccinations*: A limited campaign of vaccination was conducted in Brighton.

SCHOOL CLOSURES

At the height of the epidemic in Brighton, the elementary schools closed for a month between 18 October and 18 November, Sunday Schools voluntarily closing for the same period.⁷⁰ The smaller towns in Sussex closed their schools for shorter periods of time. Worthing closed their elementary schools for two weeks and Bognor Regis shut all public schools for the same timeframe.⁷¹ Brighton's Medical Officer of Health felt that he needed powers to close 'all children's meetings and gatherings, Sunday School treats and other entertainment for children' completely.⁷² Such powers were not forthcoming and these closures were made only on a voluntary basis.

PUBLIC TRANSPORT

Brighton's tram services had not been cut during the war, but passenger numbers had increased dramatically. By the municipal year ending March 1918, there were five million *more* passenger tram journeys than in the year before the war.⁷³ However, because of the diversion of materials and other resources for the war effort, it was not possible to build any new trams to accommodate this increased demand. The result was overcrowding of

the pre-1914 running stock.⁷⁴ The situation was so bad that by the beginning of 1918 one passenger counted 85 people on a tram to Beaconsfield Villas, and was informed by a tram driver that he had seen over 100 passengers packed on to a tram at one point.⁷⁵ The link between overcrowded public transport and the spread of infectious diseases was not lost on the population.⁷⁶ A reader of the *Brighton Gazette* commented:

The cutting down of travelling facilities has resulted in the serious overcrowding of all public vehicles, omnibuses, tramcars and trains. When these vehicles are crammed with as many people as can be jammed into them it is no wonder in such circumstances that infectious complaints spread rapidly in every direction.⁷⁷

A contributor to the *Brighton Herald* simply advised readers to 'walk to your work rather than go inside a tramcar or bus'. In an attempt to reduce the public health risk the Medical Officer of Health approached the tramcar operators, and as a result tramcar ventilation was increased. The brass shutters used to close the ventilators in the doors of tramcars were removed. This allowed the ventilators to be kept permanently open because it was thought that fresh air was 'one of the best means of guarding against influenza'.⁷⁸

It is apparent that during the epidemic, tram passenger numbers were down by tens of thousands compared to the corresponding period in 1917. It is not clear how much of this was the result of illness or a desire to avoid infection, but hundreds of thousands of passenger journeys were made each month. Public transport would therefore have been an important mechanism for the transmission of infection.

PUBLIC ENTERTAINMENT

While the influenza outbreak continued, public entertainment venues, where large numbers of people would congregate, gave particular concern to the authorities. Some proprietors had voluntarily adopted the expedient of temporarily closing their buildings to the public for a short interval after performances in order to ventilate their establishments. Nevertheless, in the third week of November 1918, a regulation was passed by the Local Government Board which applied to every building used as a 'theatre, music hall, place for public entertainment, or amusement to

which the public were admitted by ticket, or by payment'. The regulations required that where the public is admitted to any such place of public entertainment

the entertainment shall not be carried out for more than three consecutive hours, that there shall be an interval of at least 30 minutes between two successive entertainments and that during the interval the building shall be effectively and thoroughly ventilated.

It fell to the local sanitary authority to enforce these ordinances.⁷⁹ Because these regulations were passed just as the second wave of the influenza epidemic was abating, they were to prove to be highly unpopular.⁸⁰

However, Brighton's Medical Officer of Health considered that there was little benefit in disinfecting cinemas, 'neither is there any apparent object in clearing the halls at intervals as long as the halls are kept properly ventilated'.⁸¹ He considered the danger lay in 'bringing people together in stagnant air as they are brought together in public halls, in churches, and in cinemas where the fan is not kept running *during* the performance'.⁸²

THE INFORMATION CAMPAIGN

Five thousand copies of a pamphlet written by the Medical Officer of Health that described how to avoid influenza and what to do if infected were distributed to school children and the general public. The pamphlets were distributed to the public from the Public Library and on trams. Each contained the following advice on 'How to avoid infection':

- Do not go to indoor gatherings.
- Travel as little as possible on trains or inside cars or buses.
- Do not visit friends with colds and do not allow them to visit you.
- Give up shaking hands for the present; give up kissing for all time.
- Put a few drops of eucalyptus, pine oil or diluted formalin on your handkerchief in the morning and inhale at intervals during the day, and particularly after being near a person with a cold.
- Wash the hands before meals and wash out the nose by drawing up water into it at that time.
- Have your own towel; never use the common towel.
- Take drugs only when prescribed by the doctor.
- Keep fit by taking exercise in the open air.

