COVID-19 Day by Day, From the Very Beginning

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o
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[BUT UNDER CONSTANT EXTENSION AND CORRECTION, SO CHECK AGAIN SOON]

Author's Home Page and e-mail Address

>>>>> Also available ... <<<<<

COVID, the people and the places

COVID, the hard science

***** BIOLOGICAL WARFARE IN THE MIDDLE AGES *****

1346 [1st September or hereabouts] **The History of Infectious Diseases [Germs as Weapons (The Siege of Caffa)]:** According to a contemporary account, when the Muslims of the Golden Horde lay siege to the Genoese treaty port enclave in the Crimean city of **Caffa** [modern Feodosia, map], they are afflicted by the Black Death and **start catapulting their dead bodies into the town** to help spread the disease amongst the defenders as well. From there the disease is believed to have travelled by supply ship to Western Europe, where it became pandemic until about 1351. For the full story see the (2002) paper by University of California at Davis historian **Mark L. Wheelis** [Wikipedia biography] entitled **"Biological warfare at the 1346 Siege of Caffa"** [full text online courtesy of the CDC]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

1796 [14th May] **The History of Infectious Diseases [The Drive to Immunise (Cowpox Versus Smallpox)]:** It having been occasional practice for at least a generation, British physician **Edward Jenner** [check him out] scratch-inoculates eight-year-old **James Phipps** with pus scraped from the lesions of a cowpox sufferer, reporting that the procedure conferred an effective degree of immunity against subsequent scratch inoculations with the significantly more dangerous smallpox. The modern interpretation of this report is that the cowpox and smallpox viruses are close cousins chemically, and so antibodies produced to the one therefore help protect against the other. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

***** FIRST PUBMED ENTRY FOR <INFLUENZA> *****

""since the publication of our last volume, no disease has claimed more attention
from medical practitioners than the *Influenza* ..."

1803 [12th March or shortly hereafter] **Influenza Before WW1 [Outbreaks (Edinburgh, 1803)]:** The journal *Annals of Medicine* publishes a paper by <probably an editor> entitled **"Notice of the *Influenza* 1803"** [full text online], in which the unnamed author reports on the Edinburgh epidemic of "catarrhal fever or influenza" of spring 1803. His main point is that physicians fighting *present* pandemics owe it to those fighting *future* ones to take good notes in the interests of "the history and practice of medicine". To this end he recommends taking the 12-point questionnaire being promoted by London physician Richard Pearson and extending it to 14 points. In this way, he hopes to obtain "as accurate an account

of the present epidemic as former writers have done of preceding ones" (p486). The report is also tangentially useful for listing the 23 earlier outbreaks between 1323 and 1782, and for being the earliest entry under the keyword <influenza> in the *PubMed* medical literature. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1823 [5th October] The first issue of *The Lancet* appears today. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1835 [1st January] **Influenza Before WW1 [Outbreaks (Edinburgh, 1834)]:** The journal *Select Communications of the Edinburgh Medico-Chirurgical Society* publishes a paper by **William Brown** entitled **"Notice of the late influenza in Edinburgh"** [full text online], in which the author reports on the Edinburgh epidemic of spring 1834 as follows. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1843 [13th May] **Medicine Before WW1 [Registration and Statistics (The Need for Precision)]:** The *Provincial Medical Journal and Retrospect of the Medical Sciences* publishes a letter [dated 6th May - Ed.] by **William Farr**, statistician to the recently established **General Register Office**, entitled **"Registration of Deaths"** [full text online], in which the author calls for diligence on the part of physicians reporting "causes of death" to their local Registry Office, lest any carelessness should impact public health initiatives at some time in the future. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1850 [6th May] **The History of Infectious Diseases [Classics of Epidemiology (The Epidemiological Society of London)]:** Senior British physicians found the **Epidemiological Society of London** [Wikipedia briefing] as a professional development and government advisory forum for public health practitioners across London. The first president of the society will be **Benjamin Babington** (Guy's Hospital). The society will publish its own *Transactions* until reorganising as the <Epidemiology and State Medicine Section> of the Royal Society of Medicine in 1907. The society's scrolled motto reads (after Persius) *VENIENTE OCCURRITE MORBO*, that is to say, **Confront Disease at its Onset**, an approach adopted by the **World Health Organisation (WHO)** during the **COVID-19 Pandemic**. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1854 [7th September] **The History of Infectious Diseases [Classics of Epidemiology (Snow versus Cholera]:** London physician **John Snow** [Wikipedia biography] presents to parish guardians the results of observations made during the Summer 1854 outbreak of cholera in London's Soho district [map]. He has plotted each case on a street map of the locality, and noted a cluster centred on a particular street pump. Suspecting a water-borne disease, he arranged for the pump to be taken out of commission, and the outbreak duly subsided. It has been axiomatic in public health circles ever since that **the first secrets of effective epidemiology are shoe leather and pins on maps!** **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1869 [4th September] **Medicine Before WW1 [Registration and Statistics (Farr on "Public Medicine")]:** The *British Medical Journal* publishes the transcript [full text online (registration required)] of the July 1869 BMA AGM Address by **William Farr**, in which the author develops his ideas for *general* practice (where previously there had been separate specialisms), for an overriding "Minister of Health", and for properly skilled Public Health Committees and Officers. His vision is that each element should complement the efforts of the others in delivering a "public medicine" to be proud of. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1873 [24th December] **The History of Infectious Diseases [Classics of Epidemiology (One Johns Hopkins dies, Another is Born)]:** The American entrepreneur-philanthropist **Johns Hopkins** [Wikipedia biography] dies this day, bequeathing $3,500,000 to found a university and hospital. The Trustees of his estate decide that Baltimore^{MD} would make a good home and invest wisely, thus ...

> "The trustees decided that quality would sell. They intended to hire only eminent professors and provide opportunities for advanced study. [...] The trustees hired as president **Daniel Coit Gilman** [Wikipedia biography],

> who [...] immediately recruited an internationally respected - and connected - faculty, which gave it instant credibility. [...] The Johns Hopkins would have rigour. It would have such rigour as no school in America had ever known [... and] by the outbreak of World War 1, American medical science had caught up to Europe and was about to surpass it" (Barry, 2004/2018, pp33-34).

We shall be hearing regularly from JHU's Coronavirus Resource Center during the **COVID-19 Pandemic**. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

***** *HAEMOPHILUS INFLUENZAE* ISOLATED *****

1892 [16th January] **Influenza Before WW1 [Influenza A, 1889-1894 (The Pfeiffer Paper)]:** The British Medical Journal publishes joint papers, one by **Richard Pfeiffer** [Wikipedia biography] entitled **"Preliminary communication on the exciting causes of influenza"** [full text online], and the other (from the same institution) by **Shibasaburo Kitasato** [Wikipedia biography] entitled **"On the influenza bacillus and the mode of cultivating it"** [full text online]. Pfeiffer reports finding "a bacillus of a definite species [...] in the characteristic purulent bronchial secretion" of 31 cases of influenza. These organisms were not found in control infections such as ordinary catarrh or tuberculosis; also - in survivors - they disappeared when the purulence disappeared. They induced infection on demand in apes and rabbits, but not in guinea-pigs, rats, pigeons, or mice. Kitasato adds that it is possible to culture the organism on agar plates, although the resulting colonies are "unusually small". **A GLIMPSE INTO THE FUTURE:** The organism will be referred to as "Pfeiffer's bacillus" or *B. influenzae* until reclassified as *Haemophilus influenzae* in 1931. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1892 [31st December if not before] **The History of Infectious Diseases [Tobacco Mosaic Virus (The Ivanovski Outbreak)]:** The *Bulletin Scientifique Publié par l'Académie Impériale des Sciences de Saint-Pétersbourg* publishes a paper by **Dmitri I. Ivanovski** [Wikipedia biography] entitled **"Über die Mosaikkrankheit der Tabakspflanze"** [difficult to obtain, but plenty in secondary sources; we have a Russian scientist writing in German in a Russian journal with a French title, and so the work remained obscure in English-speaking science for several decades; a full listing of Ivanovski's publications is given in Lechevalier (1972)], in which the author reports that sap from a tobacco plant infected with mosaic blight is able to infect healthy plants even after all non-nanoscopic solids have been filtered out by passing it through an ultrafine porcelain filter. He interprets this as the result of a soluble bacterial toxin remaining in solution when passing through the filter, and NOT as evidence of a new, ultra-microscopic, type of microbe. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1898 [1st July or hereabouts] **The History of Infectious Diseases [Tobacco Mosaic Virus (The Beijerinck Studies)]:** A Dutch scientific journal publishes a paper by **Martinus W. Beijerinck** [Wikipedia biography] entitled (after translation) **"On a *contagium vivum fluidum*** SEE BELOW **as the origin of tobacco mosaic"** [not available online but much to reward the determined browser], in which the author reports that sap from a tobacco plant infected with mosaic blight is able to infect healthy plants even after all non-nanoscopic solids have been filtered out by passing it through an ultrafine porcelain filter ...

> **TECHNICAL ASIDE - *CONTAGIUM VIVUM FLUIDUM*:** This Latin phrase means literally "infection in the living fluid" and was introduced by Beijerinck to convey the point that even after nanofiltering the substantive pathogen remained in the filtrate.

When carrying out his study Beijerinck was unaware of the earlier work by **Dmitri Ivanovski** [see 31st December 1892]. We have mentioned him separately, however, because his experimental design was more rigorous than the Russian's had been. He, it will be remembered, had filtered the sap only once, and so could not reliably judge whether the filtrate reproductively infected or merely poisoned. Beijerinck repeated the procedure for plant after plant, each one dosed from the one before. When he observed no dilution of effect down the line of infection he was able to assert that the filtrate reproduced in each host! **FURTHER READING:** The work was republished the following year in German. Probably the most accessible narrative is in **Wilkinson (1974** [full text online]**).** **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1901 [2nd January/8th June] **The History of Infectious Diseases [The Rockefeller Thread (The Rockefeller Institute Founded)]:** Three-year-old **John Rockefeller McCormick** [Mother's Wikipedia biography] dies this day of scarlet fever. The death adds to the philanthropic motivation of his grandfather **John D. Rockefeller, Sr.** [Wikipedia biography] and his uncle **John D. Rockefeller, Jr.** [Wikipedia biography] in founding the **Rockefeller Institute for Medical Research** [Wikipedia briefing] 8th June 1901. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1915 [27th April] **The Spanish Flu Pandemic, 1918-1919 [Day by Day (The Salisbury Plain Outbreak)]:** In a letter to the *Canadian Medical Association Journal* dated today, Lieutenant-Colonel **F. G. Finley**, one of the Medical Officers attached to the **No. 1 General Hospital** [unit history (see p73)] of the Canadian Expeditionary Force (presently based on Salisbury Plain awaiting deployment to the Western Front), reports his unit's experience of the war to date. Here is an indicative extract ...

> "During the winter nearly four thousand cases were treated. On the medical side, of which I was in charge, influenza was the most prevalent disease, and although [...] not specially severe, it was often the starting point for bronchitis and broncho-pneumonia. The last-named disorder was unusually prevalent, and a considerable number of cases came under observation, many of them being of a severe and even fatal character. In a long hospital experience in Canada I have not seen such virulent cases in young and robust adults. The attack, often preceded by influenzal or catarrhal symptoms, was marked by fever, severe cough, profuse muco-purulent sputa, and in the severe cases cyanosis. [...] In the severe cases urgent dyspnoea and cyanosis [a.k.a. the "blue death" - Ed.] continued, with a good pulse until gradual respiratory failure set in" (p551).

The letter will subsequently be formally published in the *Canadian Medical Association Journal* in June [5(6):550-552]. Interestingly, a small April 1915 peak amongst Australian troops is visible as the first of three possibly herald wave showings in the **Shanks, *et al.* (2011)** re-analysis of WW1 military records - see the entry for 27th November 2011, Figure 1 clickthrough. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

1916 [15th December or hereabouts - end March 1917] **The Spanish Flu Pandemic, 1918-1919 [Day by Day (The Étaples Outbreak)]:** This is the outbreak referred to in the **Hammond, *et al.*** paper - see 14th July 1917. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

1917 [14th July] **The Spanish Flu Pandemic, 1918-1919 [Day by Day (The Hammond, *et al.* Paper)]:** *The Lancet* publishes a paper by **Hammond, *et al.*** entitled **"Purulent Bronchitis: A study of cases occurring amongst the British troops at a base in France"** [full text online], in which the authors - three R.A.M.C. Medical Officers - report a major respiratory illness outbreak amongst the troops based at Étaples the previous winter ...

> **CAMEO - ÉTAPLES / LE TOUQUET-PARIS-PLAGE:** The small French fishing port of Étaples [map] lies some 30 miles down the coast from Calais, just around the headland from the Edwardian golf and gambling resort of Le Touquet. During WW1, the area served as the main B.E.F. bridgehead and transit camp, logistics base, training camp (the infamous "Bull Ring"), base hospital, and (for those who did not make the boat back home) cemetery [now CWGC]. The logistics side of things included keeping livestock, and it was these chickens and pigs which are often blamed for cultivating the virus which may have caused the **1918 Spanish Flu Pandemic**.

The report begins by very clearly stating that **"Patients suffering from this unusually fatal disease present a symptom complex so distinctive as to constitute a definite clinical entity"** (p41). Cases had been reported "during December 1916" and then got more numerous during a cold snap at the end of January 1917, with a peak February-March. The authors describe the clinical features of the disease as follows ...

> "The cases which came under our notice can be divided broadly into two types. The first and more acute presents a clinical picture which closely simulates ordinary lobar pneumonia with a sustained temperature of about 103º, and expectoration [=coughing up phlegm] [which] rapidly becomes purulent." ...

Check out purulent expectoration here

> ... "The pulse rate in these cases is out of all proportion to the temperature in its rapidity. Dyspnoea and cyanosis are prominent features. The patient usually dies from 'lung block' [...] on the fifth or sixth day. [...] The second and less acute type is marked by a more swinging temperature with a range of 2º or 3º. The expectoration at first may be frothy and muco-purulent, but it very soon assumes the typically purulent character. This form may run a long course of from three to six weeks, during which time the patient wastes a great deal [similar to] acute tubercular infection" ...
>
> Check out COVID-19 wasting here
>
> ... "[...] The majority of our cases conforming to this type have ultimately recovered, but the convalescence is slow and tedious" (p41).

Post-mortem examination of the lungs helps explain the problem ...

> "The most striking changes are in the smaller bronchi. Their walls are thickened and the vessels engorged; the lining epithelium, which is at first intact, is later detached in parts from its basement membrane, and the epithelial cells can be seen lying free [...]. In a still more advanced stage the bronchiole is entirely denuded of mucous membrane, and [...] almost completely filled with pus" (p44).

See the original paper for fuller autopsy detail. The authors conclude from bacteriological analysis of sputum samples that a *Bacillus influenzae* [Wikipedia briefing] is responsible, describing it as a gram-negative "slightly elongated coccus" which tended to grow in pairs linked end-to-end. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

1918 [6th January or hereabouts - 16th February] **The Spanish Flu Pandemic, 1918-1919 [Day by Day (The Salisbury Plain Outbreak)]:** This is the outbreak referred to at "Sling Camp" in the **Macdonald, *et al.*** paper - see 2nd November 1918. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

1918 [26th August-10th September] **The Spanish Flu Pandemic, 1918-1919 [Day by Day (The Fever Ship *Tahiti*, 1 of 2)]:** On 26th August 1918, the troopship **HMNZT *Tahiti*** [Wikipedia shipography] departs in convoy from Freetown, Sierra Leone [map], en route to Devonport. She is carrying a draft of 1117 New Zealand soldiers plus 100 crew. Freetown is already on active influenza alert, and so nobody has been allowed ashore. However some of the officers have unwisely been allowed to attend briefings aboard a case-positive ship, and by the time *Tahiti* arrives most of those on board have been infected and 68 have died. A further 9 will later die ashore. The story of the outbreak will remain largely untold until featured in the epidemiological literature in 2010 [item continues at 1st December 2010]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

1918 [1st September-31st October] **The Spanish Flu Pandemic, 1918-1919 [Day by Day (The Camp Pike^{AR} Outbreak)]:** This is the outbreak described in greater detail in **Opie, *et al*. (1919** [see 22nd February 1919]**).** **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

1918 [2nd November] **The Spanish Flu Pandemic, 1918-1919 [Day by Day (The Macdonald, *et al.* Paper)]:** The *British Medical Journal* publishes a report by Lieutenant Colonel **W. M. Macdonald, *et al.*** entitled **"Purulent bronchitis complicating measles and rubella"** [full text online], in which the authors report on purulent bronchitis as a complication of an outbreak of measles and rubella in New Zealand conscripts between 1st January and 8th March 1918. Out of 418 cases of measles or rubella, "the large majority" suffered "copious frothy or muco-purulent bronchorrhoea". In 75 of these cases this progressed to "severe purulent bronchitis", and of these, 26 died. The authors continue ...

> "There seems little doubt that the original infection occurred at an American port where the transports touched, as they had been free from infectious disease during the voyage, but measles and rubella broke out on board two of them just before arrival in England - that is, some fourteen days after leaving America. In the first five days after arrival at **Sling Camp** [map] 77 cases developed, and thereafter the incidence was: week ending January 19th 60, January 26th 125, February 2nd 113, February 9th 43, February 16th 25" (p481).

