Epidemic Influenza

with special reference to the last two epidemics.

by

William Cunningham McLellan
M.A. (1887) M.R. C.M. (1891)

Nantwich
23rd April 1894
Epidemic Influenza

within the last four or five years the British Islands, in common with the Continent and the whole civilised world, more or less, have been visited by a series of epidemics of Influenza. This is a disease which has been fairly well known since the 16th century, but no epidemic had visited Europe in the long interval from 1866 to 1889, and the younger generation of practitioners who had grown up during these years were unacquainted with it. During this period of 23 years very great advance was made in Clinical Medicine, and particularly in the methods of Clinical examination of cases. The use of the thermometer was introduced and variations of temperature are noted more accurately than formerly, the germ theory of disease and its mode of spread has been formulated and developed, and the existence of the tubercle and other bacilli demonstrated. It was therefore to be expected that when, after the lapse of nearly a generation, the world of medical science
was again visited by an epidemic, which had so puzzled its predecessors as to the nature of its origin and mode of spread, and which was so interesting in relation to a host of other diseased conditions of the respiratory and nervous systems, that an effort would be made by modern observers with the aid of modern knowledge and appliances to more thoroughly understand the nature of the disease, and its treatment, and, if possible, investigate the methods by which it might be prevented. But it has resisted the efforts of all observers to a very remarkable extent; and although we can now perhaps speak more definitely of the etiology of epidemic influenza, its treatment is still much the same as it was a century ago, and no preventive measures which have been taken either by public bodies or by private individuals have met with any degree of success.

The best historical account of influenza is that given by Dr. Theophilus Thompson. According to him, the first visitation of the British Isles which was accurately
described, occurred in 1510. But Numerch mentions one as far back as 1173, and early Gaelic manuscripts state that several epidemics occurred during the 14th and 15th centuries. Since 1510 there have been 27 epidemics at intervals varying from 15-78 years, no regularity or periodicity being noticeable in the outbreaks.

In the 16th Century three epidemics of Feverish Cataract are recorded at long intervals of 47, 23 and 78 years respectively.

In the 17th Century there were four epidemics recorded, and that in 1675 was minutely described by Sydenham. He lays stress on the fact that it broke out after sudden atmospheric change, - sudden cold and moisture succeeding a long, mild, and warm summer. The leading symptoms he describes are the cough, often very troublesome and often accompanied by shortness of breath; pain in the head, back and limbs; and the fever. The treatment he found of most value was confinement to the house in mild, and to bed in severe cases; free diaphoretics at the
and a liberal diet throughout. The complication he met with most frequently was pleurisy.

In the 18th Century a notable epidemic was that of 1732-3. The preceding summer had been one of great drought, and on the Continent it was observed that in November just before the epidemic broke out, the air was more than usually filled with thick and frequent fogs. The direction in which it travelled was from East to West, and it was noticed that the disease often spread contrary to the direction of the prevailing winds. According to Arbuthnot, the symptoms in every place were remarkably uniform. viz: rigors often slight, succeeded by a fever, usually lasting about three days; this fever accompanied by headache and sometimes pain in the back; sneezing, cough or running at the nose; cough with some expectoration, sometimes clear sometimes purulent; and the common complications were haemoptysis, pleurisy and pneumonia, dangerous and often fatal especially to aged patients. It was
observed that the fever left a debility and
defection much greater than in proportion
to its strength or duration, and the cough
outlasted the fever in some cases more than
6 or 8 weeks.

The Epidemic of 1782 was investigated by
a committee of the Fellows of the Royal College
of Physicians of London. It prevailed during
the summer months of that year. It ap-
peared at Newcastle-on-Tyne in the end of
April 1782 and raged there till the middle
of June. It reached London by the middle of
May and Norwich, Suffolk & Portsmouth by
the end of May. It was reported at Edinburgh
on the 20th of May and at Glasgow in 1st week
of June. Here we have an accurate account
of a definite outbreak at Newcastle in the
centre of the island, and fresh cases rad-
iating from that focus, which seems
pretty direct evidence that the disease
spreads by direct infection from one case
to another, and is not due to atmospheric
influence. It is also to be kept in mind
that this epidemic prevailed in the mid-
dle of summer, the symptoms were
such as we have already described and the most common complications & sequelae recorded, were pleurisy, pneumonia, and phthisis.

The first influenza epidemic of this century was in 1803. It reached London from the Continent in the beginning of January and spread gradually over the island, reaching Edinburgh by the middle of February and Ireland in March. It reached its height during March and April, and disappeared about the beginning of July. The symptoms were as usual, except that diarrhoea was more frequent, and the head symptoms sometimes amounted to delirium, especially in the young and robust. It was noticed that a similar disease was prevalent simultaneously among horses, cows, and even cats.