It simply stated that if attacked by the disease 'the sooner you go to bed the less serious and shorter your illness will be. An attack weakens you more than you think, therefore do not hurry convalescence'.⁸³

DISINFECTION

In certain buildings in the town, including the Public Library, the General Post Office, and the Secondary Girls' School, formalin in a solution of two fluid ounces to the gallon (1.25%) was sprinkled on the floor in the morning before the arrival of the public and school children. The solution was sufficiently dilute to 'cause no more than slight smarting of the eyes. The vapour inhaled increased nasal secretion and so washed out any infection and at the same time may have acted as a mild disinfectant'.⁸⁴

SANITATION

When the third wave of the influenza came to Brighton in the spring of 1919, the authorities were better prepared. The following letter was sent by Brighton's Medical Officer of Health to the owners of licensed premises in the town in February:

'In view of the prevalence of influenza I am asking all publicans in Brighton to give their employees instructions as to the importance of very thorough washing up at present. Infection is apt to remain on the outside of the lips of glasses and these should have particular attention. Thorough rinsing in running water will remove the infection but plenty of water must be used; it is not sufficient to wash the glasses in bowls or basins of water in the bar, the used glasses should be removed for washing to a sink with a tap.'⁸⁵

Of course, these concepts of hygiene relied on the plumbing infrastructure to sustain them. In 1919, interior plumbing was not yet widely in place. A follow-up inspection of 413 licensed premises in the town revealed that 51 establishments had sinks with deficient water supply and waste pipes, and 123 had no fixed sinks. Of these, 115 did not even have a water supply.

VACCINATIONS

The Local Government Board was able to distribute a 'vaccine' for the influenza.⁸⁶ Allegedly the vaccine was claimed to make 'attack less likely' and to 'lessen severity in case of attack. As the vaccine produces no feeling of illness, persons much

in contact with the public should consult their doctors as to the advisability of having injections.'⁸⁷ A number of newspapers reiterated that 'a serum has been developed which is said to have good results'.⁸⁸ Of course, this was 15 years prior to the discovery of the influenza virus so the vaccine would have been of questionable worth. Even the Medical Officers of Health were cautious about its benefits and stated that 'since we are uncertain of the primary cause of influenza no form of inoculation can be guaranteed to protect against the disease itself'.⁸⁹

Despite these reservations key workers in Brighton were given the opportunity for vaccination. Thirty-five teachers, 19 of the Queen's Nurses, and 16 Town Hall staff took up this offer of vaccination.⁹⁰ In Brighton of the 126 people inoculated, nine developed influenza within five days of inoculation and none thereafter. This prompted the Medical Officer of Health to note that the figures 'point to an increased susceptibility to infection immediately after inoculation and less certainly to a lessened susceptibility thereafter'.⁹¹

THE IMPACT ON MEDICAL PERSONNEL

The Great War had depleted Brighton's medical staff. Even the department of the Medical Officer of Health was not immune from depletion: fourteen of his staff joined the war effort.⁹² On the eve of the epidemic Brighton's medical infrastructure was not in a good position to combat it.

When the second wave arrived it would stretch the town's medical services almost to breaking point. Because of the highly contagious nature of the influenza, medical staff were particularly vulnerable to infection. Sometimes the disease could have fatal consequences. It cost the life of one of the Voluntary Auxiliary Detachment (V.A.D.) nurses at the Pavilion General Hospital, but generally nursing staff survived the epidemic.⁹³ However, many would fall ill at the time when they were needed most. At Brighton infirmary, 141 influenza patients were treated, of whom 12 were staff. The Queen's Nurses (District Nurses) fared little better. The Superintendent of the Brighton and Preston Queen's Nurses was prompted to write to the *Brighton Herald* that 'out of a staff of 14 nurses, 8 have been ill with severe attacks of pneumonia'. With such high demand for medical

care during the epidemic there would inevitably be problems. He recorded that 'during the month of October 387 cases were nursed among the sick and poor of Brighton. Of these 98 were patients very ill with pneumonia. It is with great regret that I have been unable to send a nurse to many urgent calls'.⁹⁴ Despite this, the Queen's Nurses played a crucial role in tending the sick during the epidemic, as summed up by the Mayor of Hove, Alderman A. R. Sargeant, who stated that the value of the nursing provided was 'immeasurable' and 'one could not imagine what would have happened in the poorer houses were it not for the Queen's Nurses'.⁹⁵

The situation in the town in late October and November was critical. One Preston doctor described the evacuation of a child by ambulance, while 'the father lay dead in the home. The mother had collapsed'. The Queen's Nurses who had been attending the family were unable to help further because so many of their number were ill.⁹⁶ The son of this same doctor, who happened to be a Royal Navy surgeon-lieutenant on leave from the war, had to help with his father's Preston practice because of the overwhelming pressure of work.⁹⁷ It is apparent that the sheer volume of cases especially during the height of the second wave could cause exhaustion — further reducing medical personnel's capacity to help the sick. Robert Graves, the war poet, noted that in February 'there was not a nurse to be had in Brighton'. The urgent demand encouraged many trained medical personnel to come out of retirement, although it also brought out others who may not have been as qualified. The Graves' family eventually managed to contract the services of two ex-nurses one of whom was 'competent, but frequently drunk ... the other, sober but incompetent'.⁹⁸

With medical personnel stretched to the limit, it is apparent that the influenza epidemic was going to affect the death rate associated with other illnesses in the town because fewer medical resources could be devoted to other potentially fatal diseases and ailments.