Further examination indicated bacterial (streptococcal) pneumonia, secondary to the primary viral infection, leading, in turn, to septicaemia. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

1918 [8th November] **The Spanish Flu Pandemic, 1918-1919 [Day by Day (The Soper Paper)]:** The Journal *Science* publishes a report by **George A. Soper** [Wikipedia biography] entitled **"The influenza pneumonia pandemic in the American army camps during September and October 1918"** [full text online (registration required), in which the author reports data for the period 12th September to 18th October 1918. Across the United States, 274,745 cases had reported sick, 46,286 had developed pneumonia, and 14,616 had died. The peak of the outbreak had been in the week 5th-11th October. Geographically, **Camp Devens**[MS] was the first to be hit, on 7th September, followed by another 36 sites more or less one a day until 11th October (for the full list see the original paper p454). Soper identifies the organism responsible as **Pfeiffer's Bacillus** [<=16th January 1892]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

1918 [13th November] **The History of Infectious Diseases [Classics of Epidemiology (The Eyre Paper)]:** The Journal *Proceedings of the Royal Society of Medicine* publishes a report by **John Eyre** [Wikipedia biography] entitled **"Discussion on influenza"** [full text online], in which the author lists the bacteria he has seen associated with the pandemic. **Pfeiffer's Bacillus** [<=16th January 1892] was "the prominent organism in the early stages" in all outbreaks. Others had a later stage secondary Streptococcal or Staphylococcal infection. The author is not greatly swayed by other authorities promoting a "filter-passing" viral precursor infection. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

1919 [22nd February] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The Opie, *et al*. Paper)]:** The *Journal of American Medical Association* publishes a paper by Colonel[MED.CORPS] **Eugene L. Opie** [Wikipedia biography]**, *et al*.** entitled **"Pneumonia following influenza at Camp Pike, Ark."** [full text online **HIGHLY RECOMMENDED**], in which the authors chronicle the rapid sweep of the pandemic through the near 53,000 recruits at Camp Pike[AR] between 1st September and 31st October 1918. Those taken sick were divided into "uncomplicated influenza" (n=12,393) and "pneumonia" (n=1499), with only 2 of the 468 deaths occurring in the uncomplicated group. This is totally consistent with other reports that it was a secondary bacterial infection - "purulent bronchitis" - which was the real killer. Reanalysed by time on site, the near-24,000 freshly arrived recruits suffered an attack rate over 30%, whilst the near 29,000 more established trainees suffered an attack rate of only 15.5%. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

"The colour of the patient is of particular interest"

1919 [1st December] **The Spanish Flu Pandemic, 1918-1919 [Day by Day (The Abrahams Paper)]:** The *Proceedings of the Royal Society of Medicine* publishes a paper by **Abrahams** entitled **"Discussion on influenza"** [full text online], in which the author reports cases of "a peculiar type of lung affection with which we were hitherto unfamiliar" in the Aldershot Command "during the winters of 1915 and 1916". He describes the common presenting signs as "the expectoration of enormous quantities of purulent sputum, a most characteristic heliotrope cyanosis[see it in this YouTube at 8m30s], and a very dreadful mortality" (p97). He also notes ...

> "The colour of the patient is of particular interest in view of the baleful heliotrope element. In general one may say that once this colour has appeared the patient's condition may be regarded as desperate. [...] The condition is apparently that which Dr. J. S. Haldane has termed 'anoxaemia' precisely similar to what is seen in cases gassed at the Front [...] In upwards of twenty cases we have seen spontaneous rupture of one or both rectus abdominis muscles, the immediate cause of which appears to have been the effort of coughing. [...] Another distinctive feature has been a characteristic stench which appears to exude from the body as a whole. [...] Not one single line of treatment can be credited with any value" (pp100-101).

Staff in attendance on these patients were given precautionary gargle and required to use a gauze mask. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

1921 [9th May] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The Dudley Research, 1 of 2)]:** The *Proceedings of the Royal Society of Medicine* publishes a paper by **Sheldon F. Dudley** [no convenient biography] entitled **"The biology of epidemic influenza, illustrated by naval experience"** [full text online], in which the author chronicles the sweep of the 1918-1919 pandemic through the ships of the Royal Navy's Grand Fleet. In the spring outbreak some 10,000 sailors reported sick in the affected ships, but mortality was low. In the autumn outbreak only half as many fell ill, thanks, the author suspects, to the following factors ...

> " An organism of the required infectivity having arisen, an epidemic begins, and spreads rapidly through a highly susceptible population, but as the susceptibility decreases the more infectious strains of parasite are selected for survival, and later the more virulent strains are eliminated by natural selection, until finally the organism succeeds in adapting itself to its environment by the evolution of highly infective but innocuous strains which produce a multitude of so-called " carriers " of the original pathogenic ancestors" (p40).

... and yet the mortality in this second wave was greater at 2.8%. In fact, upon close inspection of the ships' medical logs three types of outbreak were readily discernible (there were many ships of each type) ...

> TYPE 1 - SPRING AND AUTUMN WAVES: The first pattern of infection was for a ship to suffer in both peaks. These outbreaks were "generally seen in home waters" (p44). The super-Dreadnought **HMS *Revenge*** [Wikipedia shipography] serves as the type-defining vessel, thus ...
>
> > "In her the first wave lasted about twenty days, 207 men - 17 per cent. of the ship's complement - were officially reported as sick. The autumn wave lasted about the same time, 20 per cent. of the ship's company being returned sick. This makes a total official attack-rate for the two outbreaks of 37 per cent. Surgeon-Commander Burniston, the senior medical officer of the *Revenge* (whom I must thank for giving me this information) states in his official report that quite half as many again were ill without going off duty, so the official attack-rate is much below the real attack rate and 50 per cent. is much nearer the real number attacked in the combined outbreaks" (p43).
>
> TYPE 2 - AUTUMN WAVE ONLY (MILD): These outbreaks tended to be highly infectious, but mild. The type-defining vessel was the light cruiser **HMS *Newcastle*** [Wikipedia shipography], serving in the South Atlantic ...
>
> > "During the first fortnight of October, 1918, 51 per cent. of the ship's company of 450 men were attacked by an illness consisting of three or four days fever, headache and backache. Dr. Page writes: " There was a complete absence of any malignant symptoms or complications." All cases returned to duty within a few days. The examination of stained films of sputum were said to reveal 'numerous Gram-negative bacilli resembling Pfeiffer's bacillus,' also Gram-negative cocci were noted in some of the films. This outbreak started seven days out at sea and ran its course far from land in the South Atlantic. The extreme mildness, but high infectivity, of the illness is a point worthy of careful attention" (p43).
>
> TYPE 3 - AUTUMN WAVE ONLY (SEVERE): These were super-virulent strains, with high mortality. The type-defining vessel was the pre-Dreadnought battleship **HMS *Africa*** [Wikipedia shipography], whose experience was as follows ...
>
> > "Of her complement of 779 men, 75 per cent. were struck down with a serious illness. Surgeon Commander Alderson who kindly let me abstract this information from his official journal, tells me that, as far as he had time to observe, many cases were pulmonary in type from the onset and their expectoration was blood-stained. Fifty-one men died, a 9 per cent. case mortality or nearly 7 per cent. of the ship's complement. Some samples of sputa were sent ashore for examination, but apparently only stained films were made, and a "Gram-positive diplococcus" was reported to be the predominant organism seen. There was no mention of influenza-like bacilli, but this is no evidence of its absence if cultures on suitable media were not made at the time direct from the cases" (p44).

The *Africa* seems to have been infected mid-August 1918 while at anchor off Freetown, Sierra Leone, awaiting escort duty to an assembling inbound convoy. Here she had made rendezvous with the already-infected **HMS *Mantua*** [Wikipedia shipography] freshly out from England. At this point, there being a quarantine warning hoisted for the port itself, it was decided not to use the local dock labourers [Dudley uses the obsolete term "coolie" at this point - Ed.] and so various ships contributed working parties to assist each other's re-coaling.

******* MORE ON THE PROBLEM OF CARRIERS *******

Dudley also has a point to make about "carriers" ...

> "... there is another fact that requires just as much elucidation-namely, the remarkable prevalence of influenza bacilli in the nasopharynges of healthy sailors. Since1918 up to the present year I have swabbed at intervals batches of men who exhibited no signs of influenza, and as far as I knew had not recently been in contact with influenza patients. In all 266 men, chiefly venereal convalescents, with apparently normal throats were examined. **The percentage of men in each batch harbouring influenza bacilli was roughly the same, about 50 per cent., and this figure showed no obvious relation to influenza prevalence, nor did a previous history of influenza seem to have much influence on the likelihood of a positive result in individual cases.** This tremendous prevalence of so-called influenza bacilli in apparently healthy men requires as much explanation as their reported absence in certain clinical cases. At first sight, it would appear that *Bacillus influenzae* cannot be the cause of the epidemic; because if it is present as a harmless saprophyte in the throats of half the population, its association with clinical influenza might well be incidental. But whatever the cause of influenza may be, in a pandemic of the size we have lately witnessed, the germ is certain to exist in a host of carriers as well as in the epidemic cases, and from this point of view, a high carrier-rate substantiates rather than weakens any claim *Bacillus influenzae* has of being the specific cause of the pandemic. However, the fact remains that the majority of these carriers seem to be harmless, and this at first sight appears difficult of explanation. [...] Without pressing the subject further it may well be that the explanation of the considerable number of influenza bacillus carriers is, that only certain varieties of *Bacillus influenzae* can cause symptoms of disease" (p38).

Dudley concludes with some remarks on quarantine, noting - in the light of the Freetown cross-infection - that it needs to be "absolute". The paper also records the Q&A session from the original lecture, during which reference is made to losses on a then-unnamed New Zealand troop ship on the Freetown-England leg of the transit. This may now be identified as **HMNZT *Tahiti***, whose story is told in the entry for 26th August 1918, which see. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

***** FIRST PUBMED MENTION OF HERD IMMUNITY *****

1923 [1st May] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The Topley and Wilson Paper)]:** This is the paper described in no little detail in the Companion Resource under <Herd Immunity>, which see. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

***** AN INTERESTING EPIDEMIOLOGICAL QUESTION *****
and
***** ANOTHER EARLY MENTION OF HERD IMMUNITY *****

1927 [1st July] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The Dudley Research, 2 of 2)]:** The *Journal of Hygiene (London)* publishes a paper by **Sheldon F. Dudley** entitled **"An analysis of an influenza epidemic in the New Zealand Division of the Royal Navy"** [full text online], in which the author compares and contrasts the experiences of British and New Zealand seamen in a Royal Navy squadron on the New Zealand Station. The research objective is to test whether "the New Zealanders have less stamina and are more prone to infectious diseases than the British ratings" (p132). The author therefore traces the movements of the various ships of that squadron, noting ports of infection and tabulating cases on each ship according to country of birth and length of service. He is thus led to conclude (1) that there are distinct differences in the infectivity, virulence, and type of influenza in different regions or - in the case of ships - ports of probable infection, (2) that one wave of influenza will confer "considerable" immunity against a second wave, including in those uninfected during the first wave, (3) that it is the younger recruits and junior ratings who bear the brunt of any given outbreak, (4) that senior ratings mixed with recruits suffer more than seniors on their own ...

> **ASIDE - HERD IMMUNITY:** At this point Dudley adds: "The phenomenon is probably due to increased velocities of infection (due to the higher infectibility of the recruits) breaking down the herd immunity of the senior men.

... and (5) that the anecdotes reporting "less stamina" in New Zealanders were unfounded; it was just that they made up the bulk of those at risk under (3). **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

1930 [30th April] **The History of Infectious Diseases [Airborne Infections (The Lurie (1930) Paper)]:** The *Journal of Experimental Medicine* publishes a paper by **Max B. Lurie** [Daniel (2009) tribute] entitled **"Experimental epidemiology of tuberculosis: The route of infection in naturally acquired tuberculosis of the guinea pig"** [full text online], in which the author reported his experiences with tuberculosis transmission in guinea pigs in more versus less crowded caging. When cages (and therefore soiled straw) were shared the infection strikes mainly at mesenteric nodes, whereas when cages were separated so that transmission must have been airborne the infection strikes mainly at tracheobronchial nodes. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1934 [1st November] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 1 of 26)]:** [**New nine-item research programme**] The *American Journal of Epidemiology [prev. Hygiene]* publishes a paper by Harvard School of Public Health bacteriologist-engineer **William F. Wells** [Nardell (2016) biography] entitled **"On air-borne infection: Study II - Droplets and droplet nuclei"** [abstract (full text paywalled)], in which the author extends the work of **Dunkin and Laidlaw (1926)** [see 30th September 1926] and **Lurie (1930)** [see 30th April 1930] using field bacteriology apparatus of his own devising to investigate the spreading of disease by "droplets expelled from the nose or mouth". In this, the first of what will turn out to be a 40-plus-year team research programme, he quantifies the speed of fall of microscopic droplets through the air [the **<Wells and Riley studies>** continue at next entry]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1934 [1st November] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 2 of 26)]:** [Continued from preceding entry] The *American Journal of Epidemiology [prev. Hygiene]* publishes a paper by William F. Wells and **W. R. Stone** [no convenient biography] entitled **"On air-borne infection: Study III - Viability of droplet nuclei infection"** [abstract (full text paywalled)], in which the authors turn their attention to how far germs can travel while airborne during their descent to earth. They note, for example, that pneumonia, diphtheria, and scarlet fever remained active for up to 48 hours after release; also that if they dry in mid-air to become "droplet nuclei" they are lighter and can accordingly travel further [the **<Wells and Riley studies>** continue at 20th September 1935]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1935 [20th September] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 3 of 26)]:** [Continued from 1st November 1934] The Journal *Science* publishes a paper by William F. Wells and **Gordon M. Fair** [Obituary] entitled **"Viability of *B. coli* exposed to ultra violet radiation in air"** [abstract (full text paywalled)] in which the authors report experiments with ultraviolet light to kill airborne *B. coli* sprayed from an atomiser. No viable organisms were collected in the UV condition, whereas a few remained alive after two hours in an untreated darkened room [the **<Wells and Riley studies>** continue at 17th July 1936]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1936 [17th July] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 4 of 26)]:** [Continued from 20th September 1935] The journal *Science* publishes a paper by William F. Wells and **H. W. Brown** [no convenient biography] entitled **"Recovery of influenza virus suspended in air and its destruction by ultra-violet radiation"** [abstract (full text paywalled)] in which the authors report successfully recovering viable Influenza viruses from atomised suspension [the **<Wells and Riley studies>** continue at 21st November 1936]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1936 [21st November] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 5 of 26)]:** [Continued from 17th July 1936] The *Journal of the American Medical Association* publishes a paper by William F. Wells and **Mildred W. Wells** [no convenient biography] entitled **"Air-borne infection"** [abstract (full text paywalled)], in which the authors investigate the effects of particle size on distance travelled while aloft. **They report that droplet nuclei - basically, flakes of dried respiratory mucus studded with germs - fly like tobacco smoke to be breathed in, in turn, by all persons sharing the air in question** [the **<Wells and Riley studies>** continue at 1st November 1937]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1937 [11th September] **The History of Infectious Diseases [Classics of Epidemiology (The Stuart-Harris Studies, 1 of 3)]:** [**New three-item research programme**] The *British Medical Journal* publishes a paper by **[Sir][1970] Charles H. Stuart-Harris** [Wikipedia biography] entitled **"Epidemic influenza: A clinical point of view"** [full text online], in which the author reports on case notes from an Influenza A outbreak in Winter 1936-1937, comparing those with and without detectable virus. Those with the virus he classed as "epidemic influenza" (n=84), and those without it he classed as "febrile catarrh" (n=28). Here are some of the differences he noted ...

	Epidemic Influenza (%)	**Febrile Catarrh (%)**
Cough 1st 24 hours	20	35
Headache 1st 24 hours	54	17
Malaise 1st 24 hours	18	3
Muscle pains 1st 24 hours	21	7
Shivering 1st 24 hours	39	10
Sore throat 1st 24 hours	11	42
Later headache	87	64
Hoarseness	6	40

And here are the distinguishing features by which a differential diagnosis might be made ...

	Epidemic Influenza	**Febrile Catarrh**
Onset	Sudden (75%)	Insidious (58%)
Cough	Short and dry	Paroxysmal, painful, productive
Throat	Posterior pharyngitis, no exudate	Tonsilitis, pharyngitis, exudate common
Complications	Bronchiolitis, pneumonia	Bronchitis or bronchopneumonia
Epidemic	Short, rapid peak	Prolonged
Virus	Recoverable from pharynx	Not found

The principal research question was to establish "whether influenza virus infection in man constitutes a clinical entity or not" (p516), and the author's eventual conclusion is that it is not possible "to diagnose epidemic influenza with precision" (p517) [the **<Stuart-Harris studies>** continue at 31st October 1938]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1937 [1st November (provisional)] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 6 of 26)]:** [Continued from 21st November 1936] The *Journal of Industrial Hygiene and Toxicology* publishes a paper by William F. Wells (recently moved to the University of Pennsylvania School of Medicine, Philadelphia[PA]) and postgraduate researcher **Edward C. Riley** [no convenient biography but much to reward the determined browser] entitled **"An investigation of the bacterial contamination of the air of textile mills with special reference to the influence of artificial humidification"** [abstract online], in which the authors test air purity in a textile mill. They discover that grey water is being used for humidification, and polluting the air with non-sterile droplet nuclei [the **<Wells and Riley studies>** continue at 1st March 1938]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1938 [1st March] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 7 of 26)]:** [Continued from 1st November 1937] The *American Journal of Public Health* publishes a paper by William F. Wells and Mildred W. Wells entitled **"Measurement of sanitary ventilation"** [full text online] in which the authors continue their department's experiments with the microorganisms unwittingly shared by our everyday respiratory neighbours. Here is the problem, precisely stated ...

> "In general, however, the engineer must provide for common occupancy of enclosed spaces. The magnitude of this hazard depends upon the degree of confinement of the air common to many persons, or rather upon the concentration of the contaminating nuclei, which varies directly with the number of persons occupying a given volume of air (and their specific infectivity), and inversely with the dilution either with pure air from without or with any other equivalent means of elimination of the microorganisms, such as precipitation, filtration, washing, physical or chemical disinfection. [...] Sanitary ventilation may, therefore, be defined as the rate at which microorganisms are vented; or as the proportional air replacement which would remove the equivalent number of microorganisms eliminated by any other means" (pp343-344).