Other epidemics occurred in the summer of 1831, the spring of 1833, and the winter of 1836-7, the last being fully described by Dr. Graves in the London Medical Gazette Vol. 27. He calls particular attention to the extraordinary degree
of dyspnoea often present, out of all proportion to the physical signs. This he attributes to some impression made on the vital activity of the lung, probably some nerve lesion not demonstrable by physical signs. As to treatment he finds bleeding more harmful than otherwise except at onset. Diaphoretics and expectorants are useful but produce much less relief than they do usually, when the pulmonary affection is simple. Locally, he finds that hot fomentations relieve the cough and dyspnoea more than blisters.

Other epidemics in this century were in 1842, 1844, 1854 and 1866. The '47 epidemic was peculiarly virulent, and was associated with scurvy, dysentery, and typhus which were then prevalent — in large part attributed to the scarcity and high price of many of the most important articles of diet at the time. The '57 and '66 epidemics were mild but unmistakable visitations of the same character. From 1866 till 1889 this country was free from influenz in an epidemic form.
Since 1884 there have been in Europe three epidemics 1887-90 - 91-92 and 93-94, more or less well defined in different localities. The frequency is remarkable especially when taken in connection with the fact that an interval of 23 years elapsed between the 87 out-break and the preceding one. The virulence of the seige, especially for the first few days has also been pretty generally noticed, as well as the extraordinary rapidity with which it has spread from one side of Europe to the other. It has had a very appreciable influence on the death-rate especially in London and some of the larger towns, and a curious point is, that although the disease attacks with the utmost impartiality all classes of society, most of the fatal cases have occurred among those in comfortable positions of life i.e. the middle and upper classes. It is not modified much by atmospheric conditions, as, in some of the epidemics, its height has been reached in summer-like weather, and in others, in the depth of winter although the respiratory complications do very much with the seasons, as one would
naturally expect: the progress of modern sanitation and hygienic improvement seems to exert an influence on the disease — chilli.

This, says Thompson, the symptoms and course are much the same now, when men are surrounded with the luxuries of civilisation, as they were recorded 3 or 4 centuries ago, when little regard was paid to household comforts and conveniences, and none at all to hygienic conditions.

Strictly speaking no very clear line of division can be drawn between the epidemics of the East few years. Since 1889 there seem to have been in this country always a few influenza patients somewhere or other, and the disease has become epidemic at least 3 and in some districts four times since that year. In the middle of July 1889 influenza was reported to be very prevalent in Central Asia. Thence it spread to Siberia and the Russian Empire, reaching Siberia about the end of October. It was noticed in Vienna and Berlin simultaneously on Nov. 30, and in London it became epi-
Towards the end of December, and during the later weeks of December and the first fortnight of January it was raging all over Europe. In New York it was epidemic about Christmas and in January it was general all over the United States and Canada. It seems to have spread to Egypt from Europe and prevailed there in January 1890, and in the end of February and March it was epidemic in Bombay and N.W. India, reaching Burma in April, and Mandalay in June. India seems to have been infected, not from Central Asia, from which it is separated by the Himalayas, north of which it has little inter-communication, but from Europe with which it has constant and frequent intercourse. In Africa it broke out at Cape Town in the beginning of January, no doubt being brought by ships from European ports, and it travelled northwards along the coast, reaching Algeria in November 1890. In South America it was noticed in Buenos Ayres and Chili in January and it travelled northwards along the coast. In Australia it was noticed at Melbourne and
Sydney about the middle of March, and spread northwards through the island.

In England, the epidemic was first noticed in London (Brit. Med. Jour. Aug. 8, 1891) and, speaking generally, it spread from London to the north of the country. Those places in most frequent and closest communication with London were soonest attacked, while some of the remote country villages were not reached till March. By the 1st of January 1890 it was evident that the epidemic was fully established in London, for a week it raged with increasing severity, and then began to decline. On the Continent it continued to increase in severity for many weeks. At Vienna and Paris it appeared in November and did not begin to subside till much the same time as in London.

The leading symptoms of this epidemic were (1) sudden invasion, the temperature being not infrequently as high as 105° F. (2) delirium, - often very rapid so that within 24 hours of the original attack the temperature was normal or subnormal.
Nantwich
Cheshire
23rd April 1894

Dear Sir,

I enclose herewith my thesis for the degree of M.D. under the old regulation. I also enclose an opposite page declaration that it has been composed by myself. Would you kindly let me have a matriculation form to fill up, which I shall remit with the necessary fees, and also let me know what other certificates I must produce. I graduated M.A. at Edin. in 1887 and therefore I suppose certificates in Greek or Moral Philosophy will not be required.

Yours faithfully,

William C. Milroy
M.B., Edin.

I hereby declare that the above accompanying thesis "Epidemic Influenza - with special reference to the last two Epidemics" is my own composition.

