



The Influenza Pandemic of 1918

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As it worked its way across the globe, the influenza virus of 1918 gave little warning to its victims that a visitation was at hand. One day, their communities were free from the affliction; on the next, their lives were dramatically transformed. The story was usually the same. 'Again and again a perfectly healthy man may be taken ill in the street or on duty with a sense of general malaise?and rapidly develops such a sense of prostration that wherever he is he has to lie down' He gets to bed and is only too glad to stay there.' [1]

For the majority of victims, a visitation by the virus produced a simple case of 'flu. Recovery was 'fairly speedy' and without sequelae'. [2] No treatment was found to be of value in preventing or aborting an attack; but, by the same token, in a minority of cases, none could ward off its development into a more virulent form of the disease. [3]

In these latter cases, the complications, initially pulmonary, became systemic. The symptoms could take a variety of forms, but physicians laid stress on a single feature which, in the fatal or near-fatal cases, was common to them all. For if, to produce the exact tint upon the patient's face, 'one would need to mix some heliotrope, or lavender, or mauvy-blue with red paint' the prospect is grave indeed'. [4] Death, as and when it supervened, seemed due to an extreme toxæmia or septicaemia, rather than to the extent of the lung lesion which had actually occurred. [5]

One Virus?

A number of physicians, who lived and worked through the months of the Pandemic, described their sense of dj vu. In regard to 'the clinical, bacteriological, and post-mortem aspects of the disease?', one group of them insisted, 'we would emphasise our view that in essentials the influenzo-pneumococcal 'purulent bronchitis' that we and others described in 1916 and 1917 is fundamentally the same condition as the 'influenzal pneumonia' of this present pandemic?? [6] And another observer, summarising the 'fatal cases of influenza with pulmonary involvement [which] were not uncommon in Northern France during the course of 1916 and 1917?', stressed that 'the main features, clinical and pathological, which characterized these cases' were soon to emerge as 'the main features of the pandemic'. [7] The burden of their suspicions, if proved to be correct, would be to push our understanding of the Great Pandemic further back in time: so that the search for its initial cases would take us back, say, to the years 1916 and 1917, rather than confining us to the examination of 1918 alone.

One Soldier

We present one case of 'influenza with pulmonary involvement' seen in a British hospital in France in the winter of 1916-1917, together with the observations of a physician who, together with two colleagues, gave anxious scrutiny to what passed before his eyes. That case, which involved the death of a young soldier, provides us with a sort of template: a template for a disease which, with its characteristics of heliotrope cyanosis and high mortality, was to inflict at least forty million deaths in the two years which ensued.

Harry Hubert Underdown was born in the year 1897, not far from Ashford in Kent. He lived with his parents, who were farmers, though modestly placed.

When War was declared, Underdown stayed on the family farm. But, as the year 1915 drew to a close, he chose to enlist. He was found to be 5' 1" tall, and weighed in at 132 lbs. His card was marked 'General Service?': which implies that he was physically fit. He described himself as a 'hay trusser'.

Underdown enlisted under the terms of a scheme whereby he was 'required to serve one day with the Colours and the remainder of the period in the Army Reserve' until such time as you may be called up by order of the Army Council'.

So, although he now formed a part of the Army Reserve, Underdown returned to his farm. In April 1916, he was called back to the army, and his training began.

Underdown had served for four months with the army, at a depot in England, when he fell sick. He was hospitalised with tonsillitis. He seemed to recover, then had a relapse, and was not finally 'discharged cured' until 5 August 1916.

Almost immediately, he was sent over to France. Within a few weeks, he became a casualty. He was buried when a shell exploded nearby. Although not physically harmed, Underdown was invalided home, suffering from 'shell shock'. At Bagthorpe Military Hospital, Nottingham, he was found to be 'very shaken?', with 'loss of speech and memory'. 'Rest & bromides' formed the course of treatment prescribed.

In November, Underdown left hospital and returned to his regiment. He was detained in England for a few weeks and then, in February 1917, he crossed back to France. Hardly had he arrived than he fell ill once again. He died in No. 24 General Hospital, Etaples, on the 21st of the month.[8] His death certificate conveyed the cause of death in one word: 'bronchitis'.[9]

One Physician

William Rolland, a native of Paisley, studied medicine at the university of Glasgow. On graduation, he entered general practice, but his real interests lay in the pathological branch of the science. So much so that when, in 1915, he volunteered for military service, he was at once appointed as pathologist to No. 24 General, one of the hospitals serving the British army at Etaples in the Pas de Calais.[10]

For a year and a half, the bulk of the cases which Rolland encountered derived from the fighting itself: wounded men transferred to Etaples after preliminary treatment close to the front. In December 1916, however, he and two colleagues noticed that, for the first time in the War, the numbers of sick arriving by train were outweighing the wounded; and that young men, hitherto active and fit, were suffering from respiratory problems which resisted all treatment. In January 1917, the problem became yet more pronounced. They concluded that they were faced with 'a small epidemic' of an 'unusually fatal disease'. This disease they termed 'purulent bronchitis'. [11]