The authors conclude that sanitary ventilation engineering - including ultraviolet treatment where practicable - is part of architectural design for the reduction of respiratory disease [the **<Wells and Riley studies>** continue at 1st August 1939]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1938 [1st April (interpolated)] **The History of Infectious Diseases [Classics of Epidemiology (The Weyrauch and Rzymkowski Paper)]:** This is a difficult to obtain paper, but noteworthy for being one of the first to obtain freeze-framed photographs of respiratory spray at the moments of its ejection during coughing, sneezing, or speaking plosive sounds like "p" and "t". What details we have been able to obtain are given in the entry for **Wells, Wells, and Mudd (1939** [see 1st August 1939]**).** **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1938 [31st October] **The History of Infectious Diseases [Classics of Epidemiology (The Stuart-Harris Studies, 2 of 3)]:** [Continued from 11th September 1937] The *Journal of Experimental Medicine* publishes a paper by **[Sir][1970] Charles H. Stuart-Harris** and senior **Rockefeller Institute** researcher **Thomas Francis, Jr.** [Wikipedia biography] entitled **"Studies on the nasal histology of epidemic influenza virus infection in the ferret. II - the resistance of regenerating respiratory epithelium to reinfection and to physicochemical injury"** [full text online], in which the author reports microscope investigations of the respiratory epithelium ...

> **TECHNICAL ASIDE - RESPIRATORY EPITHELIUM: Epithelial tissues** [Wikipedia briefing] form the outer protective layer of most of the body's internal and external surfaces. Respiratory epithelium is thus the mucus-coated lining of the airways. Note it carefully, because it is the primary target of the advancing COVID-19 infection, these being the cells where the virus likes to replicate within.

... in ferrets at different stages of recovery from an influenza infection. The results indicate that on the seventh or eighth day after infection "an immature transitional type of epithelium covers the respiratory area", and that this tissue is resistant to re-infection in what appears to be "a non-specific resistant state, significant for a time at least in the mechanism of immunity to influenza virus" (p803) [the **<Stuart-Harris studies>** continue at 31st October 1938]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1939 [1st August] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 8 of 26)]:** [Continued from 1st March 1938] The *American Journal of Public Health* publishes a long and detailed paper by William F. Wells, Mildred W. Wells, and **Stuart Mudd** [University of Pennsylvania obituary] entitled **"Infection of air: Bacteriologic and epidemiologic factors"** [full text online], in which the authors compare the nature of droplet, droplet nucleus, and contact transmission of a variety of common pathogens. **The fastest-spreading outbreaks are, in their observation, invariably airborne.** The paper is particularly useful for reproducing one of the otherwise difficult to obtain freeze-frame photographs from a 1938 paper by **Friedrich Weyrauch** [Thieme biography] and **Johannes Rzymkowski** [not much known] entitled ***"Photographien zur Tröpfchensinfektion"*** *Zeitschrift für Hygiene und Infektionskrankheiten,* 120:444-449 [the **<Wells and Riley studies>** continue at 1st July 1941]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1941 [1st July] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 9 of 26)]:** [Continued from 1st August 1939] The *American Journal of Epidemiology [prev. Hygiene]* publishes a paper by William F. Wells and **Max B. Lurie** [<=30th April 1930] entitled **"Experimental air-borne disease: Quantitative natural respiratory contagion of tuberculosis"** [full text online (paywalled)], in which the authors study the transmission of tuberculosis between separately caged guinea pigs. Having excluded possible infection from heavy cage dust, ingestion, or contact, they conclude that the vector responsible can only be infected respiratory droplet nuclei [the **<Wells and Riley studies>** continue at 1st January 1942]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1942 [1st January] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 10 of 26)]:** [Continued from 1st July 1941] The *American Journal of Epidemiology [prev. Hygiene]* publishes a paper by William F. Wells, Mildred W. Wells, and **T. S. Wilder** [no convenient biography] entitled **"The environmental control of epidemic contagion: I - An epidemiologic study of radiant disinfection**

of air in day schools" [full text online (paywalled)], in which the authors criticise "the confined atmospheres of our habitations" for helping to spread contagion, and then report the successful use of ultraviolet lamps in reducing infection in school premises [the **<Wells and Riley studies>** continue at 18th September 1942]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1942 [18th September] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 11 of 26)]:** [Continued from 1st January 1942] The journal *Science* publishes a paper by William F. Wells and **Peter Zappasodi** [no convenient biography] entitled **"The effect of humidity on Beta Streptococci (Group C) atomised into air"** [full text online], in which the authors report that droplet-borne Streptococci are "rapidly" killed in dry atmospheres, but are more enduring in humid ones [the **<Wells and Riley studies>** continue at 1st July 1943]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1943 [1st July] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 12 of 26)]:** [Continued from 18th September 1942] The *American Journal of Medical Science* publishes a paper by William F. Wells and Mildred W. Wells entitled **"Dynamics of air-borne infection"** [unavailable online at time of writing - entry to follow] [the **<Wells and Riley studies>** continue at 1st December 1943]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1943 [1st December] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 13 of 26)]:** [Continued from 1st July 1943] The *American Journal of Public Health* publishes a paper by William F. Wells, entitled **"Air disinfection in day schools"** [full text online], in which the author compares the effectiveness of competing disinfection systems in different day schools in suppressing outbreaks of measles, mumps, and chicken pox. In moist mild air mumps can on occasions penetrate the defences [the **<Wells and Riley studies>** continue at next entry]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1943 [1st December] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 14 of 26)]:** [Continued from preceding entry] The *Journal of Bacteriology* publishes a paper by William F. Wells entitled **"Bacteriologic procedures in sanitary air analysis"** [full text online], in which he demonstrates how the settling to earth of bacteria-laden particles might be mathematically modelled. He then tabulates some objective measurements of "settling velocity", V_g, in different test settings. For ambient dust in a toddlers' play room, for example, this was 5.26 feet per minute, whereas for finely atomised infected water it was a mere 0.03 feet per minute (so it stayed in the air about two and a half hours, assuming it never met an updraft). The real problem is, however, that "the chance that dust fragments bear single organisms is remote" (p554), so there is no simple relationship between the amount of dust breathed in and the effective germ count carried by it [the **<Wells and Riley studies>** continue at 14th November 1946]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1945 [17th and 24th February] **The History of Infectious Diseases [Classics of Epidemiology (The Stuart-Harris Studies, 3I and 3II of 3)]:** [Continued from 31st October 1938] The *British Medical Journal* publishes a two-part paper by Lieutenant-Colonel[RAMC] **[Sir][1970] Charles H. Stuart-Harris** entitled **"Influenza epidemics and the influenza viruses"** [full text online (part I); full text online (part II)], in which the author reports on influenza in the U.K. in the years 1932-1944, including outbreaks in the armed forces. As in WW1 [see 9th May 1921], recruits tended to suffer more than trained men. At Chatham Naval Base, for example, in the January-March 1937 outbreak, the disease affected 12.7% of recruits but only 3.8% of trained men. The author then raises an interesting observation about the so-called "Influenza Y" strain - clinical influenzas which have failed to be confirmed serologically - namely that it could well indicate "another virus, or other viruses, as yet unknown" (p214) might be responsible. In Part II of the paper the author looks in greater detail at the mechanisms of immunity to the influenzas, drawing initially on his laboratory research in viral transmission in animals [<=31st October 1938] , and then extending to his human patients. They begin with the following observation ...

> "All observers are agreed that a majority of cases of influenza are drawn from the population group which has the lowest levels of antibody before infection, **but that individuals with all levels of antibody yield cases**

during an -outbreak. [Detailed discussion] This agrees with the known fact that an individual can have a subclinical attack or -a clinical infection at any pre-existing level of antibody" p252.

Which in turn raises this problem ...

> "Yet the 70-odd % of the population which escapes influenza must include many individuals with low antibody levels, though during the outbreak some - perhaps in widespread epidemics the majority - develop increase in antibodies irrespective of clinical attacks. It is in these individuals that the explanation of antibodies as the chief factor in the resistance to infection breaks down. **To what, in fact, do they owe their immunity?**" (p253).

As we shall be seeing in the age of **COVID-19**, medical science in 2020 is still trying to answer that particular question [**the <Stuart-Harris studies> end here**]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

1945 [1st March] **The History of Infectious Diseases [Classics of Epidemiology (The CoARD Studies, 1 of 2)]:** [**New two-item research thread**] The *Journal of Clinical Investigation* publishes a paper by **John H. Dingle** [Wikipedia biography], director of the **Commission on Acute Respiratory Diseases (CoARD)** at **Fort Bragg**[NC], entitled **"An experimental attempt to transmit primary atypical pneumonia in human volunteers"** [full text online], in which volunteers from a Civilian Public Service camp for conscientious objectors at Gatlinburg[TN] were infected with live "primary atypical pneumonia" (n=12) and compared with a non-infected control group (n=16). The inoculate was prepared from pooled respiratory tract secretions from infected troops at Fort Bragg. Respiratory illness developed in 10 of the 12 infected group, varying considerably both in severity and clinical manifestation. Serological testing indicated that three subjects out of the 12 inoculated mimicked the one-week serological signs seen in approximately 35% of the Fort Bragg cases [the **<CoARD Studies>** continue at 1st May 1945]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES] [EPIDEMIOLOGY AND WAR]**

1945 [1st May] **The History of Infectious Diseases [Classics of Epidemiology (The CoARD Studies, 2 of 2)]:** [Continued from 1st March 1945] The *Bulletin of the New York Academy of Medicine* publishes a follow-up paper by John H. Dingle entitled **"The present status of the etiology of primary atypical pneumonia"** [full text online], which concludes that epidemic influenza may be caused by bacteria and viruses acting "in conjunction", but with the bacterial infection "initiated, if not caused" by the virus [**the <CoARD studies end here**]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1946 [14th November] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 15 of 26)]:** [Continued from 1st December 1943] The *American Journal of Public Health* publishes a paper by **Perkins, *et al.*** under the title **"The present status of the control of airborne infections"** [full text online], in which the authors - one of whom is the aforementioned William F. Wells - review what is known about the spread of disease in the built environment. Their specific interest lies in how best to co-disinfect both buildings and the air circulating within them. They therefore compared different techniques for disinfection and dust suppression in outbreaks in hospitals, schools, and the U.S. Navy's share of the military facility at **Camp Sampson** [Wikipedia briefing], noting as follows ...

> "... **the reduction in the incidence of operative wound infections and of cross-infections in paediatric and communicable disease wards and of measles in certain schools by the use of ultra-violet irradiation suggests that airborne transmission, particularly by droplet nuclei, played an important role under the particular conditions of those experiments. Similarly it is reasonable to conclude that droplet nuclei were of some importance in the transmission of acute respiratory diseases in the naval barracks at Camp Sampson**" (pp18-19).

However, not all diseases and not all research locations gave such clear results, and so the general conclusion is that there is no absolute proof that airborne transmission "is predominant" for any particular disease [the **<Wells and Riley studies>** continue at 1st July 1947]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1947 [1st July] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 16 of 26)]:** [Continued from 14th November 1946] The *Journal of Bacteriology* publishes a paper by William F. Wells entitled **"Apparatus for estimating the size of bacteria-laden airborne particles"** [unavailable online at time of writing - entry to follow] [the **<Wells and Riley studies>** continue at 7th October 1947]**.** **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1947 [7th October] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 17 of 26)]:** [Continued from 1st July 1947] The *American Journal of Public Health* publishes a paper by **William F. Wells** entitled **"Sanitary Ventilation"** [full text online], in which the author "considers the sanitary significance of ventilation", given that airborne transmission of disease is visibly more "dynamic" in any environment than waterborne. He is interested on this occasion with mathematically modelling the spread of measles-infected droplet nuclei in schools, and observes that "the percentage of susceptible pupils who contract the disease [...] increases with the number of susceptible children in the classrooms" (p777), but could be reduced in any event by ultraviolet disinfection of the ventilation [the **<Wells and Riley studies>** continue at 1st May 1950]**.** **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1951 [1st June or hereabouts] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The First Brevig Expedition]:** Three University of Iowa virologists and a University of Alaska anthropologist set off for Alaska's **Seward Peninsular** [Wikipedia briefing and map], in search of the graves of victims of the 1918 pandemic. After a quick recce they select the small Iñupiat settlement of **Brevig Mission** [Wikipedia briefing], which in 1918 had seen the death of 72 out of its 80 inhabitants ...

> **ASIDE - THE BREVIG EXPEDITION:** The expedition consisted of the head of the Iowa Influenza Laboratory **Albert McKee** [Obituary=>1st April 1952] and colleague **Jack Layton** [University of Arizona biography/archive]. They were assisted by postgraduate researcher **Johan V. Hultin** [Wikipedia biography] (UI) and Alaska old-timer **Otto Geist** [Wikipedia biography] (UA).

The team duly obtained tissue samples from four of the deceased, but unfortunately none of those samples could be successfully re-activated back at the UI labs. Hultin and McKee will collaborate on a paper on a different topic the following year [=>1st April 1952], and Hultin will re-enter the literature in the mid-1990s as part of the **<Taubenberger research programme>**, when the **National Institute for Allergy and Infectious Diseases (NIAID)** mounts a second (this time successful) expedition to the site [see 1st February 1999]**.** **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

******* AN INTERESTING POSSIBILITY *******

1952 [1st April] **General Microbiology [Understanding Viruses (The Hultin and McKee Paper]:** *The Journal of Bacteriology* publishes a paper by **Johan V. Hultin** [1st June 1951<=>1st February 1999] and **Albert P. McKee** [1st June 1951<=>Obituary] entitled **"Fixation of 'neutralised' influenza virus by susceptible cells"** [full text online], in which the authors report on animal experiments with cultures of Influenza A virus isolated in a 1943 outbreak. Fresh virus was obtained by injecting seed stock into the allantoic sac of embryonated hens' eggs and incubating them for 48 hours at 37º. The resulting allantoic fluid was then drawn off with a syringe and "inactivated" [see vocabulary below] by heating it to 57º for 80 minutes. Meanwhile an influenza antiserum had been isolated from the blood of deliberately infected lab mice. It was then possible to mix together inactivated human virus and mouse antiserum in controlled amounts to "neutralise" it [see vocabulary below], and to re-culture the mixture in a fresh batch of eggs. The cultures were then sampled every 24 hours to see what, if anything, was growing ...

> **ASIDE - ESSENTIAL VOCABULARY:** Things are about to get complicated. This is what you need to know before proceeding with the main narrative ...
>
> > VIRION: A single intact and functioning virus.
> >
> > LIVE (OR ACTIVE) VIRUS: The organism/germ in its natural, fully infective, form, that is to say, as a hollow molecular structure - a **"capsid"** - made up of surface protein molecules and other complex organic compounds, encasing an RNA payload carrying the genetic codes necessary **to build a copy of itself** in its entirety **given a suitable chemical environment**, which environment it obtains by

parasitically burrowing into the living cells of host organisms. Opinions differ as to whether or not this level of existence makes it a life form or just a tiny smudge of poison.

LYSIS: Lysis [Adj. *lytic*; both from the Greek λύειν "to unbind"] is the process of rupturing the cell wall of a single-celled organism, or one or many of the cell walls of a multi-celled organism, be it plant or animal. The word is seen variously prefixed in English, for example as "catalysis/catalytic", "analysis/analytic", "paralysis/paralytic". Lysis is a common biological attack weapon, because it frees up the cell contents as nutrients for an attacker. The breaking down of blood - "haemolysis/haemolytic" - falls within this category, and is a technique evolved into many venom-based attack systems, not least the viper family of snakes and the brown recluse spider. **Note this word carefully, because lysis is involved at all stages of a COVID-19 infection.**

INACTIVATED VIRUS: Complicated organic molecules are highly fragile, and can be damaged by many things, not least chemicals (disinfectants, soaps, alcohol solvents), heat (pasteurisation), and acidity (pickling), ionising radiation (ultraviolet light, X-ray, particle beam), and cleverly targeted antibody. A heat-inactivated virus is one which is damaged just enough to render it non-active, but not yet to reduce it to toast. The practice became popular when it was discovered that inactivated viruses still had enough surface protein showing to allow the body to form antibodies, and this was, of course, how the vaccine industry was born [see 14th May 1796].

NEUTRALISED VIRUS: A neutralised virus is one which has been sufficiently studded with attached antibodies from the host to have lost its ability either to enter or replicate successfully within a host cell. Some types of antibody destroy the target virus by a lytic process similar to that by which viruses destroy host cells.

OVER-NEUTRALISED VIRUS: A neutralised virus is one where there is deliberately more antibody than strictly necessary. This practice had been explored experimentally by Edinburgh physician **Ram Kumar Goyal** [no convenient biography] in the mid-1930s [check it out].

LATENT OR DORMANT VIRUS: Some viruses lapse into an intact but presently inactive state after an outbreak, and can resurface as an active infection from time to time. The *Herpes* family of viruses are well known in this respect.

REACTIVATED VIRUS: A neutralised or dormant virus which has been returned to its active state, perhaps by deterioration (or detachment) of antibodies. This process has been researched by, for example, **Traylen, *et al* (2012** [full text online]**)**.

Hultin and McKee's results show that an over-neutralisation ratio of at least 4 antibody:1 virus was needed to prevent infectivity. However, even the over-neutralised preparations could be reactivated if additional inactivated virus was added, although - curiously - only if added straight away; if added after 24 hours, say, no reactivation occurred. This, in turn, prompted the following question: **"If the virus is alive after 24 hours, but cannot be reactivated, where is it?"** (p441). The suggested answer is that it has either moved away or else "now exists in a new form that is undetectable by conventional procedures" (p441). Further experiments then looked into the possibility that the virus had adhered to/incorporated itself within the allantoic membrane, and the new results indicated that membrane tissue seemed indeed to have become a medium of transmission into healthy embryos. The authors conclude by "wondering" how long a potentially live virus might "remain fixed to a susceptible cell" (p446) as an infection waiting to happen. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

***** THE QUANTUM OF CONTAGION *****

1955 [3rd September] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 19 of 26)]:** [Continued from 1st May 1950] Now approaching the end of his career, William Firth Wells publishes a monograph entitled **"Airborne Contagion and Air Hygiene: An Ecological Study of Droplet Infections"** [Amazon (rarely in stock); no online archive], in which he introduces the term "*quantum*" [pl. *quanta*] to refer to the smallest number of microbes necessary to infect you with a particular disease, thus ...