PRESS COVERAGE

One aspect of the pandemic that has caused much controversy is the coverage given by the press. Three principal newspapers circulated in Brighton during the First World War. These were the *Brighton Gazette* (1821–1985), the *Brighton Herald and Hove*

Chronicle (1806–1971) and the evening *Argus* (1880–present). Of these, the *Brighton Gazette* was published twice weekly on Wednesdays and Saturdays, for 1½d. from its offices in Union Street. The *Gazette* incorporated the Hove Post, Sussex, and Surrey Telegraph, and considered itself to be the 'fashionable journal of the south'. However, its coverage of the epidemic mainly consisted of oblique references to the influenza in obituaries and coroners' cases. Little editorial space was devoted to the epidemic and, where it was, it tended to be about the outbreak in other cities, especially London.⁹⁹ The only time the influenza was to reach the front page of the *Brighton Gazette* was in a short reference to 510 deaths from influenza and pneumonia in Glasgow.¹⁰⁰

The *Brighton Herald and Hove Chronicle* was published every Saturday for 1½d. from its offices in Princes Place, North Street. The *Brighton Herald* provided the most extensive coverage of the epidemic. This consisted predominantly of the publication of readers' letters on the prevention of the spread of the influenza, although many of the suggestions — including the importance of having clean teeth — would have been of little help to Brightonians in the grip of the epidemic. However, where the *Herald* did produce an editorial on the influenza, it was both detailed and relevant to Brighton. Its 730-word article on 9 November 1919, entitled 'Influenza abating', has the distinction of being the longest editorial produced by the Brighton press about the epidemic.

It is possible that the *Herald's* comparatively extensive coverage of the influenza was prompted in part by the close call that the newspaper had had with the epidemic in October. Wartime demands had reduced staff numbers and, in the second week of October, the remaining staff started to succumb to influenza. The business manager and two of the three office staff became sick. In consequence, 'the department was left on Monday morning in the sole charge of the office girl'. She fell ill on the Tuesday and an apprentice was brought in from the printing office to run the department. He fell ill on the Wednesday. By Thursday the entire operation was left in the hands of female volunteers from the friends and families of the *Herald's* staff. Even at this early date, when the rest of Brighton's media hardly acknowledged the epidemic in the town, the *Herald* contended that 'the outbreak of influenza from which we are suffering is one of the

most widely spread visitations of the kind we have known in Brighton'.¹⁰¹

The *Argus* was published from Monday to Saturday each week, and cost 1d. The paper was based in offices at 130 North Street and 12 Bristol Road. It comprised four pages, two of which were exclusively devoted to advertising, while the remaining pages principally provided news content. As with the other Brighton newspapers, coverage of the epidemic consisted principally of references to the influenza abroad¹⁰² and in other UK towns and cities.¹⁰³

A number of other newspapers covered Brighton as part of a county perspective including the *Sussex Daily News* (1868-1956) and the *Sussex Weekly Advertiser* (established 1749). In 1918, the *Sussex Daily News* was published six days a week between Monday and Saturday, and cost 1½d. From October 1918, the *Sussex Daily News* began reporting cases of the Spanish influenza as it spread across the globe,¹⁰⁴ and then as it spread across the country approaching Brighton.¹⁰⁵ The *News* also continued reporting the worldwide spread after the second wave had passed through Brighton.¹⁰⁶

The *Sussex Express and South Eastern Advertiser* was published on Fridays for 2d. and was known as the 'Sussex Farmer's Paper'. It incorporated the Surrey Standard, Kent Mail, Hastings and St Leonards Express, Worthing Express, West Sussex Journal, and Eastbourne Observer, and catered mainly to the farming community. It had a Mid-Sussex edition (which included Brighton), although, unsurprisingly, little coverage was devoted to Brighton's influenza epidemic, but some editorial space was devoted to the outbreak in Uckfield.¹⁰⁷

The *Brighton & Hove Society* magazine had been published since 1827, and by 1918 incorporated the Hove Gazette, Sussex County Mirror, Hove Echo, Shoreham & County Gazette, and the Hove & Portslade Sun. It was published on Thursdays for 3½d. As this was a society paper, the influenza was mainly evident through the obituaries of prominent citizens. As with the *Sussex Daily News*, it also reported on the influenza in Europe.¹⁰⁸

With the exception of references to the influenza in obituaries, the Brighton press included more references to influenza outside of the town rather than articles about the epidemic in the town. However, this appears to correspond with the press coverage of the pandemic in national newspapers

such as *The Times*, where more emphasis was placed on the pandemic in the rest of the world compared to the UK.