William C. Milroy
M.B., Edin.

Nantwich
23rd April 1894

[Signature]

To the Dean
Faculty of Medicine
great prostration and headache especially frontal and occipital, and intense pain in eyeballs; (4) muscular pains in the back and limbs, (5) anaemia and sometimes nausea, (6) occasionally diarrhoea. The catarrhal symptoms were noted by many observers to be very slight; and Dr. Girdner (Edin. med. Jour. March 1890) draws special attention to the fact that in the London epidemic of 1889-90 in most of the cases there was no catarrh.

It was noticed that persons coming most into contact with other people were first attacked e.g. postmen, business men &c., and it is reported that on four of the largest railways - the E. Western, London & N. Western, E. Northern & North Eastern - 10 per cent. of clerks contracted influenza, while only 5-4 per cent. of engine drivers and firemen did so, although they are more exposed to the air in all workplaces, but when and this is the important point - are not brought so much into contact with one another, or with the travelling public. It has been calculated that 1 in 4 of those employed in large offices
were disabled by influenza, and about 1 in 8 of those employed out of doors, in and around London, but in some particular cases, e.g. some schools, the proportion reached 50 percent. In the country generally the figures were less as a rule.

The mortality of influenza directly was considerable, especially in London; but what was much more serious, was its influence on the death-rate by the sequelae or complications occurring in the later stages of the attack viz. broncho-pneumonia, pleurisy, and other diseases of the respiratory and of the circulatory organs.

After April 1890 there was a period of quiescence, although the country never seems to have been free from typical though sporadic cases. In Feb., January 1891 it broke out afresh at Hull, and by the middle of March was epidemic in the surrounding parts of Yorkshire thence it spread to Nottingham and Birmingham to London in about 6 weeks,
and soon after it became general throughout the country. In this way it differed from the epidemic of the former year, which began in London, and thence was diffused through the provinces. In London, where the statistics are more easily available, the death rate directly attributed to influenza was about 4 per 1000 whereas in the former year it was only 6.6 per 1000.

Clinically, this epidemic has some points of difference from the preceding. There was less pure catarrh, but the irritative affection of the bronchial mucous membranes was much more constant, and often very extensive, so much so as often to simulate dry apnoeic asthma. According to Eade (Brit. med. Journ. Aug. 8, 1891) there was far less prominence of sensory phenomena—acute nerve pains of trunk at the onset of the illness, and less local neuralgias—hyperaestheesia and anaesthesia that were so common in 1890.

The commonest modes of fatal termination were pulmonary complications, and cardiac and nervous asthenia especially in aged patients.
During the autumn of 1891 there was again a period of quiescence, and then towards Christmas there was a renewal of influenza in London and in the Midlands of England almost simultaneously. Here in Nantwich we recognised typical cases in the last week of '91 and by the 1st of January 1892 it was very prevalent. It continued so for about 8 weeks and after the end of March I saw no fresh cases, which I could definitely call part of the epidemic. The disease attacked the whole population indiscriminately, and equally those who had been affected before, and those who had escaped.

The symptoms were rather different from those before described. In fully one third of the cases the onset of the attack was marked by a sharp attack of diarrhoea and in quite 25% of my cases symptoms of gastro-intestinal catarrh predominated. The symptoms of nasal and respiratory catarrh were also well marked, and the acute pains in the head, trunk and limbs were also
The mortality in Cheshire and in the Country generally was less than in the last two epidemics preceding, and the majority of the attacks were milder. Most of the deaths as usual were due to respiratory and cardiac complications.

Since the spring of 1892 influenza has lain dormant, more or less, in the thickly populated districts of the Northern Midlands, Lancashire and Yorkshire and in London, where it has always figured in the mortality tables and seems always to have had an influence on the respiratory column. But there was no epidemic spread of any consequence till the autumn of 1893. In September and October it was reported to be gaining ground in London, and in October it was very prevalent in Birmingham, and round Leeds, and in South Yorkshire generally. In Cheshire many cases were reported in the North in Stockport and Northwich in the beginning of November, but it was not till the 3rd week of that month that
we recognised influenza as epidemic here in Nantwich and the surrounding district. From that time till the last week of January I saw many fresh cases each day. On the whole the type of the disease was less severe than it was in the beginning of 1892. Those who had been affected before, and those who had escaped were attacked with absolute impartiality, but on the whole the average duration of the attack was less. The most striking feature of the epidemic here was the very pronounced sore throat, which was seen in almost every case at the commencement of the attack. In former epidemics there had often been some slight congestion of the pharynx and often larynx as well, but in this epidemic it was a constant feature. In a considerable number of these cases there was more than mere congestion, an ulcerative process set in affecting especially the tonsils, soft palate and back of the pharynx, and occasionally the throat presented a very diphteritic appearance.
As in previous epidemics there was the initial rigor, but the temperature in simple cases seldom rose above 100.8°F, and was under 100°F throughout. There was pain in head, back, and limbs, and occasional diarrhoea but nothing like so frequently or so severely as in 1892.