"[Wells introduced] the term 'quantum' to represent the minimum dose of *M. Tuberculosis* [Wikipedia briefing] necessary to cause infection in the host. Quantum is the Latin word for amount and, in modern understanding, means the smallest possible discrete unit of any physical property, such as energy or matter, and in this case, unit of contagion. Not knowing for sure how many airborne infectious particles (conceivably containing more than one infectious microorganism), Wells used quantum or quanta (q) to describe whatever that unknown number

was. For example, in the vulnerable guinea pig, good evidence showed that infections could be caused by inhaling, on average, **just one culturable airborne particle**" (Nardell, 2016, p1).

***** ON WHAT MAKES A KILLER BUG *****

Wells - a specialist in designing healthy living spaces - is here addressing one of medical science's most enduring questions, namely what it is about one type of bug which makes it a killer, whilst others remain harmless. We shall be picking up this line of investigation again at the height of the **COVID-19 Pandemic**, but, for readers in a rush, a good next stop is the **Cinti (2005)** paper [scroll down to 24th June 2005] [the **<Wells and Riley studies>** continue at 1st March 1957]**.** **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1957 [1st March] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 20 of 26)]:** [Continued from 3rd September 1955] The journal *American Review of Tuberculosis* publishes a paper by Richard L Riley, William F. Wells, *et al.* entitled **"Air hygiene in tuberculosis: Quantitative studies of influenza and control in a pilot ward"** [full text online (paywalled)], in which the authors continue to argue that air hygiene is a vital arm of any public health initiative [the **<Wells and Riley studies>** continue at 1st September 1959]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1959 [1st September] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 21 of 26)]:** [Continued from 1st March 1957] The *American Journal of Epidemiology* publishes a paper by Richard L Riley, et al. entitled **"Aerial dissemination of pulmonary tuberculosis: A two-year study of contagion in a tuberculosis ward"** [full text online from a 1995 reprint (paywalled)], in which the authors - one of whom is William F. Wells - report on a clever two-year-long on site experiment carried out between November 1956 and November 1958. The essence of the study was that air from a six-bed human tuberculosis ward in the Veterans' Administration Hospital at Baltimore^{MD} was ducted to an otherwise airtight guinea pig room containing 71 guinea pigs initially (but topped up as and when necessary). Sure enough, an average three animals a month developed TB, and presented upon dissection with "single tubercles in the lungs, indicating infection by a single infectious particle" (Riley, 2001), Q.E.D. [the **<Wells and Riley studies>** continue at 1st September 1961]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

******* CORONAVIRUS ISOLATED *******

1970 [1st March] **The History of Infectious Diseases [Airborne Infections (The Parker, *et al.* Paper)]:** The journal *Archiv für die gesamte Virusforschung* publishes a paper by **J. C. Parker, *et al.*** entitled **"Rat coronavirus (RCV): A prevalent, naturally occurring pneumotropic virus of rats"** [full text online], in which the authors report isolating and successfully culturing a RCV from the kidneys of infected rats. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1978 [1st May] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 25 of 26)]:** [Continued from 1st September 1974] The *American Journal of Epidemiology* publishes a paper by **E. C. Riley** [no convenient biography], **G. Murphy** [ditto], and Richard L. Riley entitled **"Airborne spread of measles in a suburban elementary school"** [full text online (paywalled)], in which the authors report on a 1974 measles outbreak in upstate New York. The index case turned out to be one of the pupils, and it was calculated from objective measurements that she was shedding 93 "quanta" of infection [see 3rd September 1955] **per minute** [the **<Wells and Riley studies>** continue at 1st January 2001]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1997 [21st March] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The Taubenberger Research, 1 of 9)]:** [**New eight-item research programme**] The journal *Science* publishes a paper by **Jeffery K. Taubenberger** [Wikipedia biography], **Ann H. Reid** [no convenient biography but much to reward the determined browser], **Amy E. Krafft** [ditto], **Karen E. Bijwaard** [ditto], and **Thomas G. Fanning** [ditto] ...

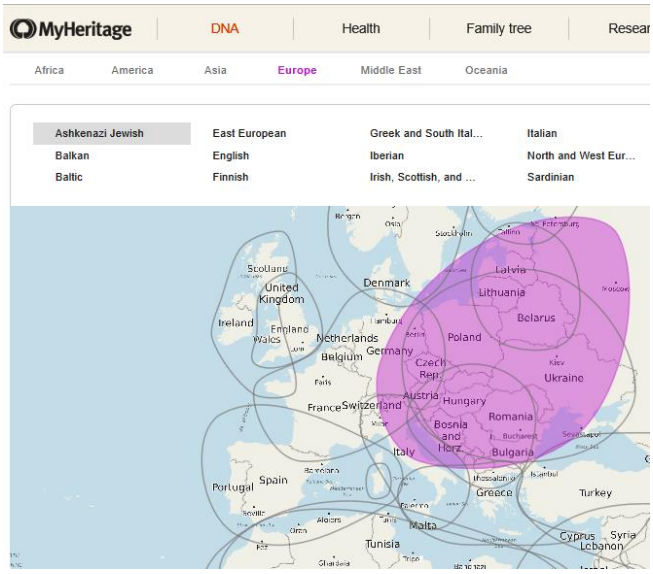
> **EDITORIAL ASIDE:** These five authors, together with others introduced later in the research programme were affiliated to the **Armed Forces Institute of Pathology (AFIP)**, Rockville^{MD} [Wikipedia briefing] until that historic faculty was reorganised 25th September 2011 - see that day's entry for where they all went.

... entitled **"Initial genetic characterisation of the 1918 'Spanish' influenza virus"** [full text online], in which the authors report the successful extraction of fragments of viral RNA from tissue samples taken at autopsy from seven victims of the 1918 pandemic. The victims were selected from their archived casenotes for having alveolitis and bronchopneumonia (n=3), bronchitis alone (n=3), or asymmetric infection (n=1; left lobar pneumonia, right focal alveolitis). The RNA fragments were then cultured up by the **RT-PCR Technique**, and their nucleotide sequence analysed. This allowed comparison with the body of literature from the early 1990s and the preparation of detailed inheritance trees (see the original paper, if interested). The authors conclude that "the 1918 strain was an H1N1 virus distinct from all subsequently characterised strains", and that it possessed a **Haemagglutinin**

(HA) Gene "most closely related to early swine influenza" (p1795) [the **<Taubenberger research programme>** continues at 1st February 1999]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1998 [15th November] **The History of Infectious Diseases [Caffa All Over (The Ethnic Bomb)]:** [Read firstly the entry concerning the **Siege of Caffa**, 1st September 1346] *The Sunday Times* publishes a piece by **Uzi Mahnaimi** and **Marie Colvin** entitled **"Israel planning 'ethnic' bomb as Saddam caves in"** [full text not available but much to reward the determined browser], in which it is suggested that Israel is attempting to build an "ethno-bomb" containing a biological agent specifically engineered to attack Arabian biochemistry ...

> **TECHNICAL ASIDE, 2020:** In the intervening two decades, personalised genetic testing has become an everyday occurrence - just browse <genetic testing> for the competing ads. The different racial profiles thereby accumulated have been plotted on the world map so that you can see at a glance who is where and how they might have got there. Here is a graphic produced [5th May 2020] from the MyHeritage applet. It shows the distribution of Ashkenazy Jewish DNA in modern Europe. The problem is immediately apparent - if Poland, say, ever wished to ethnic bomb the Ukraine, say, then it would lose half its own population ...



> Other DNAs and other continents can be selected to heart's content (the menu options are visible above the map). Check it out at ... https://www.myheritage.com/ethnicities/europe/continent-ethnicity-list

The Sunday Times' idea will be immediately dismissed as a "wholly fantastical" slur, but will nevertheless resurface in 2000 in the **Project for the New American Century**'s blueprint paper **"Rebuilding America's Defenses"** [full text online, p60]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

1999 [1st February] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The Taubenberger Research, 2 of 9)]:** [Continued from 21st March 1997] The journal *Proceedings of the National Academy of Science (U.S.A.)* publishes a paper by Reid, Fanning, **Johan V. Hultin** [<=1st June 1951], and Taubenberger entitled **"Origin and evolution of the 1918 'Spanish' influenza virus hemagglutinin gene"** [full text online], in which the authors report successfully decoding the structure of the **Haemagglutinin (HA) Gene** [Wikipedia briefing] of the HA surface glycoprotein of the presumptive 1918 virus. Working with tissue samples (n = 13) taken at autopsy 80 years previously and stored in the AFIP archives, as well as with an additional 1918 case only recently exhumed from a permafrost burial at **Brevig Mission**, the authors carried out a **RT-PCR Technique** RNA replication for sequence testing, and conclude that "Influenza A and B type viruses contain eight single-stranded RNA gene segments, each encoding at least one protein" [the **<Taubenberger research programme>** continues at 29th December 2001]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2001 [1st January] **The History of Infectious Diseases [Airborne Infections (The Wells and Riley Studies, 26 of 26)]:** [Continued from 1st May 1978] The *American Journal of Respiratory and Critical Care*

Medicine publishes a 50-year memoir by Richard L. Riley entitled **"What nobody needs to know about airborne infection"** [full text online], in which the author re-tells the story of the Baltimore experiments - see 1st September 1959. The paper includes interesting insights into the life of Riley's mentor William F. Wells, and other members of the 1950s research team [**the <Wells and Riley studies> end here**]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2001 [29th December] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The Taubenberger Research, 3 of 9)]:** [Continued from 1st February 1999] The journal *Philosophical Transactions of the Royal Society of London* publishes a paper by Taubenberger, Reid, **Thomas A. Janczewski** [no convenient biography but much to reward the determined browser], and Fanning entitled **"Integrating historical, clinical, and molecular genetic data in order to explain the origin and virulence of the 1918 Spanish influenza virus"** [full text online], in which the authors continue their efforts to decode the genome of the presumptive 1918 virus. The research effort is justified by the observation that **"how and when novel influenza viruses emerge as pandemic strains is still not understood"** (p1829) and in the hope that the better an organism is understood the easier it will be to predict "the magnitude of the public health risk that a new pandemic might pose" (*ibid.*) [the **<Taubenberger research programme>** continues at 4th August 2005]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

******* MAJOR NEW THEORY OF SPANISH FLU *******

2002 [1st February] **The Spanish Influenza Pandemic, 1918-1919 [Retrospective Studies (The Oxford Research, 1 of 2)]:** [**New two-item research thread**] The journal *Lancet Infectious Diseases* publishes a paper by **John S. Oxford** [Wikipedia biography] entitled **"World War 1 may have allowed the emergence of 'Spanish' influenza"** [full text online], in which the author presents his now-well-known ***Étaples Theory* of Spanish Influenza**. In so doing, he provides the following useful summary of outbreaks in England and on the Western Front during WW1 ...

> "**Hammond *et al.*** [see 14th July 1917] described an outbreak of respiratory infection, termed at the time purulent bronchitis, in a huge British army base at Étaples [...]. This camp housed 100 000 soldiers on any one day and over one million soldiers stayed here en route from England to the Western Front between 1916 and 1918. In the 1916 outbreak the soldiers were admitted to the base hospital, suffering from an acute respiratory infection, high temperature, and cough at a time when recognised influenza was present. Undoubtedly, conditions in the camp, with most soldiers housed in tents or temporary wooden barracks, were ideal for spread of a respiratory virus. This outbreak was further characterised clinically by heliotrope cyanosis described extensively in the ensuing 1918 outbreak, and very high mortality. [...] An almost identical epidemic of purulent bronchitis with bronchopneumonia, with cases showing the peculiar dusky heliotrope cyanosis, and mortality rates of 25–50%, was also described in Aldershot barracks in March 1917 [see 1st December 1919]. The authors of that paper concluded that the unique clinical symptoms together with the pathology delineated a new clinical entity. Furthermore, the same medical team, once they had experienced the 1918–1919 outbreak, noted in retrospect the similarities in pathology to the Aldershot epidemic of 1916. The pathologist at Étaples did transmission experiments in 1918 on monkeys and this group was perhaps the first to identify the causative agent of the pandemic as a filter-passing virus" (p112).

The authors characterise a Chinese origin for the pandemic as "unlikely" [the **<Oxford studies>** continue at 4th January 2005]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2005 [4th January] **The Spanish Influenza Pandemic, 1918-1919 [Retrospective Studies (The Oxford Research, 2 of 2)]:** [Continued from 1st February 2002] The journal *Vaccine* publishes a paper by **John S. Oxford, *et al.*** entitled **"A hypothesis: The conjunction of soldiers, gas, pigs, ducks, geese, and horses in Northern France during the Great War provided the conditions for the emergence of the 'Spanish' influenza pandemic of 1918-1919"** [abstract (paywall for full text)], in which the authors continue to promote their ***Étaples Theory* of Spanish Influenza** [**the <Oxford studies> end here**], pointing (as their title suggests) to the intimate association of hundreds of thousands of troops and their victualling animals as ideal breeding grounds for infections of opportunity. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

******* ON PANDEMICS AND VIRAL SHEDDING *******

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2005 [24th June] **The History of Infectious Diseases [Pandemic Precautions (The Cinti Paper)]:** The respected academic journal *Disaster Management and Response* publishes a paper by University of Michigan research physician Professor **Sandro Cinti** entitled **"Pandemic influenza: Are we ready?"** [full text online], in which he argues that because "an influenza pandemic is inevitable [perhaps] imminent", the world's public health systems need to learn the difference between epidemics and pandemics, for "preparations and responses to each differ". He then explains that at the molecular level the main difference is that between **"antigenic drift"** and **"antigenic shift"** in a viral genome. With the former, you get a strain that is "different enough" to require a new vaccine but causes no runaway change to mortality and morbidity. With the latter, on the other hand, you get a strain which is "completely new", and to which "the general population has no immunity", and mortality spikes accordingly, as it did when Influenza A (H1N1) killed 40 million people in the 1918 Spanish Flu Pandemic. Here are the differences in management requirement between epidemic and pandemic ...

> "The traditional public health approach to yearly influenza epidemics has 3 components: (1) vaccination of high-risk populations, (2) chemoprophylaxis of exposed high-risk populations; and (3) treatment of populations at high risk for complications of influenza. However, the public health response to an influenza pandemic is very different. **First, it is unlikely that enough (or any) vaccine will be available quickly enough to prevent significant morbidity and mortality. Second, the population at high risk for complications may expand tremendously. Finally, it is unlikely that an influenza pandemic will be contained among health care workers even if excellent infection control practices are followed.** Therefore, the protection of health care workers will depend more on available antiviral drugs for chemoprophylaxis and treatment than on vaccination. *During a pandemic, vaccine will not be available.* It should be assumed that at the beginning of a pandemic, little or no vaccine would be available. Production of vaccine involves identification of strains, development of reassortment strains that will grow in eggs, collection of eggs, inoculation/incubation of eggs, virus extraction from eggs, potency testing, and clinical trials. Even under the most optimal conditions, and even if virus was grown in cell culture instead of eggs, this process requires 6 to 8 months. A pandemic influenza strain could spread around the world in half that time. It is unlikely that a more rapid vaccine production method (eg, reverse genetics) will be widely available before the next pandemic occurs. *The population at high risk for influenza complications will expand during a pandemic.* During yearly influenza epidemics, the following groups are at increased risk of complications from influenza:
>
> - Persons older than 65 years
> - Nursing home residents
> - Adults and children with chronic pulmonary and cardiovascular disorders
> - Adults and children with diabetes, renal dysfunction, hemoglobinopathies, or immunosuppression
> - Children and adolescents receiving long-term aspirin therapy because of the risk of Reye's Syndrome
> - Pregnant women
>
> In 2000, approximately 73 million people in the United States were at increased risk of complications from influenza. **During a pandemic influenza outbreak, the high-risk population might be 2 to 3 times greater.** During the 1918 influenza pandemic, in addition to the high mortality rates in the very young and the elderly, especially high rates of death occurred among young adults between the ages of 15 and 35 years. This age group includes a large part of the health care workforce and first responders who would be asked to care for sick and dying influenza patients. Without vaccine to offer protection, health care workers would be left to rely on antiviral agents and infection control practices. Infection control practices will not contain an influenza pandemic. Although there is some evidence for aerosol transmission, **influenza generally is spread through respiratory droplets, and droplet precautions are recommended to control spread of the virus in a health care setting.** Unfortunately, health care worker attack rates during outbreaks are as high as 59%. Even with excellent infection control practices, in the absence of vaccine, attack rates of greater than 10% are likely to occur among health care workers. **Viral shedding of influenza occurs 1 to 2 days before symptoms are noted and can continue for 7 days after symptoms begin. Infants and immunocompromised individuals may shed for weeks, which makes transmission of influenza even more difficult to control both in the hospital and the community.** In contrast, the Severe Acute Respiratory Syndrome (SARS) coronavirus shedding peaks at 7 to 10 days after symptoms begin, making this disease more easily contained with current infection control practices."

Note carefully Cinti's concluding remarks concerning when to expect a given contact to be infectious.
[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]

2005 [4th August] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The Taubenberger Research, 4 of 9)]:** [Continued from 29th December 2001] The journal *PLoS* publishes a paper by **Edward C. Holmes** [Wikipedia biography], *et al.* entitled **"Whole-genome analysis of human Influenza A virus reveals multiple persistent lineages and reassortment among recent H3N2 viruses"** [full text online], in which the authors, one of whom is the aforementioned Jeffery K. Taubenberger, report a phylogenetic analysis of 156 clades of H3N2 Influenza A. They found that "multiple reassortment events had occurred", and therefore recommend that similar research be conducted on future mutations of this virus [the **<Taubenberger research programme>** continues at 1st March 2006]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2005 [28th October] **The COVID-19 Pandemic [The Science (The Li and Shi Paper)]:** The prestige journal *Science* publishes a paper by **Li Wendong** [we think this is he], **Shi Zhengli** [check her out], et al. under the title **"Bats are natural reservoirs of SARS-like coronaviruses"** [abstract online], which reports as follows ...