In Brighton, as with elsewhere in the country, the press coverage was astonishingly low for an epidemic of such global magnitude. As with most combatant nations in the Great War, the full extent of the death toll from influenza was heavily underplayed, so as not to undermine morale and provide confidence-boosting information to the opposing nations. It is widely stated that wartime censorship helped disguise the effects of the influenza, but this is not the full story. If war censorship or patriotism were the reasons for the lack of coverage, then increased press coverage would have been expected during the third wave of the influenza, which occurred three months after the cessation of hostilities in the Great War. But Brighton's press coverage did not increase during the third wave and neither did coverage in the national newspapers. What is also striking is the rapidity with which Spanish influenza disappeared as a topic in Brighton's newspapers. It could be that the country was overwhelmed with human loss: the Great War saw loss of human life on a scale never before witnessed in war. The influenza epidemic was one more tragedy to befall a nation already weighed down by death, a tragedy the nation wished to expunge from its collective memory.¹⁰⁹

CONCLUSIONS

The UK's Chief Medical Officer, George Newman, called the Spanish Influenza pandemic 'one of the great historic scourges of our time'. But for a historic event that resulted in the loss of nearly a quarter of a million British lives, over five hundred of which were in Brighton, the Spanish Influenza pandemic has, until recently, received very little coverage.¹¹⁰ Certainly, the Spanish Influenza outbreak barely registers against the backdrop of the First World War. During the four years of the Great War 2997 Brightonians lost their lives in the conflict, and yet in October and November 1918 317 were to fall victim to the influenza epidemic. Of course, it was precisely this timing at the close of the war that has helped obscure the pandemic.

With hindsight it has been easy for contemporary historians to criticize the authorities' response to

the 1918–19 pandemic. But the Spanish influenza epidemic could not have come at a worse time for either Brighton or the country. The war effort had diverted huge amounts of the nation's resources and personnel, the population was weakened by years of privation and the state of medical knowledge was not yet in the age of viruses. Under the circumstances Brighton's authorities did the best they could.

Author: Jaime Kaminski, Brighton Business School, University of Brighton, Mithras House, Lewes Road, Brighton, East Sussex, BN2 4AT.

NOTES

- ¹ G. A. Soper, The lessons of the pandemic, *Science New Series*, **49** (1919), 501.
- ² The mortality rate in the third wave was lower than in the second because the first waves had imparted immunity to many in the population and killed many of the most susceptible individuals. S. E. Mamelund, *The Spanish Influenza among Norwegian Ethnic Minorities 1918–1919*. (Oslo: Department of Economics, University of Oslo CDE Working Paper No. 2001-11).
- ³ W. I. B. Beverage, *Influenza: the Last Great Plague*. (London: Heinemann, 1977), 27–30.
- ⁴ The Russian influenza came in four waves between 1889–93 and is estimated to have caused an excess mortality of 125,000 in England and Wales. D. Parsons, *Local Government Board Report on the Influenza Epidemic of 1889–90* (London: HMSO, 1891); F. B. Smith, The Russian influenza in the United Kingdom 1889–1894, *The Society for the Social History of Medicine* **8**(1) (1995), 55–73.
- ⁵ P. Davies, *Catching Cold: 1918's Forgotten Tragedy and the Scientific Hunt for the Virus that Caused it* (London: Michael Joseph, 1999), 49–51.
- ⁶ The average annual mortality from influenza in Brighton between 1901 and 1914 was 37.
- ⁷ This figure only includes the personnel transported, not the ships' crews. 'Busy times at ports', *Sussex Daily News* 7 March (1919), 4.
- ⁸ There is a pressing need for such research. Few of the major histories and reference works relating to Brighton which cover the 1918–19 period even mention the Spanish influenza epidemic. The influenza epidemic in Brighton is not mentioned in T. Carder, *The Encyclopaedia of Brighton*. (Lewes: East Sussex County Libraries, 1990); K. Fines, *A History of Brighton & Hove*. (Chichester: Phillimore, 2002); R. Flower, *The Old Ship: a Prospect of Brighton* (London: Croom Helm, 1986); E. W. Gilbert, *Brighton: Old Ocean's Bauble* (Hassocks: Flare Books, 1975); K. Hill, *Underdog Brighton: a Rather Different History of the Town* (Brighton: Iconoclast Press, 1991); E. Underwood, *Brighton* (London: Batsford, 1978). It does achieve a single line in Anon., *Blighty Brighton: Photographs and Memories of Brighton in the First World War* (Brighton: Queenspark Books, 1991).
- ⁹ County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the Year 1919* (Brighton: Southern Publishing, 1920), 5–7.
- ¹⁰ Figure 1 is based on the 'Map of Brighton & Hove' specially produced for the use of the members of the Library Association in 1908. According to the annual reports of the Medical Officer of Health (1909–17), approximately 380 additional houses were constructed in the town between the production of this map in 1908 and 1918, but the boundaries remained essentially the same.
- ¹¹ This compares to a population density of 24.6 per acre in central Brighton, based on 1999 figures (i.e. 6080 people per km²), or 11.9 people per acre within the 85 km² boundaries of Brighton (i.e. 2945 people per km²). *European Best Practice in the Delivery of Integrated Transport* (Epsom: W. S. Atkins Transport Planning, 2001), 97.
- ¹² 'Births and deaths: Steyning West', *Sussex Daily News* 21 September (1918), 4.
- ¹³ For example, in 1918 the civilian population of Hove was calculated to be 39,622, but allowing for military service personnel in the district, the total was thought to be 44,167. 'Hove health report', *Brighton Gazette* 25 September (1918), 3.
- ¹⁴ For the purposes of this article the figures of the Registrar General are used. County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the Year 1919* (Brighton: Southern Publishing, 1920), 7.
- ¹⁵ Since the mid-nineteenth century a distinct 'railway district' had formed around the station in Brighton to house the railway workers. J. A. Sheppard, Brighton's railway district in the mid-nineteenth century, *Sussex Archaeological Collections* **146** (2008), 189–98.
- ¹⁶ County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the Year 1919* (Brighton: Southern Publishing, 1920), 5.
- ¹⁷ 'Brighton in 1917: a remarkable year', *Brighton Gazette* 2 January (1918), 2.
- ¹⁸ E. W. Gilbert, *Brighton: Old Ocean's Bauble*, 219.
- ¹⁹ M. Smallman-Raynor, N. Johnson & A. D. Cliff, The spatial anatomy of an epidemic: influenza in London and the county boroughs of England and Wales, 1918–1919, *Transactions of the Institute of British Geographers* **27**(4) (2002), 457.
- ²⁰ How influenza was introduced to Brighton in 1918 is not known. The close proximity to London is a possible