The duration of the attack was usually about a week or 9 days in the case of able-bodied men without complications. The mortality was slight; less than in the two previous epidemics.

The mildness of the winter may possibly have prevented to some extent the recurrence of respiratory complications in those who were indiscreet enough to expose themselves.

There are several points which are worth noting on a general survey of all these epidemics.

I. Course - the disease is generally westward - the disease is first noticed in Asia in Eastern Europe and spreads gradually westward across that Continent and thence to America. In 1890, for example
it was reported in St. Petersburg Oct. 15; in Berlin and November; in Denmark, France, and Spain beginning December; in London by the end of December, and in the beginning of January it was general in this country.

II Climate. No climate is exempt from it. The last three epidemics have been prevalent equally in Siberia and at the Cape of Good Hope. It extends over the Whole Globe.

III Season. The time of its appearance is not specially in winter when catarrh is most prevalent. Out of 123 epidemics of pandemics (Merselles) 50 began in winter, 33 in spring, 16 in summer, and 24 in autumn. Thus although the majority are in winter or spring, it is by no means always so, and the disease seems quite independent of season. In 1856 we find the disease raging simultaneously at Cape Town and in London — midsummer in the one place and mid-winter in the other.

IV Temperature. Temperature seems to have no influence whatever on the spread of Influenza. For example at the Cape
of Good Hope, in Jan. 1890 when influenza was epidemic there, we find that the mean temperature was 68°6°F. In Glasgow for the seven weeks ending 18th Jan. 1890 it was 42°F, and in St. Petersburg for the month ending 27th Nov. 1889 it was 55°6°F. Here then we have influenza existing and spreading at all temperatures between 35°6 and 68°6°F, and as these figures are mean temperatures we have practically a much greater range.

**Mode of Spread** As to the mode of spread of this disease there has been the greatest diversity of opinion.

In 1782 Dr. Meagart wrote a dissertation on the epidemic of that year and he asserts that in 8 out of 10 towns (the city of Chester and 9 neighbouring towns) he actually did cover the individual who brought the disease into each place previous to the general seizure of the inhabitants.

Dr. Nelson Scott writing of the 1803 epidemic in the Isle of Man says, "I feel quite satisfied as to the infectious nature of influenza."

In 1856-57 at the close of that epidemic, the Council of the Provincial Medical Association
issued a circular of questions to its members, and among the questions there asked was:—

"Are you in possession of any proof of influenza having been communicated from one person to another?" The opinion of nearly all those who had had the most extensive opportunities of investigating the disease, and the best means of arriving at a definite conclusion was, that there was no proof of the existence of any contagious principle by which it was propagated from one individual to another.

The experience of the last three epidemics has, however, I think, dispelled all doubt in the matter. Personally, I feel convinced that the disease is highly infectious. The following reasons seem to me ample ground for such a view.

1) The number of scattered cases which were observed a day or two prior to the general prevalence of the epidemic. Nearly mid-Cheshire, which was not attacked till later than many other places, this was very evident in 1892. In the end of December 1891 influenza was very prevalent in Manchester, Liverpool, Birmingham, and the
thickly populated country round about. Of course we were on the watch here for any suspicious cases, but it was not till the first week of Jan. 1892 that they appeared in our midst, and by the middle of that month every 2nd patient on my visiting list was down with the epidemic.

(2) I have never met with an example of all the members, or I think I may safely say, more than one of the members of a household being attacked simultaneously, although I have seen as many as 8 cases in one house at the same time; but they were always attacked in succession. I have in my mind one house in particular that suffered during the last epidemic. One afternoon I was called to see the mistress of the house who was ill in bed with unmistakable symptoms. For 2 or 3 days previously her eldest son had been out of sorts, and when I saw him he was convalescing from a mild attack. On the next day 2 of the daughters were attacked two days later her husband and one of the servants, the day after another of the children
in fact, only one of the inmates of that house escaped. I met with another very clear chain of cases during the recent epidemic. On Jan 1st of this year I was called to see Mr. J. He was suffering from symptoms suggestive of influenza which was then prevalent in Nantwich viz: feeling of chillines; acheing of back and limbs; sore throat; pulse quick and weak; temperature 100° F. His servant had been two days before sent home ill, and the medical attendant had pronounced her ailment to be influenza. On Jan 2nd his daughter complained of similar symptoms accompanied with bronchitic asthma to which she is subject. On Jan 3rd his son the only member of the household was attacked by the same disease in a mild but unmistakable form. The woman who acted as their servant pro tempore also fell a victim at the end of a fortnight. No disease, it seems to me, could so attack one after another all the members of a household unless distinctly infectious, and communicated directly from one individual to another, most probably by breathing an infected atmosphere.
Immunity from second attack. Second attacks during the same epidemic are not usual, although relapses are common enough, usually following on some inadvertent exposure during convalescence, and evidenced by a rigor, high temperature, headache, and all the symptoms typical of the onset of an attack.