> "Severe acute respiratory syndrome (SARS) emerged in 2002 to 2003 in southern China. The origin of its etiological agent, the SARS coronavirus (SARS-CoV), remains elusive. Here we report that species of bats are a natural host of coronaviruses closely related to those responsible for the SARS outbreak. These viruses, termed SARS-like coronaviruses (SL-CoVs), display greater genetic variation than SARS-CoV isolated from humans or from civets. The human and civet isolates of SARS-CoV nestle phylogenetically within the spectrum of SL-CoVs, indicating that the virus responsible for the SARS outbreak was a member of this coronavirus group."

[THREAD = THE ANATOMY OF A CRISIS]

2006 [1st March or hereabouts] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The Taubenberger Research, 5 of 9)]:** [Continued from 4th August 2005] The journal *Proceedings of the American Philosophical Society* publishes a long paper by Taubenberger entitled **"The origin and virulence of the 1918 'Spanish' influenza virus"** [full text online], in which the author assesses more than one hundred previously published research papers and concludes that there is strong support for the hypotheses that the **1918 Spanish Flu** virus (a) "contains genes derived from avian-like influenza virus", and (b) that it is the ancestor of human and H1N1 swine influenza, with the entry into the human population having taken place "around 1915" [the **<Taubenberger research programme>** continues at 1st February 2007]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2007 [1st February or hereabouts] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The Taubenberger Research, 6 of 9)]:** [Continued from 1st March 2006] The journal *Antiviral Therapy* publishes a paper by Taubenberger, Hultin, and **David M. Morens** [no convenient biography but much to reward the determined browser] entitled **"Discovery and characterisation of the 1918 pandemic influenza virus in historical context"** [full text online], in which the authors review nearly 90 years of increasingly sophisticated research leading, in 2005, to the deciphering of the virus's genome [see 4th August 2005]. The final genome rebuild is described as follows ...

> "Viral sequence data now suggest that the entire 1918 virus was novel to humans in, or shortly before, 1918, and that it was not likely to have been a reassortant virus such as those that caused the 1957 and 1968 pandemics. Rather, the 1918 virus is an avian-influenza-like virus that appears to have been derived in toto from an unknown source because its eight genome segments differ from contemporary avian influenza genes, especially at synonymous sites. Influenza virus gene sequences from a number of fixed specimens of wild birds collected circa 1918 showed little difference from avian viruses isolated today and consequently did not suggest these birds were the source. These findings also suggest that avian viruses undergo little directed evolution in their natural hosts even over long periods" (p9).

The paper concludes with the expressed wish that "revealing the biology of a pandemic that occurred nearly 90 years ago is not just a historical exercise. It may well help us to prepare for, and even prevent, the emergence of new pandemics in the 21st century and beyond" (p9) [the **<Taubenberger research programme>** continues at 5th March 2015]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2008 [30th January] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The White and Pagano Paper)]:** The Journal *PLoS ONE* publishes a paper by **Laura F. White** and **Marcello Pagano** entitled **"Transmissibility of the influenza virus in the 1918 Pandemic"** [full text online], in which the authors revisit epidemiological statistics from two outbreaks aboard troop ships and five in communities across Maryland which happened to have been well documented at the time by the U.S. Public Health Service. They report, for example, that the liner/troop ship **SS/HMAT *Medic*** [Wikipedia shipography] returned an initial **R-value** of 3.42 with a 30-day burn-out. Results for cities were always lower, but the outbreaks there lasted more than twice as long. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2008 [29th February] **The History of Infectious Diseases [Pandemic Precautions (Mass Gathering Events)]:** The medical journal *Emerging Health Threats* publishes **Rashid, *et al.* (2008)** [full text online], a retrospective study of a sample of the ~25,000 U.K. Muslims who attended the 2005 Hajj pilgrimage to Mecca. The authors report significant potential for acquiring viral respiratory infections such as influenza and RSV [=respiratory syncytial virus] at said events, "especially now when an influenza pandemic threatens the world". **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2008 [14th April] **The History of Infectious Diseases [Pandemic Precautions (The Pentagon Prepares)]:** Following a series of recent fact-finding workshops, the U.S. Department of Defense announces that its North American command - **USNORTHCOM** [Wikipedia briefing] - will be taking up a planning role as "global coordinator" for pandemic influenza planning across the U.S. armed forces as a whole [sub-thread continues at 6th January 2017]**. [THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2009 [13th July] **Virological Science [Viral Genomics (The Smith, *et al.* Paper)]:** The journal *Proceedings of the National Academy of Science* publishes a paper by **Smith, *et al.*** entitled **"Dating the emergence of pandemic influenza viruses"** [full text online], in which the authors compare and contrast the 1918 H1N1, 1957 H2N2, and 1968 H3N2 pandemics using the latest techniques of virological genetics. They conclude as follows ...

> "Our results indicate that genetic components of the 1918 H1N1 pandemic virus circulated in mammalian hosts, i.e., swine and humans, as early as 1911 and was not likely to be a recently introduced avian virus. Phylogenetic relationships suggest that the A/**Brevig Mission**/1/1918 virus (BM/1918) was generated by reassortment between mammalian viruses and a previously circulating human strain, either in swine or, possibly, in humans. Furthermore, seasonal and classic swine H1N1 viruses were not derived directly from BM/1918, but their precursors co-circulated during the pandemic. Mean estimates of the time of most recent common ancestor also suggest that the H2N2 and H3N2 pandemic strains may have been generated through reassortment events in unknown mammalian hosts and involved multiple avian viruses preceding pandemic recognition" (p11709).

The paper concludes by suggesting that "appropriate surveillance strategies for detection of precursor viruses" might assist the avoidance of future pandemics. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2010 [1st December] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The Fever Ship *Tahiti*, 2 of 2)]:** [Continued from 26th August 1918] The journal *Emerging Infectious Diseases* publishes a paper by **Summers, *et al.*** entitled **"Mortality risk factors for pandemic influenza on New Zealand Troop Ship, 1918"** [full text online], in which the authors apply cast a modern eye over the outbreak of purulent bronchitis aboard HMNZT *Tahiti* August-September 1918. Here are some of their observation ...

> - the smallest age group (aged 40 or over) had the highest mortality rate
> - no effect of civilian occupation was found
> - amongst the military specialisms aboard, artillerists did significantly worse, possibly because ...
> - occupants of cabins did significantly worse than occupants of hammocked living quarters

The general conclusion is that the *Tahiti* outbreak was made worse by poor ventilation. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2011 [1st April] **The History of Infectious Diseases [Pandemic Precautions (The Traylen, *et al.* Paper)]:** [Read firstly the ASIDES in the entry for **Hultin and McKee**, 1st April 1952] The journal *Future Virology* publishes a paper by **Christopher M. Traylen** [Duke University page]**, *et al.*** entitled **"Virus reactivation: A panoramic view in human infections"** [full text online], in which the authors review the literature pertaining to reactivatable viruses such as *Herpes simplex* and the Adenoviridae, the families of micro-organism responsible for illnesses such as cold sores, genital herpes, chicken pox, and shingles. Although the precise "molecular triggers" of reactivation from dormancy are not known, the authors suspect that the "unifying theme" is stress, as mediated by such cellular metabolites as **MAPK** [Wikipedia briefing] and **Inflammatory Cytokines** [Wikipedia briefing]. They further observe that reactivation often coincides with the infected cell entering its own replication phase. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2011 [27th November] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The Shanks, *et al.* Paper)]:** The journal *Influenza and Other Respiratory Viruses* publishes a paper by **Shanks, *et al.*** entitled **"Relationship between 'purulent bronchitis' in military populations in Europe prior to 1918 and the 1918-1919 influenza pandemic"** [full text online], in which the authors compare and contrast reports of Spanish Influenza in the Australian military archives with those for the Canadian, British, and American Expeditionary Forces. They note, for example, that the Canadian and Australian troops followed a very similar infection pattern. Indeed, their Figure 1 [shortcut; upper graph] demonstrates how, between September 1918 and April 1919, the population-adjusted curves overlay almost perfectly. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2012 [6th April] **The COVID-19 Pandemic [Day by Day (Dust as a Vector)]:** An otherwise arcane research paper by **Spekreijse, *et al.*** entitled **"Quantification of dust-borne transmission of highly pathogenic avian influenza virus between chickens"** [full text online] looks at the possibility of dust-vectored avian flu transmission in industrial poultry, and concludes not only that it takes place between animals, but also represents a potential risk to their human keepers.

2014 [15th July or hereabouts] **The COVID-19 Pandemic [Day by Day (The AMR Working Group)]:** Set up by the **Engineering and Science Research Council (ESRC)** [Wikipedia briefing] under the Chairing of **[Dame][2011] Sally Macintyre** [Wikipedia biography], the **Anti-Microbial Resistance Working Group (AMR)** [no convenient briefing] is noteworthy in the present context (a) as Britain's forum for excellence in the field of veterinary diseases, and (b) **for thereby being vital also when it comes to zoonotic [= spread by animals] diseases in humans**. One of the members of the group is the University of Liverpool's **Ian Donald**, soon to earn his spurs as a government advisor in the **COVID-19 Pandemic**. The group's remit is to look into the effects of "behaviour, practices, and structures" on the effectiveness of "anti-microbials", that is to say, disinfectants, drugs, vaccines, etc. [sub-thread continues at 15th January 2015]. **[THREAD = THE ANATOMY OF A CRISIS]**

******* PANDEMIC RESPONSE PLANNING IN OPERATION *******

2014 [25th October] **The COVID-19 Pandemic [Day by Day (Obama's Crystal Ball)]:** With the **COVID-19 Pandemic** still more than five years away, **President Obama**, having considered technical reports on the Ebola Epidemic, addresses the American people with studied accuracy. The key advice is to work together and to stay ahead of the disease. So soon it would all be forgotten. Watch the full speech here. **[THREAD = THE ANATOMY OF A CRISIS]**

2015 [15th January or hereabouts] **The COVID-19 Pandemic [Day by Day (The AMR Working Group)]:** [Continued from 15th July 2014] Having taken and considered evidence the **Anti-Microbial Resistance Working Group (AMR)** [no convenient briefing] publishes a report entitled **"Behaviour Within and Beyond the Healthcare Setting"** [full text online], in which they identify the following five areas where

human "behaviour, practices, and structures" can potentially hinder the effective use of antimicrobials (AMs) ...

> **(1) Awareness and Engagement:**
>
> **(2) Public Health:**
>
> **(3) Informal Markets and Access to AMs:**
>
> **(4) Stewardship and Use:**
>
> **(5) Research and Development:**

Specific research questions are identified under each heading - see full text for details. One of the 34 (!) contributing authors is the University of Liverpool's **Ian Donald**, soon to earn his spurs as a government advisor in the **COVID-19 Pandemic** [see *Timeline* 13th March 2020]. **[THREAD = THE ANATOMY OF A CRISIS]**

2015 [1st March] **The History of Infectious Diseases [Pandemic Precautions (The Rashid, *et al*. Paper)]:** The journal *Science Direct* publishes **Rashid, *et al*.** (2015 [full text online (paywall applies)]), in which the authors review the evidence relating to social distancing and other measures for slowing the spread of an influenza epidemic. Here are their conclusions ...

> "**School closure, whether proactive or reactive, appears to be moderately effective** and acceptable in reducing the transmission of influenza and in delaying the peak of an epidemic but is associated with very high secondary costs. **Voluntary home isolation and quarantine are also effective** and acceptable measures but there is an increased risk of intra-household transmission from index cases to contacts. Work place-related interventions like **work closure and home working are also modestly effective** and are acceptable, but likely to be economically disruptive. **Internal mobility restriction is effective only if** prohibitively high (50% of travel) restrictions are applied and **mass gatherings occurring within 10 days before the epidemic peak are likely to increase the risk of transmission of influenza**."

All these tactical options will be exercised to some extent or other in the U.K. during the **COVID-19 Pandemic**, sometimes poorly timed, always poorly coordinated, resourced, and enforced, and never in an un-politicised way. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2015 [5th March] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The Taubenberger Research, 7 of 9)]:** [Continued from 1st February 2007] The *American Journal of Pathology* publishes a paper by **John C. Kash** [no convenient biography but much to reward the determined browser] and Taubenberger ...

> **EDITORIAL ASIDE:** Following the 25th September 2011 dissolution of the **Armed Forces Institute of Pathology (AFIP)**, Rockville^{MD} [Wikipedia briefing] we now treat the Taubenberger team as clustered at the **National Institute of Allergy and Infectious Diseases (NIAID)**, Bethesda^{MD}.

...entitled **"The role of viral, host, and secondary bacterial factors in influenza pathogenesis"** [full text online], in which the authors consider the intersecting influence of the three distinct clusters of factors named in the title in enhancing the disease risk from Influenza A. Here are the three clusters, and the essence of their argument ...

> (1) VIRAL ECOBIOLOGY: The "major" reservoir of Influenza A viruses is in wild aquatic birds, but the organism is quite capable of also exploiting "hundreds" of other warm-blooded animal hosts, both avian and mammalian. The risk is therefore that the scope for mutation is correspondingly large.
>
> (2) HOST FACTORS: It is possible for individual differences in a host's inflammatory response to lead to greater likelihood of bronchiolitis and pulmonary haemorrhage (and these are the killer complications, remember) with otherwise similar viral loads.
>
> (3) SECONDARY BACTERIAL FACTORS: The body's ability to manage post-viral bacterial infection has long been recognised to be a function of a number of protective mechanisms in our airways. It seems that these come under sustained attack during the viral stage of the illness, thus opening the way to the sort of secondary bacterial infections responsible for "most of the 50 million worldwide deaths" in the 1918-1919 pandemic [it

was these bacteria, remember, which gave the disease its unmissable "purulence" - Ed.]. Mutations which prevent epithelial cell repair are particularly bad news.

All other things being equal, it is only when all three clusters deteriorate simultaneously that the disease progresses to acute respiratory distress [the **<Taubenberger research programme>** continues at 25th September 2018]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2015 [23rd July] **The COVID-19 Pandemic [Day by Day (Pirbright Research)]:** Britain's centre for research excellence in veterinary medicine the **Pirbright Institute** files for **U.S. Patent 2017/0216427** [no convenient briefing but much to reward the determined browser] in Coronavirus genetic modification technology in the names of **Erica Bickerton** [no convenient biography], **Sarah Keep** [no convenient biography], and **Paul Britton** [no convenient biography]. The research might, according to the patent application, "be used as a vaccine [in animals! - Ed.] for treating and/or preventing a disease, such as infectious bronchitis, in a subject" ...

> **CAMEO - U.S. PATENT 2017/0216427:** It is worth reproducing part of the detail, because the **COVID-19 Pandemic** seems to involve an avian Coronavirus mutated to cross the species barrier to infect humans (and because by March 2020 the race will be on for a vaccine to defend against possible megadeaths). Here is how the patent explains the problem, and (hopefully) part of the solution ...
>
> > "Avian infectious bronchitis virus (IBV), the aetiological agent of infectious bronchitis (IB), is a highly infectious and contagious pathogen of domestic fowl. [...] Clinical signs of IB include sneezing, tracheal rales [=rattling of the lungs], nasal discharge, and wheezing. [...] IBV has been reported to be responsible for more economic loss to the poultry industry than any other infectious disease. Although live attenuated vaccines and inactivated vaccines are universally used in the control of IBV, the protection gained by use of vaccination can be lost either due to vaccine breakdown or [etc. ...] It is important that new and safer vaccines are developed for the control of IBV. Thus there is a need for IBV vaccines which are not associated with these issues, in particular vaccines which may be used for in ovo vaccination. [...] The present inventors have used a reverse genetics approach in order to rationally attenuate IBV. This approach is much more controllable than random attenuation [...] because the position of each mutation is known and its effect on the virus [...] can be derived."

A Pirbright Institute press release clarifying exactly what it does, and why, will appear very early in the crisis, on 24th January 2020 [see separate entry that date]. **[THREAD = THE MAKING OF THE MODERN WORLD] [THREAD = THE ANATOMY OF A CRISIS]**

******* PANDEMIC RESPONSE PLANNING IN OPERATION *******

2016 [18th-19th October] **The COVID-19 Pandemic [Pandemic Precautions (Exercise Cygnus)]:** With the **COVID-19 Pandemic** still more than three years away, Britain's regional healthcare committees conduct a civil defence self-evaluation to assess the NHS's ability to keep a hypothetical outbreak of pandemic influenza under control. Several serious areas of serious concern are flagged up both regionally [see, for example, 25th January 2017] and nationally [where, if anything changed at all, it was for the worse - Ed.]. **[THREAD = THE ANATOMY OF A CRISIS]**

******* PANDEMIC RESPONSE PLANNING IN OPERATION *******

2017 [6th January] **The History of Infectious Diseases [Pandemic Precautions (Branch Plan 3560)]:** [Continued from 14th April 2008] Drawing from recent experiences worldwide with influenza outbreaks, **USNORTHCOM** now unveils **"Branch Plan 3560: Pandemic influenza and infectious disease response"** [not available because operationally sensitive], setting out likely outbreak scenarios and identifying the facilities, staff, and logistics required to respond. Civilian medical facilities are deemed likely to be overwhelmed in all scenarios. The plan will become of interest when lack of preparations becomes a political hot potato at the height of the **COVID-19 Pandemic** [sub-thread continues at 2nd April 2020]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

******* PANDEMIC RESPONSE PLANNING IN OPERATION *******

2017 [25th January] **The COVID-19 Pandemic [Pandemic Precautions (The Powys Report)]:** With the **COVID-19 Pandemic** still more than three years away, **Catherine Woodward**, Director of Public Health for Powys Teaching Health Board (PTHB), a Category 1 responder under the Civil

Contingencies Act, 2004, signs off on a status report entitled **"Powys Pandemic Influenza Update 2016"** [full text online], initiating that trust's response to the experiences gained from its involvement in **Exercise Cygnus** [see 18th October 2016] two months earlier. The justification for the effort is stated therein as follows ...