Certain symptoms of this 'definite clinical entity' they judged as particularly striking: the acute catarrhal condition, the expectoration, the tachycardia, and, in those cases which resulted in death, the prominent cyanosis of the face.[12]

Their reaction was swift and far-sighted. Rolland and his colleagues resolved to send to post-mortem every soldier who died at Etaples ' even if, to outward appearance, the man had simply died of his wounds. The outcome was dramatic. Forty-five per cent of all autopsies, over a period of weeks, showed that purulent bronchitis had affected the lungs. [13]

In addition, in selected cases, the three physicians tested for any harmful bacteria that might be found in the sputum and lungs, and examined tissue from other organs as well. In making this final selection, they looked for men who had died from a disease whose clinical aspect differed markedly from that of 'ordinary' bronchitis.[14]

Private Underdown's body was one of the twenty index cases they chose.[15] His death certificate mentioned only 'bronchitis'. But Captain Rolland had discovered a great deal more. 'Widespread broncho-pneumonia' was what he seen, and, in addition, he had examined the films of Harry Underdown's sputum, and allowed culture from that sputum to grow in a dish. Organisms such as pneumococcus, D. catarrhalis, and A Gram-positive diplococcus, amongst others, were found. [16]

One Certainty

A number of questions surround the influenza virus of 1918: questions which have not been resolved to this day. The question as to why it came and went in the spring of that year, in a non-fatal form, but then re-appeared in the autumn and inflicted so many deaths. The question as to why its impact was so severe in young adults ' the very class which, confronting seasonal influenza, are often the quickest to shrug aside the effects. And the question, finally, as to where this virus struck down its first case: in northern France in 1916, as these authors have argued, or at some other time in some other place.

One thing, however, was clear to the physicians who lived through those days. It was not influenza which sent Harry Underdown and millions more to their graves. The affliction itself merely served as a key. A key which perturbed and upset the body's defences, permitting the pneumococcus, the diplococcus, etc., to flood through the trachea and into the lungs. The very pathogens which, as William Rolland reported, had overwhelmed Harry Underdown as he lay in his hospital bed.

One Question

One patient overwhelmed, one pathologist seeking the cause: a palimpsest soon forgotten as the Great War moved on. Still, consider the following facts:

- At Etaples, on the north coast of France, the British army built the largest reinforcement camp which any country has ever constructed abroad. Through the barbed-wire pens of this camp there passed, in the course of the War, some three million officers and men.[17]
- At Etaples was created a complex of hospitals more extensive than any which any country has ever established overseas. Up to ten ambulance trains disgorged their patients each night, filling, at times, some twenty or more thousand hospital beds.
- At Etaples, men and women arrived from most parts of the globe: Great Britain, Ireland, North America, Australasia, India, China, South Africa, even Germany too.
- Interspersed throughout this military camp were piggeries, poultry farms, etc.: all part of the system of feeding the troops.

- Anti-aircraft batteries kept watch for German aircraft overhead. They ignored the vastly greater, though less obvious threat: from the pathogens carried by the many millions of birds as, from time immemorial, these headed down one of Europe's principal migration routes via the mouth of the Somme.

Here, at Etaples in 1916, were gathered all the factors known to be essential in the genesis of an influenza virus. One question remains. **Would this Pandemic have ever occurred unless the Great War had brought all these factors together?**

Douglas Gill & John Oxford

[1] Abrahams, Hallows, French, 'A Further Investigation'., The Lancet, 4 January 1919, p. 1.

[2] *ibid*, p. 1, col. 2

[3] *ibid*, p. 11, col. 2; p. 10, col. 1

[4] *ibid*, p. 4, col. 2.

[5] *ibid*, p. 1, col. 2.

[6] *ibid*, p. 1.

[7] Macpherson, Leishman, & Cummins (ed.), History of the Great War, Medical Services, Pathology, HMSO 1923, pp. 419 & 423.

[8] The service record of No. G/10475 Harry Hubert Underdown, including these medical details, is to be found in The National Archives, WO 363, 'the burnt series'.

[9] Information from Harry Underdown's death certificate.

[10] Paisley Daily Express, 28 October 1943; Bolton Journal & Guardian, 22 October 1943; The National Archives, WO 95/4026, Staff Diary, Etaples Administrative District; information from Wm Rolland's son and granddaughter.

[11] Hammond, Rolland, & Short, 'Purulent Bronchitis....?', The Lancet, 14 July 1917, p. 41.

[12] *Ibid*, pp. 41-42.

[13] *Ibid*, p. 43.

[14] *Ibid*, p. 42.

[15] Private U. is No. 8 on the list of these cases. The Etaples Staff Diary, cited, provides firm evidence that 'Private U.' is in fact Harry Underdown.

[16] Hammond, Rolland, & Short, *op. cit.*, p. 43.

[17] Extrapolation from the number given in WO 95/4027, Staff Diary, Etaples Administrative District, September 1917, p. 73. It was Wilfred Owen who first likened the reinforcement camp to 'a kind of paddock where the beasts are held for a few days before the shambles.' Archaeologist Joel Ramet believes that this number may be an underestimate, in that drafts simply slept tents in the fields, along the road to Boulogne, when the camp could hold no more.

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