Etiology. In the earlier epidemics this was very fully discussed, but the results arrived at were chiefly negative. We have already seen that influenza does not originate in the state of the weather or in any particular climate or reason. From the specific character of the fever, and the manner in which it propagates itself as it spreads, each case acting as a nucleus, and producing a crop of fresh cases round itself, and from its analogy to other acute specific fevers, it is highly probable — in fact almost certain — that influenza is a specific germ disease which has a definite period of incubation, of advance, and of resolution. Dr. Ringwood and Dr. Drake.
fie believe that it is very nearly allied to
if not identical with dengue or chancy fever
prevalent in some tropical climates; but
their theory is not accepted by most observers.
As to the specific bacillus Klein and others
claim to have isolated it; and in the re-
port on influenza to the Local Government Board
by Dr. Parsons and Klein,
dated 1893, they state that it, the bacillus
influenzae, abounds in the mucous secreted
by the air tubes, and is also to be found
in the mucous membrane of the mouth.
The period of incubation seems
to be about 2 days, sometimes less,
and occasionally more, but about 48
hours as a rule. The case of Miss G.
which came under my notice furnishes a
good example of this. I had been in atten-
dance on her mother, who was suffering from
a rather severe attack of influenza in January
last, and the daughter was from home on a
visit, living in a locality which was free
from influenza at the time. She came home to
murder her mother, arrived in good health
and on the 3rd day she developed symp-
toms of influenza.
Clinical History of a Typical Case. The patient at first is usually flushed and hot. The temperature is usually between 100°F and 103°F but may be as high as 105°F or even higher. The Respiratory and Nervous systems are in the first instance most markedly affected. There is often injection of the Conjunctivae, and some cataract of the eyes and nose, but this is not by any means a constant symptom. The breathing is rapid and there is a persistent dry tickling cough, without, or with only a very little mucous expectoration. The dyspnoea is out of all proportion to the physical signs. The discovered on examining the chest. In a simple case there is no dulness to be made out; and on auscultation there are usually a few rather moist rales all over the chest.

The changes in the Nervous system are well marked. The patient feels cold and chilly when in reality his skin may be burning hot to touch. He complains of acute headache, - may be occipital, frontal or temporal; often great pain
in the eyeballs and photophobia. Taste and smell are frequently absent, especially in those cases in which the catarrhal symptoms are well marked. The cerebral and mental functions are much disturbed. There is great proneness to delirium, even in those cases in which the temperature is not very high, and there is often impairment of memory and distressing sleeplessness.

The changes in the alimentary system are often striking, and point to a catarrh of the whole tract. As in other acute febrile processes there is often nausea and sickness at the beginning, foul tongue and loss of appetite. In a large proportion of the 1892 epidemic especially as seen in Cheshire diarrhœa was one of the most marked features to start with, and there was often a tendency to it during the whole progress of the case.

The circulatory system is markedly depressed, probably as a consequence of the action of the poison on the controlling nervous system of the heart and vessels.
The pulse is rapid and weak, often irregular and the heart sounds often feeble, pointing to cardiac weakness and threatened failure, and giving a most valuable and important indication for treatment.

There is not unfrequently an eruption sometimes like urticaria, sometimes more or less hematomas, during the stage of advance and often a tendency to acenaiform eruptions, very often profuse perspiration accompanies desquamation.

In severe cases, where the temperature keeps above 102°F for any length of time, there are usually distinct urinary changes, frequent desire for micturition, scanty, high-coloured urine, of high specific gravity and loaded with urates, and occasionally albuminuria, and even haematuria.

The course of a simple case is usually short. In 3 or 4 days the fever subsides leaving the patient very prostrate, mentally and physically, the depression being very much greater than after an ordinary so-called "influenza cold" of the same severity.
as regards temperature &c. The aches and pains persist—often long after the fever has subsided, and are sometimes very difficult to get rid of. They are particularly troublesome in patients of rheumatic diathesis, and may hinder convalescence very seriously.