> "The risk of an influenza pandemic remains one of the highest threats to the resilience of the United Kingdom. [...] PTHB's Pandemic Influenza Framework was approved by Board on the 17th December 2014 [and] outlines the PTHB response in the event of an influenza pandemic. [...] These arrangements are based on three key principles that underpin the planning and response:
>
> **Precautionary** - plan for an initial response that reflects the level of risk, based on information available at the time, accepting the uncertainty that will initially exist about the scale, severity, or level of impact of the virus.
>
> **Proportionality** - plan to be able to scale up and down in response to emerging epidemiological, clinical, and virological characteristics of the virus and its impact at the time.
>
> **Flexibility** - plan for the capacity to adapt to local circumstances that may be different from the overall UK picture - for instance in hotspot areas" (*op. cit.*, pp2-3).

It will emerge at the height of the 2020 pandemic (1) that certain recommendations of this and similar regional feeder committees were in certain important respects deliberately not acted upon at government level as the NHS struggled with ever diminishing state funding prior to its being sold off, and (2) that the Cygnus details would remain a state secret. **[THREAD = THE ANATOMY OF A CRISIS]**

2017 [13th June] **The History of Infectious Diseases [Pandemic Precautions (The Prussin, *et al.* Paper)]:** The journal *Building and Environment* publishes a long and detailed paper by **Aaron J. Prussin, *et al.*** entitled **"Ten questions concerning the aerosolisation and transmission of Legionella in the built environment"** [full text online], in which the authors analyse the literature on the spread of Legionnaires' Disease, identifying the ten questions, of which the following seem likely to apply also to coronavirus transmission. (1) How is the disease transmitted? (2) Are there any climatic, socioeconomic, or regional trends associated with the disease? (3) Is transmission more likely in certain types of built environments? (8) How well does the virus survive in aerosols? And (9) What engineering practices can we implement to reduce disease transmission? **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2017 [7th September] **The History of Infectious Diseases [Pandemic Precautions (The Pyankov, *et al.* Paper)]:** The *Journal of Aerosol Science* publishes a paper by **Oleg V. Pyankov, *et al.*** entitled **"Survival of aerosolised coronavirus in the ambient air"** [full text online], in which the authors experimentally compared the virulence of MERS-CoV/2012 in a hot dry chamber intended to simulate the Saudi Arabian climate, with its virulence in a cooler and more humid chamber intended to simulate an office environment (temperatures of 38° and 25°, respectively, and relative humidity 24% and 79%). At the lower temperature, more than 63% live particles remained airborne an hour after aerosolisation. At the higher temperature, this reduced to only 4.7%. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2018 [10th May] **The COVID-19 Pandemic [Day by Day (Bolton Sacks the Pandemic Team)]:** On this the 556th day >>before<< the **COVID-19 Pandemic**, *The Washington Post* reports that National Security Advisor (NSA) **John Bolton** - having stood too long in the sun - has fired Rear-Admiral **R. Timothy Ziemer** [Wikipedia biography] from his post as President Trump's biodefense preparedness advisor, and is disbanding his team. For the full story we have to wait until **Deirdre Shesgreen**'s 18th March 2020 piece in *The Battlecreek Enquirer* entitled **"'Gross Misjudgement': Experts Say Trump's Decision to Disband Pandemic Team Hindered Coronavirus Response"** [full text online]. **[THREAD = THE ANATOMY OF A CRISIS]**

2018 [22nd May] **The COVID-19 Pandemic [Day by Day (The Shortages Begin)]:** With the **COVID-19 Pandemic** still 18 months away, *The Guardian*'s health correspondent **Denis Campbell** puts out a piece entitled **"Hospitals Struggling to Afford New Equipment After NHS Budget Cuts"** [full text

online], in which he highlights research by Birmingham University exposing the results of the latest round of budget cuts. Amongst the areas to have suffered are scanners and radiotherapy machines obsolete, ambulances constantly breaking down, IT systems no longer fit for purpose, estate maintenance backlogs, and delayed strategic upgrades. In Spring 2020, the impact of by-then-a-decade of government-inflicted deficiencies will be responsible for the U.K. taking pride of place as the worse-performing of Europe's health services, and the unnecessary deaths of dozens of front-line NHS staff. **[THREAD = THE ANATOMY OF A CRISIS]**

2018 [25th September] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The Taubenberger Research, 8 of 9)]:** [Continued from 29th December 2001] The *American Journal of Public Health* publishes a paper by **Morens** and **Taubenberger** entitled **"The Mother of all pandemics is 100 years old (and going strong)!"** [full text online], in which the authors revisit the 1918-1919 mortality statistics and raise some interesting challenges to conventional explanations. Here are some of the points they make ...

> - the July 1918 outbreak "appeared globally almost everywhere at once", but only after a period of "silent seeding at some time in or shortly before 1918"
>
> - "virtually all" deaths were due to secondary Staphyloccal or Streptococcal bacterial infections
>
> -What had previously been interpreted as a beneficial effect from nursing care, rest, and fresh air, might perhaps be more accurately interpreted as the result of removal from military overcrowding
>
> - molecular genetics studies indicate "a wild waterfowl influenza-like genome, reflecting an avian pandemic viral ancestor"

In all, the authors conclude that "we have learned more about influenza from the 1918 pandemic and its aftermath than from influenza occurrences in all previous centuries combined [...] A century after the world's deadliest pandemic, we are still energetically studying it" (p1454). A vaccine agains Staphylococcus aureus would be particularly valuable [the **<Taubenberger research programme>** continues at 10th December 2019]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2018 [10th October] **The COVID-19 Pandemic [Day by Day (Whitty's Crystal Ball)]:** With the **COVID-19 Pandemic** still 13 months away, the U.K.'s Chief Medical Officer, **Chris Whitty**, gives a lecture entitled **"How to Control an Epidemic"** to the staff and students of the City of London's Gresham College ...

> **ASIDE:** Gresham College was founded in 1597 with monies from the estate of court financier **Sir Thomas Gresham** [Wikipedia biography] who had asked that a college be set up in the City, to employ seven professors, who would each speak on their subject once every seven days. Gresham himself remains famous in economic circles for promulgating **Gresham's Law** [see *Timeline* 14th July 1890 (INSET)].

Dr Whitty gave examples, many from first-hand experience, of major recent epidemics, such as HIV (1981 ongoing), Zika (2015), H1N1 (2009), and Ebola (2014-2016). The lecture is now online and is a convenient introduction to the high level medical management of epidemics - YouTube it now. The specific points to watch out for are (a) that the general management principle is to calculate the R-value for the infection at hand, **and act to bring it down using early isolation and social distancing**, (b) that the R-value for Ebola sits in the range 1.5 to 2.5 [COVID-19 will turn out to be a spine-chilling ~5.7 - Ed.], (c) that pandemic flu is "by far the biggest known epidemic risk" because it is airborne transmitted, and (d) that antivirals therefore **need to be stockpiled accordingly in advance**.

2019 [18th January] **The COVID-19 Pandemic [Day by Day (Another Lost E-Mail??)]:** With the **COVID-19 Pandemic** still 10 months away, the **World Health Organisation (WHO)** releases its list of the **"10 Threats to Global Health"** [*New England Journal of Medicine* report]. Third on said list is "threat of global influenza pandemic". As far as we can tell, the Westminster government decided that Britain knew best, and simply ignored it in favour of *Getting Brexit Done*. **[THREAD = THE ANATOMY OF A CRISIS]**

******* AN EXCELLENT SOURCEWORK ON MASS GATHERING MEDICINE *******

2019 [18th May] **The History of Infectious Diseases [Pandemic Precautions (Mass Gathering Research Again)]:** *The Lancet* publishes a paper by **Memish, *et al.*** entitled **"Mass gatherings medicine: public health issues arising from mass gathering religious and sporting events"** [full text online], in which the authors trace the growth of **Mass Gathering Medicine** from 2009 (when that year's Hajj pilgrimage coincided with the H1N1) through to summative conferences on the subject in 2017 (Riyadh) and 2018 (London). The authors note particularly how the threat posed by Zika virus and dengue fever to the 2016 Rio Olympic and Paralympic Games was successfully neutralised by the Brazilian public health authorities. They also note that entertainment events and music concerts have profoundly different problem profiles to religious gatherings ...

> "[These] attract younger individuals of 15-25 years of age. Excessive alcohol consumption and recreational drug use increases the risk of intoxication and injury [...] sexual activity [...] and sexual assault" (p2079).

The authors then explain that there is a long way to go before we have a perfect world in which mass gathering events are planned well in advance and then overseen by properly resourced emergency response systems. "A need remains," they argue, "for more coordinated action by a global coalition of interested partners to share experiences [...] and push for the best health promotion and educational policies" (p2081). **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2019 [1st June] **The History of Infectious Diseases [Pandemic Precautions (Death by Government)]:** *The Guardian* publishes a piece by **Toby Helm** entitled **"Austerity to blame for 130,000 'preventable' U.K. deaths"** [full text online], in which attention is drawn to a public health audit published this day by the **Institute for Public Policy Research (IPPR)** [Wikipedia briefing]. The report is entitled **"Ending the Blame Game"** [full text online], and its core thesis is that "over half of the disease burden in England is deemed preventable", but that improvements have "hit a wall" since 2010. Indeed the report's specific estimate is that **cutbacks in education and "a perfect storm that encourages harmful health behaviours" had caused an estimated 130,000 preventable deaths**. The core allegation is that government had made it a matter of dogma to **"place the burden of responsibility exclusively upon the individual, while turning a blind eye to a social environment which makes healthy lifestyles difficult to achieve"**. The proposed solution is that the government needs not just to reverse the annual funding cut, but find new money to address deficiencies in adult social care. We shall be adding context to these findings in the entry for 1st April 2020. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2019 [11th July] **Weaponised Antisemitism in British Politics [Hostile Propaganda (The Matthews Piece)]:** Having recently left his post as the head of the Labour Party's "Disputes, Governance, and Legal Department", and having yesterday been featured in the BBC's fundamentally flawed *Panorama* piece [it was not a documentary within the usual meaning of the word - Ed.] on antisemitism in the Labour Party [see yesterday's entry], **Sam Matthews** [check him out] puts out a piece in *The Jewish Chronicle* entitled **"'Jeremy Corbyn Has Done More to Inflame Antisemitism Than Any Political Figure Since Second World War'"** [full text online], in which he explains how he came to select that title - read it for the detail. **[THREAD = THE DEATH OF DEMOCRACY] [THREAD = THE BATTLE FOR HEARTS AND MINDS] [THREAD = THE COGNITIVE SCIENCE OF POLITICAL PROPAGANDA]**

2019 [18th October] **The History of Infectious Diseases [Pandemic Precautions ("Event 201")]:** The epidemiological modellers at **Johns Hopkins University**, in partnership with the **World Economic Forum** [Wikipedia briefing] and the **Bill & Melinda Gates Foundation** [Wikipedia briefing], stage a major one-day software modelling exercise in pandemic influenza planning under the flag **"Event 201"** [Johns Hopkins University briefing]. As we have explained in detail elsewhere [see the ASIDES to the entry for 24th March 2020] such models simply allow parameterised "what-if" scenario testing, and at one point in the proceedings someone must have got a simulated death toll of 65 million, because come 24th January 2020, with the **COVID-19 Pandemic** looming on the horizon, JHU will put out a clarificatory statement to the effect that this is not their formal prediction. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2019 [18th-27th October] **The COVID-19 Pandemic [Day by Day (The Military Olympics)]:** On 18th October 2019 the **Military World Games** begin in Wuhan [Wikipedia briefing]. A 172-strong team represents the United States, including Sergeant First Class **Maatje Benassi**, "an armed diplomatic driver and cyclist", later to be suggested as a possible American Patient Zero in the **COVID-19 Pandemic** [see entry 26th March 2020]. **[THREAD = THE ANATOMY OF A CRISIS]**

******* SELLING THE CARE HOME LIFEBOATS *******

2019 [7th November] **The COVID-19 Pandemic [Day by Day (Looting the Care System)]:** *The Guardian* puts out a piece by **Denis Campbell** entitled **"Care home operators accused of extracting 'disguised' profits"** [full text online], in which the author publicises a lobby group estimate that one tenth of the £15 billion annual funding to the care home sector is siphoned out of the system in the form of rents and loan repayments thanks to clever accounting. Private companies, we are informed, "own 94% of the U.K.'s total stock of 464,900 beds [...]. There are rich pickings for the shadowy businesses operating U.K. care homes from tropical tax havens". Little wonder, therefore, that the system will be exposed as little better than the workhouses of old once the **COVID-19 Pandemic** bares its teeth - see the entries 1st April and 19th May 2020 for a casualty report. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

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2019 [17th November] **The COVID-19 Pandemic [Day by Day (Wuhan Patient Zero)]:** On this the **1st** day of the **COVID-19 Pandemic**, a worker in a Wuhan wet market contracts COVID-19 from a person or animal unknown. **[THREAD = THE ANATOMY OF A CRISIS]**

******* GAIN OF FUNCTION VIROLOGY *******

2019 [10th December] **The Spanish Flu Pandemic, 1918-1919 [Retrospective Studies (The Taubenberger Research, 9 of 9)]:** [Continued from 25th September 2018] The journal *American Society for Microbiology* publishes a paper by Taubenberger entitled **"Influenza's newest trick"** [full text online], in which the author reports successfully introducing a protease sequence into an A/H7N6/duck virus, thereby artificially enhancing not just its effects in experimental hosts but also its ability to replicate outside an animal host. Taubenberger describes this as demonstrating "the extraordinary evolutionary flexibility of influenza A viruses" (p1) [other judgements are available - Ed.]. The journal does not record the precise manuscript submission date, but it cannot have been long thereafter that early reports of the **COVID-19 Pandemic** outbreak reached Taubenberger's lab, and the coronavirus, as we shall now be seeing, has a few tricks of its own up its sleeve [**this is the last in the <Taubenberger research programme>**]. **[THREAD = THE SHAPING OF THE MODERN WORLD] [THREAD = MAN AGAINST MICROBES]**

2020 [Friday 3rd January] **The COVID-19 Pandemic [Day by Day (First Case Outside Wuhan)]:** On this the 48th day of the **COVID-19 Pandemic**, health authorities in **Shenzhen** [map] announce that city's first confirmed COVID-19 case, the first outside Wuhan. **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Friday 17th January] **The COVID-19 Pandemic [Day by Day (The Fever Ship *Diamond Princess*, 1 of 3)]:** On 17th January 2020, "Mr. A.", an 80-year-old Hong Kong resident, takes a flight to Tokyo, holding a ticket to board the *Diamond Princess* [Wikipedia shipography] cruise ship three days later at Yokohama. However, it seems he is incubating a COVID-19 infection picked up the previous week during a visit across the SAC/PRC border into Shenzhen [map], and by the time he disembarks back in Hong Kong 25th January, he has passed the disease on to fellow passengers. He will be positively diagnosed 1st February, by which time the ship will be nearly back to Yokohama [item continues at 3rd February 2020]. **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Friday 24th January] **The COVID-19 Pandemic [Day by Day (The Pirbright Statement)]:** On this the 69th day of the **COVID-19 Pandemic**, the **Pirbright Institute** [see 23rd July 2015] puts out a clarificatory

press release [full text online (link below)] concerning its research into coronavirus vaccines (emphasis ours) ...

> "The Pirbright Institute carries out research on infectious bronchitis virus (IBV), a coronavirus that infects poultry, and porcine deltacoronavirus that infects pigs. Pirbright does **not** currently work with human coronaviruses. More information on our coronavirus livestock research can be found on our website. The Institute holds Patent no. 10130701 which covers the development of an attenuated (weakened) form of the coronavirus that could potentially be used as a vaccine to prevent respiratory diseases in birds and other animals. Many vaccines are made in this way, from flu to polio. **We have not yet developed an IBV vaccine, but research is ongoing.** The Institute is strategically funded by the Biotechnology and Biological Sciences Research Council, part of UK Research and Innovation (BBSRC UKRI) and also receives funding from many other organisations including the **Bill & Melinda Gates Foundation**. The patented work was not funded by the Bill & Melinda Gates Foundation. More information on The Livestock Antibody Hub which is funded by the Bill & Melinda Gates Foundation is available on our website. The coronavirus first identified in Wuhan, China, earlier this year is a new coronavirus, the seventh coronavirus identified that is able to infect humans. Six other coronaviruses are capable of infecting humans and these can cause diseases which range from mild to severe, and include the common cold, severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS). The exact origin of the new virus is unknown but initial confirmation shared by China and the **World Health Organization (WHO)** indicates that this new virus is genetically similar to a SARS-like coronavirus found in bats. The source of the outbreak has yet to be confirmed and investigations are ongoing."

Click here to see the full document. **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Tuesday 11th February] **The COVID-19 Pandemic [Day by Day (Boris Ignores Advice)]:** On this the 87th day of the **COVID-19 Pandemic**, the Westminster government's COBRA committee hears medical advice that Britain's public houses should be closed at the earliest opportunity. Hospitality tycoons such as **Tim Martin** [Wikipedia biography] lead the chorus of self-interested *leave it ahts*, and in the event it will a further five weeks before this advice is acted upon. **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Friday 21st February] **The COVID-19 Pandemic [Day by Day (The Liu, *et al.* Paper)]:** *The Journal of Medical Virology* publishes a paper by **Liu, et al (2020)** [full text online] comparing and contrasting the characteristics of COVID-19 and the two earlier pathogens, SARS-CoV and MERS-CoV. The authors note as follows ...