source, but Brighton was also a major centre for the treatment of wounded troops. With the influenza raging on the Western Front it could be that the disease originated in France.

- ²¹ These pneumonic complications seen in 1918 differed from the symptoms of the Russian 'flu three decades earlier which often caused stomach complications. 'The Spanish influenza: a sufferer's symptoms', *The Times* 25 June (1918), 9.
- ²² The Brighton data used in this article come from the Reports of the Registrar General of England and Wales, and from Brighton's Medical Officer of Health. These data almost certainly contain inaccuracies because of misdiagnosis, but they do provide a core data set from which considerable information can be obtained. It is likely that initially there were issues with the identification of this new strain of the influenza virus, it is probable that the virus was in the Brighton population before it was recognized in official statistics.
- ²³ This phase gained names such as 'the three-day fever', 'knock-me-down fever', or the 'wrestler's fever'. P. Davies, *Catching Cold*, 56–8.
- ²⁴ Using data from the 1137 students at the Boys and Girls Secondary Schools in Brighton the Medical Officer of Health could state that 'one attack protects to a certain extent from later attacks', however 'second attacks in any one year are frequent'. County Borough of Brighton *Annual Report of the Medical Officer of Health and School Medical Officer for the Year 1918* (Brighton: Southern Publishing, 1919), 11.
- ²⁵ More British soldiers were lost in 1918 than all those who died in the Second World War. In addition to the military situation the Brighton press may have had another motivation for downplaying the epidemic. Brighton was a tourist town, a town whose very origins were based on the alleged health-giving properties of its bathing waters. If it became known that the town was heavily infected with influenza, then this could have a detrimental impact on visitor numbers and so undermine the very economic base of the town. If this was the case then it would not be the first instance of a health resort apparently downplaying the epidemic. One of the first locations where the first wave of the influenza broke out was the northern Spanish health resort of San Sebastian, near the French border. Here, much was done to play down the severity of the outbreak so as not to jeopardize the health-tourist industry. See P. Davies, *Catching Cold*, 52–3.
- ²⁶ 'A cure for influenza', *Brighton Gazette*, 6 July (1918), 5. This was the *Gazette's* first and only reference to the influenza during the first wave.
- ²⁷ The epidemic would claim 526 lives in Brighton (3.69 per 1000 population), 187 in Hastings (2.81 per 1000 population) and 142 in Eastbourne (2.29 per 1000 population). Uncorrected population figures from the 1921 census are used to estimate the death rate per thousand of the population.
- ²⁸ The 'second wave' of the pandemic appeared simultaneously in three separate locations across the globe: Boston (MA), USA; Brest, France; Freetown, Sierra Leone. J. M. Barry, *The Great Influenza* (London: Penguin, 2005), 180–84.
- ²⁹ Data source: Registrar General (1920) *Supplement to the*

Eighty-first Annual Report of the Registrar-General: Report on the Mortality from Influenza in England and Wales during the Epidemic of 1918–19, table 20. The data provided from 1 October onwards, referred to all deaths to which influenza was recorded as contributing, whether the death was assigned to influenza or not.