As regards treatment I have found that the important point is the avoidance of any risk that may bring on complications especially of the respiratory tract. As long as the temperature is above normal the patient ought to be confined to bed, and when the temperature has come down he ought to remain indoors, and in one room as much as possible, till the aches and pains have disappeared. It is impossible to overrate the danger of a chill caught during convalescence from influenza. The use of antipyrin at the onset of the attack I have found most valuable. In a dose of 10 or 15 grains it relieves the headache and pain in the back and limbs in a most marked degree. The salicylate of soda has also a very marked influence
in relieving the initial symptoms, and it is well to combine with the antispasmin or salicylates some stimulant to counteract the depression of nervous vitality which is so characteristic of the disease. Antifebrin often acts very satisfactorily, but seems to have more depressing action on the heart, and therefore I have not used it much.

The bronchial irritation is often exceedingly troublesome and if not attended to may develop into capillary bronchitis or pulmonary congestion. Carbonate of Ammonia and other stimulating expectorants are valuable but the annoying tickling cough without mucous expectoration is often very difficult to relieve. Acid: Hydrocyanic: dilat. and Morphia in the form of fluid: Chloroformi et Morph. inat Co., are what I have found most useful for this condition. Sometimes touching the pharynx and tonsils with solid binae caustic is useful if there is much congestion, and inhalations of Perbrene or H: Puri Sylvestris often do good. Great care must be taken
in administration of opiates & a stomach predisposed to catarrh as that of an influenza patient undoubtedly is, for if the gastric and intestinal mucosa is deranged, convalescence is often exceedingly tedious. When the febrile and catarrhal symptoms have subsided the patient should be put on as liberal a diet as the state of his digestive organs will permit. Alcohol, in the form especially of sparkling wines, and spirits well diluted, and taken with meals, is most valuable and tonics such as the Elixir Ferris Perchloride combined with Simircine and a mineral acid should be persisted in for several weeks.

Complications and Sequelae. There has been an endless number of these recorded; but I shall deal chiefly with the commoner and more important which I have myself observed. Roughly speaking the mortality from influenza may be said to vary directly with the severity of the complications. From influenza perse I have not seen more
than half a dozen deaths. All of these I believe to have been due to the depressing effect of the influenza poison which found out some particularly weak spot in the patient's constitution. Two of them were very old men—act. 81 and 79 respectively—and were free from any respiratory symptoms and signs except great dyspnoea. The temperature kept between 102° and 103°F and the respirations in both cases between 35 and 45. The pulse was always over 120 and both died of pure heart failure on the ninth day of the disease. Another case was that of Mr. J. D., an apparently robust man of 38, who died in the 6th week rather suddenly from syncope, and to whose case I shall refer later. Another patient, a woman of 30, died of hyperpyresia on the 4th day, her temperature after remaining at 104°F for nearly 48 hours suddenly rising to 106°F when she became comatose and died in a few hours.

In all the other cases I have seen which have had a fatal issue, that
issue has been determined more by the severity of the complication than by the virulence of the influenza poison, or its direct action on some vital organ. The most frequently fatal complications were undoubtedly those affecting the respiratory system. So old and debilitated patients they were, as one would naturally expect, especially dangerous. Bronchitis becoming capillary, pulmonary congestion, pneumonia, sometimes lobar, but more frequently in patches of consolidation scattered over one or both lungs, but tending to run together, was a very common order of occurrence. In favourable cases where the patient was put under treatment in time recovery took place, but a weak point was apt to be left which might be the starting point of tubercular disease as in the following case:

Charlotte A. 18, very bad family history, her father and two brothers having died of pulmonary phthisis, had a sharp attack of influenza in Jan. 1892. She was
confined to bed for a week, and then by exposing her
self developed a patch of congestion at right apex.
Under treatment she recovered but had always a
musty cough and never full expansion of that apex.
She was an inmate of Brompton Hospital for 3
months and improved considerably last autumn,
but since then has been sinking and has now
a well-marked cavity at left apex, consolidation
of right apex, occasional haemoptysis and a tem-
perature ranging from 99°F as high as 102°F. In
24 hours she is in fact dying of typical phthisis.

The following is a typical case of pneumonia fol-
lowing influenza - J. D. 24, labourer, first seen Jan 11th
1892 when temp. was 103°F. Marked cataract, had
been ill for 3 days with pain in head, back and legs,
but had worked on in the snow, and only stopped
about 2 hours before I saw him. He had evidently
had the disease at least 3 days. At first there
was no dulness, but there was bronchitis and
a good deal of setoema, but on the 12th the base
of the right lung was quite dul, and on the
next day the dulness was up above the angle of
the scapula, and there was well consolidation at
the base of the left lung. He died 4 days after I first
saw him from the pneumonia brought on by exposure.
The nervous system was often seriously affected and sometimes permanently damaged. Neuralgia often succeeded the intense headache of the initial attack, and Lumbago the lumbar pain. In some cases I believe I saw evidence of neuritis affecting a particular nerve, and its distribution, as in the case of Mr. G. to which I shall refer later.