> "The available pathology data for SARS-CoV infections were mainly obtained from autopsies. The predominant visceral macroscopic changes in fatal SARS-CoV cases have been oedematous lungs with increased gross weights and multiple areas of congestion, enlargement of lymph nodes in the pulmonary hila [Internet briefing] and the abdominal cavity, as well as a diminished spleen size and reduced spleen weights. Morphological changes were bronchial epithelial denudation, loss of cilia, and squamous metaplasia [=tissue surface degeneration akin to scarring]. [...] The genome of 2019-nCov was sequenced very early during the outbreak. This enabled rapid development of point-of-care real-time reverse transcription-polymerase chain reaction diagnostic tests [Wikipedia briefing] specific for 2019-nCoV. The genetic sequence analysis revealed that the 2019-nCoV belongs to the β-coronavirus genus, with a 79.0% nucleotide identity to SARS-CoV and 51.8% identity to MERS-CoV. **Furthermore, it has been reported that nCoV-2019 is 96% identical across the entire genome to a bat coronavirus.** Inoculation of the 2019-nCoV onto surface layers of human airway epithelial cells in vitro causes cytopathic effects and cessation of the cilium beating of the cells. The 2019-nCoV infection was of clustering onset that is more likely to affect older males with comorbidities and can result in severe and even fatal respiratory diseases. The major clinical symptoms resulting from 2019-nCoV infection at the prodromal [=still developing, pre-acute] phase include fever, dry cough, myalgia, fatigue, and diarrhoea. Many patients also developed dyspnoea [=difficulty breathing] and lymphopenia [=loss of white blood cells]. Complications of 2019-nCoV infections included acute respiratory distress syndrome, RNAaemia [=viral catabolytes detectable in blood samples], acute cardiac injury, and secondary (super-)infections. All reported cases, including asymptomatic patients, had abnormal findings concerning the chest computed tomography (CT) as indicated by bilateral ground-glass opacity [=difficult to see through, like bathroom windows]."

[THREAD = THE ANATOMY OF A CRISIS]

2020 [Sunday 23rd February] **The Weaponisation of Diseases [COVID-19 (The *Asahi* Piece)]:** [To understand why the Chinese are so jumpy about CBW, read firstly the entry for Unit 731.] On this the 99th day of the **COVID-19 Pandemic**,

the Japanese *Asahi Media* puts out a piece suggesting in detail how the Wuhan outbreak was secondary to an earlier outbreak in the United States ...

> **CAMEO - U.S. SEASONAL FLU, 2019:** The U.S. **Centers for Disease Control and Prevention (CDC)** dates their seasonal flu epidemic from 29th September 2019 - see the data curves. The *Asahi* piece quite reasonably points out that said infection could well have been lurking amongst the 172-strong U.S. contingent at the **Military World Games** in Wuhan the following month [Wikipedia briefing; see also 18th October 2019].

The *Asahi* coverage draws no conclusions as to (1) whether the virus was laboratory-developed or a spontaneously emerging natural mutation, or (2) whether the U.S. troops in question [if, indeed, it was they - Ed.] transmitted it deliberately or accidentally. **[THREAD = THE ANATOMY OF A CRISIS] [THREAD = 21ST CENTURY BLACK OPS/FALSE FLAGS] [THREAD = BIOLOGICAL WARFARE]**

2020 [Tuesday 25th February] **The COVID-19 Pandemic [Day by Day (First Man Down)]:** On this the 101st day of the **COVID-19 Pandemic**, the Pentagon confirms the first case in the U.S. armed forces, namely a 23-year-old soldier stationed in South Korea. **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Thursday 27th February] **The COVID-19 Pandemic [Day by Day (The Taiwan TV Piece)]:** On this the 103rd day of the **COVID-19 Pandemic**, a Taiwanese TV piece [online here, unable personally to verify narrative because don't speak Chinese - Ed.] presents epidemiological evidence suggesting that the Wuhan virus had originated in the United States, thus ...

> "The man in the video is a top virologist and pharmacologist who performed a long and detailed search for the source of the virus. [..] One of his main points is that the type infecting Taiwan exists only in Australia and the US and, since Taiwan was not infected by Australians, the infection in Taiwan could have come only from the US. The basic logic is that the **geographical location with the greatest diversity of virus strains must be the original source** because a single strain cannot emerge from nothing. He demonstrated that only the US has all the five known strains of the virus (while Wuhan and most of China have only one, as do Taiwan and South Korea, Thailand and Vietnam, Singapore, and England, Belgium and Germany), constituting a thesis that the haplotypes in other nations may have originated in the US. [...] Neither Iran nor Italy were included in the above tests, but both countries have now deciphered the locally prevalent genome and have declared them of different varieties from those in China, which means they did not originate in China but were of necessity introduced from another source. It is worth noting that the variety in Italy has approximately the same fatality rate as that of China, three times as great as other nations, while the haplotype in Iran appears to be the deadliest with a fatality rate of between 10% and 25%. [...] Due to the enormous amount of Western media coverage focused on China, much of the world believes the coronavirus spread to all other nations from China, but this now appears to have been proven wrong" (Romanoff, 4th March 2020 [full text online]).

Unfortunately, modern scientists are government funded, and so the truth may be a long time emerging, if, indeed, it ever will. **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Saturday 29th February] **The COVID-19 Pandemic [Day by Day (First U.S. Death)]:** On this the 105th day of the **COVID-19 Pandemic**, the United States confirms the first civilian COVID-19 death. In the U.K. one epidemiologically aware commentator notes wearily that a million people will have jostled against each other by the end of the day at the nation's football fixtures. **[THREAD = THE ANATOMY OF A CRISIS]**

CLICK HERE FOR THE MARCH 2020 ENTRIES

2020 [Wednesday 1st April] **The COVID-19 Pandemic [Day by Day (Britain's New Workhouses)]:** The contrived verbal assault against China is led this morning by senior conservative **Damien Green**, who is calling for a new Cold War against Beijing. We also begin to see *Good Morning Britain*'s anchorman **Piers Morgan** as the only MSM celebrity willing to ask pointed questions of politicians. His target on this occasion is Secretary of State for Housing, Communities, and Local Government **Robert Jenrick** [check him out], for having made an allegedly unnecessary journey, against the advice of his own government. The popular judgement is that Morgan "skewered" him. Of greater moment,

however, is emerging concern about the state of the nation's care homes, where reports are coming in that more and more have gone into self-isolation with the disease ...

***** FROM WORKHOUSES TO ... UM ... WORKHOUSES AGAIN *****

FOR FOREIGN READERS - CARE HOMES AND SOCIAL CARE IN BRITAIN, A DISASTER WAITING TO HAPPEN: To give fair warning, this is a massive subject area, most of which will keep until after we have got through the present emergency. Here is just enough to explain how care homes became little short of death rows in one of the richest countries on the planet, killing hundreds of staff and tens of thousands of vulnerable residents.

(1) THE 1834 NEW POOR LAW: The story began in the late 1810s/early 1820s, when the economies of Europe suddenly lost the stimulus of constant war. As a result, poverty, and especially urban poverty, brought about levels of deprivation far beyond the coping ability of parochial charities. The first great new law was the **1834 New Poor Law** [Wikipedia briefing], which introduced the Parish Union Workhouse as the focal point for ministering to those "incapable, elderly, and sick" who had no other means of support ...

> **CAMEO - THE UNION WORKHOUSE, 1834-1930:** Most of us probably know more than we realise about workhouses, thanks to the Lionel Bart stage musical "Oliver!" ...
>
> YouTube reminder
>
> The singing was - needless to say - a 20th Century sanitisation of some pretty harsh 19th Century realities. For a more academic account see Picard (2009 [full text online]).

(2) THE 1929 LOCAL GOVERNMENT ACT: Under the terms of this legislation [Wikipedia briefing], local authorities recycled the old workhouse stock as "Public Assistance Institutions".

(3) THE 1948 NATIONAL ASSISTANCE ACT: Under the terms of this legislation [Wikipedia briefing], the remaining workhouses were handed over to local authorities, who turned the larger ones into new hospitals to service the newly-formed NHS, and the smaller ones into "old folk's homes" and "social housing" ...

> *EXAMPLE #1 - St. ANDREW'S HOSPITAL, BOW:* Here is a nostalgic memoir of one of the London East End's larger workhouses-turned-hospitals. Originally built 1868 as the Poplar and Stepney Sick Asylum - check it out, then a workhouse until 1921, then a public assistance institution, then a hospital 1948-1974.
>
> *EXAMPLE #2 - BANCROFT ROAD HOSPITAL, MILE END:* Here is another East End ex-workhouse - check it out. The present author worked as Lab. Assistant in this hospital's Pathology Department Jan-Sept 1966.

(4) CREATING EQUITY: Little then happened in the social care system for 60 years, even though Britain underwent a series of economic and social revolutions. We had the "affluent society" of the 1950s followed by the Swinging Sixties and the rise of Consumerism. The common factor in all this was house-price inflation. If you owned your house it went up very markedly during your lifetime, thereby creating instant equity upon your passing. If you did not own your own house, you at least had a diligent and non-profit-making parochial landlord in the form of your local council. Perversely, the councils were then encouraged to divest themselves of their housing stock under "Right to Buy" schemes during the Thatcher era (1979-1990), thereby creating even more private owners sitting on equity. This national resource was then systematically plundered during the descent into the debt-laden Neoliberalism of **Tony Blair**'s New Labour years, during which real money was taken offshore into the hands of syndicates and billionaires, and replaced instead by **CDO**'s [Wikipedia briefing]. All of which led, wholly predictably, to the **2008 Crash**, the **2009 Great Bailout**, and the ensuing "back to the workhouse" **Decade of Austerity** 2010-2020.

> **CAMEO - THE PRIVATISATION OF THE CARE INDUSTRY:** A public health audit carried out in mid-2019 by the **Institute for Public Policy Research (IPPR)** [Wikipedia briefing] estimated that government cutbacks in education, together with "a perfect storm that encourages harmful health behaviours" had caused an estimated 130,000 preventable deaths [full details in the entry for 1st June 2019]. More recently, teachers have been reporting on a daily basis "Dickensian" levels of poverty in the children they are trying to educate (NEA), and a United Nations rapporteur has described Britain's social support system as "doing little for those who are hard at work" and as being (perhaps irreparably) "stretched" (*The Guardian*). **Which brings us to the point of this long inset, which is that caring is big business.** Successive Neoliberal administrations 1997-2010 therefore saw the sector hived off as a cash cow to any buyer(s) rich enough to buy up well-situated but unwanted property in the countryside and turn it into tax-payer subsidised care accommodation.

(5) THE 2014 CARE ACT AND THE 2014 CHILDREN AND FAMILIES ACT: Under the terms of these two interlinked pieces of legislation [Wikipedia briefing/Parliamentary briefing], arguably the most significant since

the Great Poor Law of 1834, local authorities were given responsibility for the full panoply of social care, including care homes [U.S.="senior living"], nursing homes [U.S.="assisted living"], and "vulnerable" adults cared for in the community at large. The budget, however, was capped in any one year, and reduced in real terms year-on-year. The system was even given its very own quango, the **Care Quality Commission (CQC)** [Wikipedia briefing], to flag up the sites most struggling.

> **CAMEO - AUSTERITY AND THE 21ST CENTURY WORKHOUSE:** The 2014 legislation brought the care home money-go-round to a sudden halt because there was less cash swilling about the system. Homes were closed, went broke, or simply started to cut corners. Staff were de-professionalised by being put on zero hours contracts and minimum wage (not de-skilled, note, but denied all the benefits of a secure long-term employment contract, such as paid sick leave). And where skills were in short supply there arose an agency staff system to move the people who were available around more than one site. **Which was all well and good until those varmint microbes started to seek out the weaknesses in the system.**

As the **COVID-19 Pandemic** took hold during March 2020, care home staff who had no paid sick leave continued to go to work even when feeling a little under the weather, and agency staff doing their daily circuit took infection with them wherever they went. **The government then stepped in, thoughtlessly directing the general hospitals to free up intensive care beds by transferring unconfirmed patients out into spare care home capacity.** Many medics shook their heads in disbelief but - for want of hard evidence - had little option but to comply. It would be another seven weeks before the truth started to emerge ...

> **CAMEO - SEVEN WEEKS LATER, 16TH-19TH MAY 2020:** On 16th May 2020 three exceptionally worrying reports hit the social media more or less simultaneously. The first came from the *Huffington Post* to the effect that the NHS's in-house labs had been told not to take part in testing because the workload was being switched across to private labs, who - having been thrown together on the hoof - then proceeded to collapse under the strain. The second came from ITV's **Paul Brand**, reporting a home which had been asked to take a patient with casenotes to follow, and who 10 days later proved to have tested positive all along; by which time three other residents had died or were dying as a result. The third came from the CQC itself, who, having chanced to audit the **Wells Nursing Home**, Henton, Somerset [Homepage] in late February/early March, had just published a report rating the site as "inadequate" overall. The Twittersphere promptly erupted with reports of others in the same boat. Two days later, a primary care physician who covered care homes in his practice reported: **"The care homes I look after DID have Covid-positive residents discharged from hospitals. The staff DID NOT have adequate PPE. Other residents caught Covid and DIED in HIGHER NUMBERS as a result"**. Meanwhile, *The Guardian*'s front page story called a downright lie to government claims to have "thrown a protective ring round care homes", pointing, amongst other things, to the fact that agency staff had only been stopped from moving from site to site on 14th May. On 19th May, *Sky News* reported that care homes had begun reporting their imminent collapse to their controlling local authorities. In Westminster, the **Health and Care Select Committee** had been holding a drains-up inquiry of its own, taking evidence, for example, from Hong Kong University's Professor **Terry Lum** of the sort of provisions built into care homes in the SAR which had led to ZERO deaths therein. **The professor was too polite to mention the word, but FUNDING is quite clearly the difference between the systems there and here.** Finally, in their second piece in 24 hours, *The Guardian* covered the Select Committee session, adding expert testimony from a number of additional sources as to glaringly obvious flaws in the U.K.'s care system. And so it will happen that by late on 19th May the U.K. will be at war with its own government, for having - not unlike the workhouse governors of old - watered the gruel just once too often.

Whatever else happens today may safely be ignored. **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Thursday 2nd April **The COVID-19 Pandemic [Day by Day (Masking and Other Issues)]:** The day opens with a discussion of a *CNN* piece questioning the utility of masking up ...

> **ASIDE - THE MASKING ISSUE:** At time of writing [=20th April 2020], there is neither media nor scientific consensus as to the role of masks in personal protection. Such public health advice as has been given focuses (in the U.K. at least) on minimising transmission of the infection by salivary or mucosal aerosol when coughing or sneezing. Flimsy disposable masks will do little to prevent this, and in any event will not be sterilised prior to disposal, thus creating a secondary hazard. We should also protect ourselves against dust and dander from public transport upholstery, or yesterday's jogging kit, or an overused handkerchief, or a worn-once-too-often undershirt, or - frankly - other people in general. The ideal equipment would be a filtered mask or a fresh or recently sanitised home-made, multi-layered, cloth face scarf - see specimen official advice video here ...

> Other design schemes are available, but whichever you choose the point is that you need several off, because you have to work on the assumption that by doing their job they will become infected, and require laundering/disinfection before re-use.
>
> The design and use of masks will, we suspect, be increasingly headlined over the coming weeks and we shall be reporting developments as they occur.

The Twittersphere then turns to the U.K. government's poor handling of the crisis to date. Hard-pressed leftists somewhat predictably point out that it was the Tory press barons who had inflicted that government upon us, so what did everyone really expect? One exasperated poster ruefully summed it up as follows: "So the Tories ruined the economy, ruined our services, ruined out health service, ruined our international reputation, ruined our EU membership, ruined our BBC, ruined our police, and now they're killing us!" On the international stage we hear again of **USNORTHCOM** [see 14th April 2008 and 6th January 2017] in a most informative piece by **Stephen Lendman** in *Global Research* entitled **"U.S. Knew of a Novel Coronavirus threat, Failed to Prepare"** [full text online **RECOMMENDED**]. The thrust of Lendman's argument is that despite detailed contingency planning in 2017 the Pentagon "slept instead", thus ...

> **CAMEO - USNORTHCOM BRANCH PLAN 3560:** There is an entry introducing this plan at 6th January 2017. This latest piece is merely an accusation that little practical preparation was done toward meeting the recommendations therein. As a result, "**we are going from press conference to press conference and crisis to crisis**" (Lendman is here quoting very highly respected epidemiologist **Michael Osterholm** [check him out]). A separate piece in *The Nation* by **Ken Klippenstein** entitled **"The military knew years ago that a coronavirus was coming"** [full text online] tells much the same story.