- ³⁰ This profile is characteristic of influenza epidemics because of two traits of the epidemiology of the virus. First, it has a rapid incubation period of 1–3 days, and second, it is highly infectious. This results in a high transmission rate so that on average each infected person infects more than one person.
- ³¹ This is unsurprising because by the second decade of the twentieth century the two towns were one in all but name.
- ³² County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the Year 1918*, 9.
- ³³ 'Spanish influenza', *Sussex Daily News* 10 October (1918), 8.
- ³⁴ 'The influenza epidemic', *Sussex Daily News* 9 October (1918), 8.
- ³⁵ 'The Germ-Hun', *Brighton Gazette* 12 October (1918), 6.
- ³⁶ 'Influenza epidemic', *Brighton Gazette* 16 October (1918), 3.
- ³⁷ 'What people say', *Brighton & Hove Society* 24 October (1918), 6.
- ³⁸ 'Influenza epidemic', *Sussex Daily News* 31 October (1918), 5; 'Influenza epidemic', *Sussex Daily News* 1 November (1918), 3.
- ³⁹ County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the Year 1918*, 10; 'Brighton & the "flu": all elementary schools closed', *Argus* 22 October (1918), 3; 'Influenza abating' *Brighton Herald*, 9 November (1918), 7.
- ⁴⁰ "'Our day" for "our men"', *Sussex Daily News* 28 October (1918), 6; 'Our flag day', *Brighton Gazette* 30 October (1918), 4; "'Our day"', *Brighton & Hove Society* 31 October (1918), 6; "'Our day" collections in Brighton and Hove: less than last year', *Sussex Daily News* 31 October (1918), 5; 'Our day yields £2235', *Brighton Herald* 2 November (1918), 9.
- ⁴¹ 'Influenza abating', *Brighton Herald* 9 November (1918), 7.
- ⁴² 'Armistice day in Sussex: How Brighton & Hove celebrated it', *Sussex Daily News* 12 November (1918), 5.
- ⁴³ 'Influenza abating', *Brighton Herald* 23 November (1918), 7.
- ⁴⁴ 'Less severe influenza', *Sussex Daily News* 13 February (1919), 6.
- ⁴⁵ N. Johnson, *Britain and the 1918–19 Influenza Pandemic: a Dark Epilogue* (London: Routledge, 2006), 2.
- ⁴⁶ 'A sad homecoming', *Brighton Herald* 9 November (1918), 12.
- ⁴⁷ 'A honeymoon tragedy', *Brighton Herald* 9 November (1918), 12.
- ⁴⁸ 'Brother and sister buried: sorrow of a Brighton household', *Sussex Daily News* 7 February (1919), 3.
- ⁴⁹ 'Sick poor of Preston', *Brighton Herald* 23 November (1918), 8.
- ⁵⁰ R. Graves, *Good-bye to All That: an Autobiography* (New York: Jonathan Cape & Harrison Smith, 1930), 338.
- ⁵¹ 'Sisters united in death', *Brighton Herald* 26 October (1918), 11.
- ⁵² Data source: County Borough of Brighton, *Annual Report*

of the Medical Officer of Health and School Medical Officer for the Year 1918, 36.