In patients of a neurotic temperament, especially women, fits of nervous depression almost amounting to melancholia were apt to come on for a considerable time after the attack of influenza proper had passed off.

The most alarming and the most treacherous complications were those affecting the heart and circulation. In almost every patient there was marked depression of the heart's action, evidenced in bad cases by a rapid, weak, compressible, most inefficient pulse. Sometimes the heart was dilated and haemie murmurs might be heard, pointing to a want of tone about the heart substance, due either to impaired...
nutrition, or to nervous depression, most probably the latter. The following case is particularly interesting and instructive:

Mr. J. D. aged 38, farmer, very active and apparently robust, and insured as a 1st class life for a large sum 6 weeks before the present illness. Family history good except that one brother died suddenly from heart failure last December. I was first called to see him on Jan. 18th of this year. He had been feeling out of sorts for some days previously but thought he had only got a bad cold. When I saw him his temperature was 103°F, his pulse 120, breathing rapid, troublesome dry cough but no expectoration or cataract. He complained of great pain in head, back and calves of both legs and of a feeling of general malaise. I ordered him to bed at once and under treatment he improved very much, the temperature coming down to 99.4°F, but the pulse rate always over 100. The heart sounds were normal, and regular, although its action was as rapid. On Jan. 26th the temperature suddenly rose to 102°F, and the patient
complained of acute pain in the calf of the right leg, and up the inside of the thigh along the lines of the cutaneous nerves. The pain was quite superficial and was most persistent. Local applications of belladonna and opium did not relieve it much, and it was only after constant fomentation for 3 days that it was relieved and gradually disappeared. I believe it to have been a neuritis of the cutaneous nerves in that part. His temperature dropped suddenly again to normal on Jan. 28th, and never again rose above 98.6 F. The patient was of a most excitable temperament and extremely difficult to manage at times, and his rapid pulse was attributed to this chiefly, in the absence of any other cause. For the next fortnight he was kept on bromide of ammonium, and full doses of strophanthidin and digitalis, but never at any time did his pulse rate fall below 90, even during sleep. He was now able to lie up 10 hours at a stretch, and felt so much better that the trained nurse who had been with him
left on Feb. 17th. After her departure he worked himself into an extraordinary and causeless state of excitement, which upset him so much that next day another nurse was sent for. He was kept in bed and his pulse was now 120 + sometimes 130, very rapid, but regular. Both in rhythm and force, there was no cardiac murmur and the only physical sign to be made out was that the left ventricle seemed somewhat dilated. I saw him each day and on Feb 20th he was sitting up in bed, pulse 110, took his food pretty well, said he felt quite well, and had had a quiet restful night. The next morning after another good night he felt as much better that he got up and shaved himself, after which he said he felt much exhausted and complained of pain in the region of the heart. He lay down on the bed, and a messenger was despatched in haste to the surgery 4 miles off. He got brandy & other stimulants but died in less than half an hour evidently from heart failure. No post-mortem was obtained. It was altogether a most instructive case.
for he had been most carefully examined, and the only sign to be detected of anything abnormal was the very rapid pulse. He had digitalis at first, which was stopped for a fortnight owing to some slight gastric catarrh, and latterly he had been having strophanthinus with digitalis and strychnine and without much good effect in steadying the heart.

As I have already remarked, catarrh of the alimentary tract was not uncommon, especially during the first week of the illness. Sickness and diarrhœa were often present, the latter in about 1 in 4 of the cases I saw in 1892, and about 1 in 10 of those in 1893-4. This I find has been the common experience of medical practitioners in this part of Cheshire, but from what I can gather, the diarrhœic symptoms have not usually been so pronounced elsewhere. Where the gastric catarrh was marked the treatment was apt to be unsatisfactory, on account of the rejection of food and medicines alike.
by the irritable stomach. The dyspepsia often persisted for some time, and I have still under treatment some chronic cases which trace the starting point of the stomach condition to an attack of influenza.

The following are my notes of a severe case which terminated in fatal dyspepsia. Mrs W., aged 56, first seen Feb 28th, 1892. She had just had a rigor, and had vomited, complained of great pain in head and back. Her temperature was then 105.5°F and her pulse 125. Her tongue was very red and irritable-looking, and she had had slight diarrhoea. Under ordinary treatment she improved very much at first, and in a week was able to lie up and about the house; but, on the 8th day, she had a relapse which she attributed to eating some pork pie and this time the diarrhoea was very severe. There was much pain and griping, and once or twice the motion, which was chiefly frothy mucus, was streaked with blood. I gave her a pill containing Pulbipin gr. 1/2 and Pil Hydragr. gr. 1/8 every 3
hours which checked the urgent symptoms in 12 hours, and I then put her on a course of bromth and Eada, and careful diet, followed by a fortnight of liminie and perchloride of iron. She improved so much that, at the end of a month after the relapse, she was able to go to the seaside, and passed out of my care. From her husband however, I afterwards learned that there she had another attack of influenza, which was there prevalent, complicated with dysentery, and that she died in 3 weeks from exhaustion chiefly caused by the dysenteric diarrhoea. In this case the gastrointestinal tract seems never to have recovered from the primary cataract of the influenza.