Reports are also coming in of a cluster of cases in County Kerry, Ireland, consistent with their having been infected at the should-have-been-cancelled **Cheltenham Race Festival** [see 10th March]. Infected celebrities are named. Similar mistakes must have been made in the United States because the MSM have suddenly been switched into full *Blame China* diversionary mode - see Washington Post example. The day closes with the news that the Arcadia Group, once a stalwart of the new model British high street, has gone to the government with its begging bowl, seeking a handout at the expense of tomorrow's taxpayers (*The Guardian*). **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Friday 3rd April **The COVID-19 Pandemic [Day by Day (Let Us Spray - Not!)]:** We begin our watch before 0600hr with a piece by **Nafeez Ahmed** for *Byline Times* entitled **"Conservative Party Donor Cashes in on Government-made PPE Shortages"** [full text online], in which it is pointed out that the executive chairman of **Clipper Logistics** [no convenient briefing but much to reward the determined browser] - recently contracted by the Department of Health and Social Care (DHSC) to manage the NHS's COVID-19 supply chain - has donated some three-quarters of a £million to the Conservative Party. In much the same vein, *The Guardian* then turns its eyes to the United States by putting out a piece by **Lloyd Green** entitled **"Jared Kushner's Coronavirus Overreach Puts More American Lives on the Line"** [full text online], in which the performance of President Trump's son-in-law and by presidential decree PPE-Tsar **Jared Kushner** [check him out] is criticised, thus: "The princeling has helped place American lives and bodies on the line. New York's hospitals have become combat zones, its morgues and funeral homes look like abattoirs". *The Guardian* also puts out a piece by intensive care doctor **Jessica Potter** entitled **"There are still NHS staff without proper PPE - their lives are at risk"** [full text online], which complains that **Public Health England (PHE)** has yet to accept the WHO recommendation of long-sleeved protective gowns for close contact with known or suspected COVID-19 cases, rather than the smaller plastic aprons. In other parts of the system, "GPs are going out to DIY stores to buy their own masks and goggles, cleaners are being told they do not need masks despite working in high-profile areas, and nurses are being bullied by managers for raising concerns". We also hear that the captain of the **USS *Theodore Roosevelt*** [Wikipedia shipography], **Brett Crozier** [Wikipedia biography] has been relieved of his duties [we return to this story tomorrow - Ed.]. Meanwhile a sharp-eyed Tweeter points out that the present U.K. **Case Fatality Rate (CFR)** is 9.44%, but that if - as one school of thought has it - this ignores a further 1100% of unreported cases then it would bring said CFR down to 0.79%, which is in the same ballpark as the 0.7 to 1.0 observed in the closed population natural

experiment aboard the fever ship ***Diamond Princess*** [see 4th February]. The day closes with the assertion that the decision to allow the **Cheltenham Race Festival** to go ahead [see 10th-13th March 2020] had been taken as an old boys' network favour to the gambling industry, more big time donors to the Tories. The medical cost of the favour will emerge later in the month [see 24th April]. And hidden amongst all the big stories was a quick mention on *CNN* mid-morning that **the virus could be spread by merely talking**. Curious though this might sound, *CNN* were right on the money, and we shall be hearing a lot more about mucosal aerosols as a mechanical disease vector in the coming days - click here for some of the research. **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Sunday 5th April] **The COVID-19 Pandemic [Day by Day (A Quiet Day)]:** The day opens on a dark note, with lots of discussion criticising general practitioners for forcing (in the public perception, at least) **Do Not Resuscitate (DNR)** forms onto vulnerable people absent any immediate need ...

> **CAMEO - DO NOT RESUSCITATE ORDERS:** For a sensitive introduction to this inevitably painful subject, see the Compassion in Dying website.

Around mid-morning, there comes a fleeting mention of one **Charles M. Lieber** [Wikipedia biography], Head of Chemistry at Harvard University, who was arrested 28th January 2020 and held for 48 hours on charges of making false statements to the federal authorities concerning his academic collaboration with the Chinese **Thousand Talents Program** [Wikipedia briefing] (a beauty show for international brains), and specifically - back in 2012 - with **Wuhan University of Technology**. Lieber's academic specialism is nanotechnology, and he had been collaborating on developing "nanowires", such as might be used in small Lithium ion batteries. The U.S. government was, however, suspicious of Chinese motives, seeing the entire program as an attempt to acquire taxpayer-funded American technology on the cheap. The arrest only came to public notice 4th February 2020 in a piece by **Robert Service** in *Science Mag* entitled **"Why did a Chinese university hire Charles Lieber to do battery research?"** [full text online]. The only other highlights on the day are the resurfacing of some very helpful notes on viruses from one **Peter Kolchinsky** [Twitter-Id **MUCH FOOD FOR THOUGHT**], and the Queen's Broadcast. This latter turned out to be as embarrassing as many had feared, even to the point of her ending with an appeal to the Vera Lynn spirit worthy of a six-year-old - YouTube it here and judge for yourself. **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Monday 6th April] **The COVID-19 Pandemic [Day by Day (Care Homes and Testing)]:** The day begins with a flurry of grumblings that the BBC had descended into "full Queen mode" sycophancy following Her Majesty's broadcast yesterday. Then came news of the hospitalisation of **Premier Johnson**, complete with much attendant speculation, not all of it charitable. It was therefore welcome light relief to learn that **Sir Keir Starmer**, only two days in post as Leader of the Labour Party, might be popular in Iran by virtue of the fact that their word *sirkeer* (phonetic) would translate into English as "bell-end" [Wikipedia explanation (should one be necessary)]. For their part, *The Times of Israel* has welcomed him aboard with a piece headlined **"Keir Starmer, Zionist with Jewish Wife"**, a phrasing which no left wing newspaper would have been allowed to get away with without accusation of antisemitic motive. Meanwhile, in the United States, *Fox News* is assembling a legal team to resist a threatened class action for negligently promoting substandard anti-pandemic practices a month earlier. On the disease front itself, there are complaints that the British public is EITHER not sure what is expected of them during lockdown OR - more worryingly - that they are deliberately ignoring the official advice, Examples of unhelpful media "mixed messaging" are given. Equally concerning is the situation in Britain's care homes, following numerous individual reports of untested staff and residents. Few Tweeters are surprised given that the NHS's testing regime has just been ranked 49th in the world. **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Tuesday 7th April] **The COVID-19 Pandemic [Day by Day (A Busy Day)]:** The sun rises on the Twittersphere this day with a timely reminder that it is now a full two years since the House of Lords debated **Lords' Amendment 227** in an attempt to rationalize joint pandemic response measures with the EU after Brexit ...

CAMEO - LORDS' AMENDMENT 227: On 19th March 2018, the House of Lords debated an amendment to the European Union (Withdrawal) Bill, to clarify the relationship between the U.K. and the rest of Europe after Brexit. This was a desperately complicated piece of legislation, subject to hundreds of amendments. The thrust of #227 was that a "proper role" should be specified for "local authorities in the planning and decision-making processes [...] for all matters which concern them". The amendment was moved by **Lord Shipley**, and it soon emerged that one of the main areas of concern is with the clause requiring that **"a high level of human health protection" be maintained by the post-Brexit U.K."**, thus ...

> "Disease is no respecter of international borders, and public health is best protected when the international community operates to established and well-understood high standards. [... Moreover t]he citizen does not need ministerial assurances but an effective legislative provision to challenge in court the Government, devolved Administrations, and public bodies when they fall down on the job of protecting public health [...] In conclusion, I will say a few rather unkind words about why ministerial assurances about good intentions simply will not do. The Government's track record on public health has been inadequate [examples given]" (Lord Shipley)."
>
> "Cross-border cooperation is critical to addressing health threats. The EU has a number of technical agencies relevant to health [list given]. EU cooperation has also incentivised work on antimicrobial resistance, which requires a global response. **Infectious diseases remain a major threat to the U.K. health system and economy**" (**Lord Patel**). See the full debate transcript here.

The next piece worthy of note is by **Arwa Mahdawi** for *The Guardian*, and is entitled **"Why Jared Kushner Could Be the Most Dangerous Man in the U.S."** [full text online]. This follows on from their earlier hatchet piece [see 3rd April; remember this is U.S. election year and Kushner is a Republican - Ed.], and makes the point that as COVID Tsar he has no idea what he is doing. Then (while we are on the subject of people not knowing what they are doing) there come a couple of items concerning best civil defence practice. The first of these questions the wisdom of continuing to hold close contact religious services in the explicit hope that your faith will be protection enough. The second is a timely warning in a FAQ by *The Guardian*'s science team entitled **"Coronavirus key questions"** [full text online] that there are lots of types of masks to choose from and many practical problems in using them to maximum effect ...

> **ASIDE - ON COMMUNITY SELF-DEFENCE:** After decades of specific preparation against pandemic influenza, there are many rules and regulations out there, but - perversely - they are at their least thorough where the demand is greatest. The tightest controls apply to the research laboratories, then come hospital intensive care units, then other hospital units, then paramedics and ambulances, then primary care medicine, nursing homes, and community nursing, and then residential care homes. Bodies like the **Health and Safety Executive (HSE)** and the **Care Quality Council (CQC)** administer and audit all these after a fashion. When it comes to the community at large, however, the advice is superficial and often unenforceable. Indeed, it was this very *The Guardian* piece which prompted us to conduct our own emergency review of the medical literature from the perspective of community volunteers. This went online 1st May 2020 and identifies a number of nuances of personal protection not yet picked up on by the big boys, not least the role played by respiratory aerosol during everyday speech as a potential disease transmission vector - check it out here.

The last major item to come round on our watch concerns predictions out of the University of Washington's **Institute of Health Metrics and Evaluation Model** to the effect that the U.K. curve was predicting we would end up with 66,000 dead, the highest in Europe and the worst per capita in the world. **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Thursday 9th April] **The COVID-19 Pandemic [Day by Day (The Vultures Gather)]:** The early complaint today concerns the "continuing fiasco" of allowing inbound flights from disease hotspots such as the United States, Italy, and Spain into Britain's airports without the slightest screening, testing, or quarantine [the figure usually quoted, but unchecked by me, is 15,000 arrivals per day - Ed.]. Taiwan, on the other hand, is held up as a model of "looking after its citizens", because its civil defence best practice is properly integrated with both its health and social care services, and because it followed the WHO's advice to intervene quickly [see 24th March]. Chancellor of the Exchequer **Rishi Sunak** then wades in with a warning in barely coded phraseology that more austerity is going to be needed once life returns to normal. "This money," he says, "will all have to be paid back at some point" [this cannot be the truth because it is not the whole truth; but we shall cross that bridge when we come to it - Ed.]. On the care home front *The Argus* is worried

that peripatetic agency services might unwittingly be transmitting the disease from one home to the next. Another serious problem for infection management is personal slipstream, thus ...

> **CAMEO - THE BLOCKEN STUDY:** In a piece in *The Telegraph* entitled **"Stay 20 Metres Apart When Exercising"** [full text online] **John MacLeary** quotes the results of a Belgian study of sweat and saliva droplets in the slipstream of joggers, cyclists, and the like. The original study was by research physicist **Bert Blocken** [homepage] of Eindhoven University, whose team had investigated air flow around runners in the light of what was known about how aerosol droplets move and evaporate. His conclusion was that "the droplets are just in the slipstream, and if you stay out of this slipstream, there are no droplets." This, however, casts doubt on the one-size-fits-all government recommendation of 2 metres separation. Blocken continues ...
>
> > "With fast walkers, it should be five metres. With fast runners, it should be about ten metres. And with fast cycling—at 30 km/hr—it should be 20 metres. That should not freak people out, because if you cannot keep the 20 metres, you can just move to the side, and it's also fine."
>
> For our own part we are seriously concerned that so little research into the risks of unsafe slipstreaming has been done, and we await with interest any changes to the official masking recommendations as part of coming out of lockdown.

It is announced later in the day that the Debenhams department store chain - long in decline - is finally going into administration. **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Friday 10th April] **The COVID-19 Pandemic [Day by Day (Starmer Fails to Impress)]:** The day begins with a fair few grumbles about the under-new-management Labour Party, now that party leader **[Sir][2014] Keir Starmer** has started to gather around him a shadow cabinet containing many of those who had led four years of disloyalty against **Jeremy Corbyn**. Names were named. This feeling of betrayal after two centuries of worker struggle is also making itself shown in a steady flow of lapsed memberships, with one disgruntled walker complaining that the new party was "a sorry bunch of empty shells with no soul and no heart". Then, as if deliberately to spoil our breakfasts, we learn that the U.K. is running short of coffins, and are then treated to aerial shots of a modern day plague pit on **Hart Island** [map] in Long Island Sound to the east of NYC - YouTube it here. A little later we are assured by **Paul Cosford** [check him out] of **Public Health England** [ditto] that "we're doing very well", only to be told almost immediately that there might be three different mutations of the virus out there (*Mirror Group*). **President Trump**'s son-in-law **Jared Kushner** [check him out] comes up again [prev. 3rd and 7th April] following a piece by **Susan Glasser** in *The New Yorker* entitled **"How Did the U.S. End Up With Nurses Wearing Garbage Bags"** [full text online] which accuses him of adding to the general confusion surrounding survival-critical healthcare procurement. *The Atlantic* is more forthright in its criticism of the president, describing him as completely out of his depth and relying on "blather, bluff, and bullying". A different source Tweets that he reminds one of "**a drunk seven-year old trying to explain something he had heard grown-ups talking about**". Britain's Health Secretary **Matt Hancock** takes advantage of the late news slot to complain that panic buying of masks by the population at large is diverting stock away from healthcare professionals (*The Independent*). The day closes with two very well targeted volleys of criticism. The first is directed at Chief Nursing Officer for England **Ruth May** [check her out], accusing her of "stunning lack of truthful answers". The second is directed at the Prime Minister's father and (by that qualification alone) C-list television celebrity **Stanley Johnson**, who is on film from 20th September 2019 playing the entertaining old duffer who "as an environmentalist" has nothing against a pandemic wiping out "huge chunks of the human race" ...

> **CAMEO - DEATH WISH 2019:** The clip seems to have come from Series 1, Episode 4, of Channel 4's ***Rob Rinder Verdict*** chat show - view it here. It is not known how many of that evening's viewers will have obliged Stanley by the end of the present pandemic.

Be careful what you wish for. **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Easter Saturday 11th April] **Weaponised Antisemitism in British Politics [The Formby Inquiry (Re Sam Matthews)]:** [Read in the context of this entire sub-thread, and also of the preceding entry.] One of the Labour Party

staffers mentioned in the Easter Saturday disclosures [see preceding entry] is the 2017-2019 head of the Labour Party's "Disputes, Governance, and Legal Department" 2017-2019, **Sam Matthews** [check him out], who had featured in both *Panorama* and *Jewish Chronicle* attacks on **Jeremy Corbyn** [see entries 10th and 11th July 2019]. These earlier attacks should now be carefully re-evaluated in the light of the disclosures in Section 4.3.7, 4.4.2, 4.4.6, and 4.4.7 of the Easter Saturday report to see if the conclusion that Matthews had provided "false and misleading information" on the subject is justified. **[THREAD = THE DEATH OF DEMOCRACY] [THREAD = THE BATTLE FOR HEARTS AND MINDS] [THREAD = THE COGNITIVE SCIENCE OF POLITICAL PROPAGANDA]**

2020 [Easter Saturday 11th April] **The COVID-19 Pandemic [Day by Day (First Government "Apology")]:** Today's morning hate is directed against those who have allowed Britain's shortage of **PPE** to come about. The government, one angry Tweeter reminds us, exists **at our expense** and has "failed on many many levels". For example, there have already been 26 known deaths amongst front line health staff (*The Nursing Times*) - **all eminently avoidable if properly equipped**. Meanwhile in the United States *MediaMatters* has been taking *Fox News* to task for allegedly negligently pushing the government line, even when that government line has been changing from one hour to the next. A major class action for consequential illness could well be on the cards. At midday comes news from the **British Medical Association (BMA)** that its members still do not have proper PPE. They also observe, as a topic for urgent research, that the first ten doctors to die of the disease were of foreign extraction.

> **RESEARCH ISSUE - THE ETHNIC BIOWEAPON NIGHTMARE:** Recognised officially since 1998, we have here the possibility that Mother Nature has unwittingly mutated for herself a Coronavirus to which some ethnic phenotypes are selectively susceptible. Should this prove to be the case, then it would show that random mutation in nature can deliver an **Ethnic Bioweapon** [Wikipedia briefing] of sorts, **a disease which only infects particular racial groupings**.

The teatime briefing in London is given by Foreign Secretary **Priti Patel**, who courts the immediate ridicule of those who do not like her by prefacing her statements **"I'm sorry if people feel that there have been failings":** this is - one regular Twitter correspondent says - **like the Captain of the *Titanic* stating that he was "sorry if people feel we didn't have enough lifeboats"**. It is nevertheless the first apology of any sort made by the government to date, and small mercies are duly thanked. Discussion then turns to virus testing, following a University of Oxford press release entitled **"Trouble in Testing Land"** [full text online] which sees little sign of a viable enzyme-linked immunosorbent assay (Elisa) home-test kit being available in the near future. Finally, we have Priti Patel again, this time making an unfortunate verbal fumble with some numbers. Such tongue-twistings are usually quickly self-edited and nobody pays them much attention. Not in British politics, however, where the Tories have been mercilessly picking on a similar mistake some years back by Labour member **Diane Abbott**. Revenge is sweet, as they say, and Patel's mistake is accordingly greeted with a veritable tsunami of witticisms, some very funny. It is, therefore, a slip which will regularly return to haunt Patel for as long as Diane Abbott has friends. **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Wednesday 15th April] **The COVID-19 Pandemic [Day by Day (Europe Levelling Off)]:** On this the 151st day of the **COVID-19 Pandemic**, **John Burn-Murdoch**'s **FT/JHU** "logarithmic y" graphic (as at 1900hr GMT) shows Italy, Spain, and France levelling off at around 500 deaths per day, the U.K. levelling at just short of 1000 deaths per day, and the U.S. still actively climbing toward 2000 deaths per day. Most of the rest of the world is also holding level at their respective death rates, but not actually improving. China's remains by far the healthiest of the curves, thanks, we suspect, to the "Unit 731 Effect" [YouTube tutorial], the rapid mobilisation of her civil defence arrangements. **[THREAD = THE ANATOMY OF A CRISIS]**

2020 [Wednesday 20th May] **The COVID-19 Pandemic [Day by Day (The Contact Tracers Calamity)]:** *The Guardian* puts out a piece by staffer **Frances Perraudin** entitled **"'No one had any idea': Contact tracers lack knowledge about COVID-19 job"** [full text online], which exposes probably the shoddiest

example of government ineptitude yet, Perraudin has in her sights the recent panicked recruiting drive for staff to carry out "contact tracing" on behalf of Health and Social Care Secretary **Matt Hancock**. This, it will be remembered, had been trailed 18th May as being "well under way", with 18,000 out of a target 21,000 staff already recruited. Unfortunately some of the 18,000 have been getting touch with the press and reporting the experience. It seems they have signed up in response to ads for "Work at home - customer service adviser" at £10 per hour. Induction took place 17th May via an app and online tutorials, with chatbox support. However, even the trainers seemed lost as to the purpose of the exercise. One recruit, when asking how to handle a bereaved contact, was told to watch relevant counselling YouTubes. The fitness for purpose of the criminal record screening has yet to be confirmed. As at date of writing [=21st May], the system has yet to be implemented. Nobody seems to have taken to the opportunity **Professor Lum** [see inset 1st April 2020] while he was in town whether he had any tips to offer. **[THREAD = THE ANATOMY OF A CRISIS]**

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COVID, the people and the places

COVID, the hard science