- ⁵³ Although, the figures used in this article are based on the official statistics provided by the Medical Officer of Health, it is apparent that the mortality caused by the epidemic will have been higher than the official records suggest. These figures must be considered as conservative.
- ⁵⁴ Data source: Registrar General, *Supplement to the Eighty-first Annual Report of the Registrar-General*, table 20. The data provided from 1 October onwards referred to all deaths to which influenza was recorded as contributory, whether the death was assigned to influenza or not.
- ⁵⁵ G. Kolata, *Flu: the Story of the Great Influenza Pandemic of 1918 and the Search for the Virus that Caused it*. (London: Macmillan, 1999), 7.
- ⁵⁶ The virus was discovered by Christopher Andrewes and Wilson Smith of the National Institute of Medical Research: W. Smith, C. H. Andrewes & P. P. Laidlaw, *A Virus Obtained from Influenza Patients*, *Lancet* **1933:2**, 66–8.
- ⁵⁷ 'Less severe influenza', *Sussex Daily News* 13 February (1919), 6.
- ⁵⁸ Registrar-General of England and Wales, *Supplement to the eighty-first annual report of the Registrar-General of Births, Deaths and Marriages, Report on the Mortality from Influenza in England and Wales during the Epidemic of 1918–19* (London: HMSO, 1920), 3.
- ⁵⁹ County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the year 1919*, 18–19. This was not the first time such links had been made. As early as 1847, William Farr concluded that increases in fatalities associated with asthma, pneumonia and bronchitis, as well as whooping cough, typhus and measles, were related to an influenza epidemic. Registrar-General England and Wales, *Tenth Annual Report* (London: HMSO, 1852), xxviii–xxix.
- ⁶⁰ Data source: County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the year 1919*, 7.
- ⁶¹ Data source: County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the year 1919*, 7.
- ⁶² 'Influenza abating', *Brighton Herald* 9 November (1918), 7. Recent hypotheses proposed for this skewed age profile range from the vigorous inflammatory response to infection in young adults, to the elderly having immunity conferred from previous influenza epidemics. C. Langford, 'The age pattern of mortality in the 1918–19 influenza pandemic: an attempted explanation based on data for England and Wales', *Medical history* **46** (11) (2002), 15–16.
- ⁶³ Data source: County Borough of Brighton, *Annual Reports of the Medical Officer of Health and School Medical Officer*.
- ⁶⁴ This is due to the large number of women in domestic service and providing services for the tourist industry as well as to the large number of men away on active service. These men of military age would have been those in the age group most likely to fall victim to the influenza.
- ⁶⁵ This slight differential can be attributed to numerous factors. For example, it is possible to postulate that in the early twentieth century, women had a greater role as carers in society and as such would have had a greater potential of exposure to the virus. Once the virus had entered a household, the potential for exposure within the occupants increased greatly. Other biological factors could influence the differential mortality. In 1918–19, 1350 pregnant women who had influenza were monitored. Stillbirth, miscarriage, or premature labour occurred in 26 per cent of the influenza sufferers without pneumonia but in 52 per cent of those with pneumonia. The prospects for those women who spontaneously aborted/miscarried or went into labour were seen as particularly bad. No such observations were made in the influenza pandemics in 1957–8 or 1968–9. W. I. B. Beverage, *Influenza: the Last Great Plague*, 15.
- ⁶⁶ M. O. Leavitt, *Pandemic Planning* (Washington (DC): Department of Health and Human Services, 2006), 2.
- ⁶⁷ Sir Arthur Newsholme was the country's Chief Medical Officer between 1908–1919. J. M. Eyles, *Sir Arthur Newsholme and State Medicine 1885–1935* (Cambridge: Cambridge University Press, 1997).
- ⁶⁸ Of course, the resources that the government could deploy against the influenza were always going to be of limited effect. Without the key understanding that influenza was a virus the fight against the pandemic would always be a losing battle. Doctors could only give palliative treatment to patients.
- ⁶⁹ Duncan Forbes was to hold the position for 31 years between 1908 and 1939.
- ⁷⁰ 'Influenza abating', *Brighton Herald* 9 November (1918), 7.
- ⁷¹ 'The influenza epidemic', *Sussex Daily News* 25 October (1918), 7.
- ⁷² County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the year 1918*, 10.
- ⁷³ Arterial tram routes such as Beaconsfield Road or Ditchling Road had 55,000 journeys a week in 1918. 'Brighton tram returns', *Brighton Gazette* 23 November (1918), 6.
- ⁷⁴ 'Overcrowded tramcars', *Brighton Herald* 4 January (1918), 7.
- ⁷⁵ 'The overcrowded tramcars', *Brighton Herald* 4 January (1918), 5.
- ⁷⁶ 'To stop the spread of influenza: protect yourself', *Brighton Herald* 22 February (1919), 5.
- ⁷⁷ 'Influenza epidemic', *Brighton Gazette* 16 October (1918), 3.
- ⁷⁸ 'Influenza abating', *Brighton Herald* 9 November (1918), 7.
- ⁷⁹ 'Regulations for houses of entertainment', *Sussex Daily News* 21 November (1918), 7; 'Influenza', *Brighton Gazette* 23 November (1918), 6.
- ⁸⁰ 'Influenza regulations', *Sussex Daily News* 21 November (1918), 8.
- ⁸¹ County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the year 1918*, 13.
- ⁸² Original parenthesis. County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the year 1918*, 13.
- ⁸³ County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the year 1918*, 12–13.
- ⁸⁴ County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the year 1918*, 12.