Albuminuria was not in frequent at the beginning especially if the fever was high but in all my cases it passed off after the attack. In one case of a innkeeper who had very bad diarrhoea, there was also a remarkable glycosuria which lasted for over a fortnight, but which has now
entirely disappeared. The treatment I adopted in this case was 10 grains of Dover's Powder alternately with 20 min. of dilute sulphuric acid and 15 minutes of slight opium until the urgent symptoms subsided. I have often found Dover's Powder useful as well for the diarrhoea, and for the initial pyrexia and cough. Paralysis of the bladder occurred in one case, probably analogous to the cardiac paralysis in acute febrile, but was completely recovered from.

Not infrequently there was an attack of subacute and even acute rheumatism complicating the course of influenza, but I have never had a really well-marked case of rheumatic fever developing in the course of an influenza attack, and this I largely attribute to the salicylate of soda which I constantly gave & relieve the pain in the muscles and joints.

I have at present under treatment a man who I believe suffering from the sequelae of an attack of influenza last January. As far as the influenza was concerned his attack was a very light
one for which he did not seek medical advice, but on inquiry I found he had most of the leading symptoms. When I saw him first on Jan. 28, he was complaining of intense pain all over the cranium, and which he said seemed to be inside the brain. He had also extreme confusion of ideas, and his pulse was 70 and weak. Since that time he has remained very much in status quo. For a time he seemed to improve under Bromide of Potash and Phrenoline, and then he had a relapse and seemed to have slight aphasia which however passed off in 3 or 4 days. At present he is taking clathrate of ammonia & iron and stimulants and is improving a little though very slowly. His symptoms seem to point to cerebral anaemia especially affecting that part of the brain where the speech centre is placed.

I had also under my care for a period of 6 weeks this year at Nantwich Union Hospital a man Drigger who was admitted from Crewe on Dec. 30 with the history that
he had been suffering from influenza for
a fortnight and being in poor cirmum-
stances had been sent to the hospital as
soon as he was considered fit to be
moved. The following are minutes of his case:
John Brigger aged 40 labourer admitted the 30th
Temp. 98° F. Complaining of extreme week-
ness and inability to take his food. The
patient's friends told us that he had
he had had influenza in Brewe and was
recovering from it. He was extremely
drowsy and could hardly be roused
to take anything or to speak, but otherwise
at first he seemed fairly well. On Jan.
however his temp. went down to 96° 6 F,
and he seemed almost comatose. He
was ordered a mixture of Ether & Arsenmum
and was given a tablespoonful of Brandy
every 4 hours; still his temperature
kept falling till on the evening of Jan 6th
it was down to 95° F. I then ordered an
arsena 1 Brandy and egg mixture
which seemed to do him good, and he was
packed round with hot bottles wrapped in
flannel. It rose slightly during the
next 2 days then on Jan 9 5/6 10.12° F it rose very rapidly till on the morning of the 11th it reached 102° F. During these 2 days he had 3 well-marked rigors. After this under Dr. Ammonia Acetate and Spilled. Nitric Acid it fell gradually & normal on Jan 13th and then on the morning of the 18th was 96.2° F, but his condition was distinctly improved and he took his food fairly well and could sit up in bed. His pulse was still very weak as I continued the brandy and gave him a liberal diet and he gradually improved although once or twice his temperature sank to 96. On Feb 11th he was able to sit up 3 hours and on March 3rd he was discharged with temperature still sub-normal but in other respects well and feeling fit for work. His case was a somewhat mysterious one but I believe it to have been one which clearly exemplified the depressing influence of the influenza poison. I enclose his chart.

In conclusion I would say from my experience of the last two epidemics...
that influenza is a most infectious disease, 
but that as a rule in this country the mor-
tality is slight, especially in healthy districts 
where the people are not crowded too much 
together. Fatal cases occur chiefly amongst 
those who contract respiratory complications 
and those whose hearts are likely to 
fail easily. It is not a terrible scourge 
like widespread smallpox or typhoid, 
but it is to be dreaded by very young and 
by old persons and by those generally 
whose resisting power is feeble. It is 
sufficiently severe to disorganize the com-
merce of any particular town in which 
it may happen to be prevalent; it is prob-
ably an airborne disease and usually caught 
by breathing infected air; and it travels 
with such rapidity that it is difficult 
to conceive of any practicable measures 
of prevention, such as isolation or dis-
fection, that are likely to meet with 
much success in checking its course.