- ⁸⁵ County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the year 1919*, 5–7.
- ⁸⁶ 'Vaccine treatment of influenza', *The Medical Officer* **20:19**(537) (1918), 160.
- ⁸⁷ 'Preventative vaccine against influenza', *Brighton Herald* 15 February (1919), 9; 'Preventative vaccine', *Sussex Daily News* 15 February (1919), 7.
- ⁸⁸ 'The influenza epidemic', *Sussex Daily News* 9 October (1918), 8; see also 'The influenza epidemic', *Brighton Gazette* 12 October (1918), 2.
- ⁸⁹ 'A memorandum on influenza', *The Medical Officer* **20:21**(539) (1918), 178.
- ⁹⁰ County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the year 1918*, 14.
- ⁹¹ County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the year 1918*, 14. Of course, the vaccine was made available after the epidemic had peaked. It is therefore open to question how much this decrease in infection was due to the prophylactic potential of the vaccine and how much it was due to the natural decline in the disease. It could also be that the vaccine conferred some resistance to the secondary bacterial infections that proved so deadly in the epidemic.
- ⁹² This department was not actively involved in patient care. County Borough of Brighton, *Annual Report of the Medical Officer of Health and School Medical Officer for the year 1918*, 3.
- ⁹³ 'Nurse's death at Brighton Pavilion', *Sussex Daily News* 24 October (1918), 7; 'A nurse's death: Brighton Pavilion Hospital', *Argus* 24 October (1918), 2; 'Pavilion nurse's death', *Brighton Gazette* 26 October (1918), 3; 'The late Miss Grundy V.A.D.', *The Pavilion 'Blues'* **3:6**, November (1918), 282.
- ⁹⁴ 'Queen's nurses and influenza', *Brighton Herald* 16 November (1918), 12.
- ⁹⁵ 'The wonderful "Queen's Nurses"', *Brighton Herald* 1 March (1919), 9.
- ⁹⁶ 'Sick poor of Preston', *Brighton Herald* 23 November (1918), 8; 'Sick poor of Preston', *Brighton Herald*, 30 November (1918), 12.
- ⁹⁷ 'Sick poor of Preston', *Brighton Herald* 23 November (1918), 8.
- ⁹⁸ R. Graves, *Good-bye to All That*, 338.
- ⁹⁹ A number of these articles in the *Gazette* were first published in the *Sussex Daily News*.
- ¹⁰⁰ 'Influenza', *Brighton Gazette*, 23 October (1918), 1. This was the only time the influenza epidemic reached the front page of a Brighton newspaper. The 62-word article held less than an inch of column space.
- ¹⁰¹ 'Herald hit by influenza', *Brighton Herald*, 19 October (1918), 7.
- ¹⁰² For example: 'The "flu" in South Africa', *Argus* 10 October (1918), 2; "'Flu" rampant', *Argus* 14 October (1918), 2 (referring to the epidemic in Capetown); '5000 deaths in Cape Town', *Argus* 19 October (1918), 3; 'German schools closed', *Argus* 22 October (1918), 4; 'Influenza epidemic: 4000 deaths in Kimberley', *Argus* 23 October (1918), 3.
- ¹⁰³ For example, 'Exeter and the "flu"', *Argus* 11 October (1918), 2; 'The influenza epidemic: death of a bishop's wife', *Argus* 19 October (1918), 3; 'Judge and the "flu"', *Argus*, 21 October (1918), 3 (referring to the epidemic in London); 'Glasgow and the "flu": alarming death rate', *Argus* 22 October (1918), 3; 'Influenza epidemic: singular contrast in London', *Argus* 23 October (1918), 3; 'Influenza epidemic: a champion runner's death', *Argus* 23 October (1918), 3.
- ¹⁰⁴ For example, 'Spanish influenza in the Transvaal mines', *Sussex Daily News* 1 October (1918), 7; 'Influenza in India', *Sussex Daily News* 3 October (1918), 3; 'Influenza in Hungary', *Sussex Daily News* 5 October (1918), 7; 'Spanish influenza: epidemic in South Africa', *Sussex Daily News* 8 October (1918), 3; 'Influenza in South Africa', *Sussex Daily News* 11 October (1918), 8; 'Flu rampant', *Sussex Daily News* 14 October (1918), 3; 'Influenza in Germany', *Sussex Daily News* 18 October (1918), 8.
- ¹⁰⁵ For example, 'The influenza epidemic: high death rate in Glasgow', *Sussex Daily News* 23 October (1918), 6.
- ¹⁰⁶ 'Samoan influenza victims', *Sussex Daily News*, 27 December (1918), 5; '4000 dead in Jamaica', *Sussex Daily News* 6 January (1919), 8; 'Flu among allied soldiers', *Sussex Daily News* 15 January (1919), 4; 'Sickness in an allied camp', *Sussex Daily News* 17 January (1919), 8; 'The Flu epidemic', *Sussex Daily News* 17 February (1919), 4; 'Deaths from influenza', *Sussex Daily News* 24 February (1919), 2; 'Influenza epidemic: Kenilworth Castle', *Sussex Daily News* 14 March (1919), 3.
- ¹⁰⁷ For example, 'Uckfield scourged: another influenza death', *Sussex Express (Mid Sussex edition)* 2 October (1918), 3; 'Influenza victims: three deaths at Uckfield', *Sussex Express (Mid Sussex edition)* 1 November (1918), 3.
- ¹⁰⁸ 'Recrudescence of influenza in Switzerland', *Brighton & Hove Society* 24 October (1918), 4.
- ¹⁰⁹ For a discussion of this phenomenon, see N. Johnson, *Britain and the 1918–19 Influenza Pandemic*, 179–80.
- ¹¹⁰ This is beginning to change. In the last decade the pandemic potential of H1N5 avian influenza, SARS as well as the sequencing of the 1918 influenza virus have helped stimulate a plethora of publications on the 1918–19 influenza.