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# TRAVEL MEDICINE

## Deadly travelling companions

**W**ars, weapons of mass destruction, nuclear obliteration: these terms conjure up images of the citizens of entire cities and even countries being annihilated. This certainly has been true since the Second World War. Prior to that it was known that invading armies indeed killed a number of their captives, but what is not always realised is that that deadly travelling companions in the form of microbes killed many, many more. Travel, and especially the movements between continents, has been associated with the introduction of infectious diseases by invaders or explorers into populations who had little or no resistance to them.

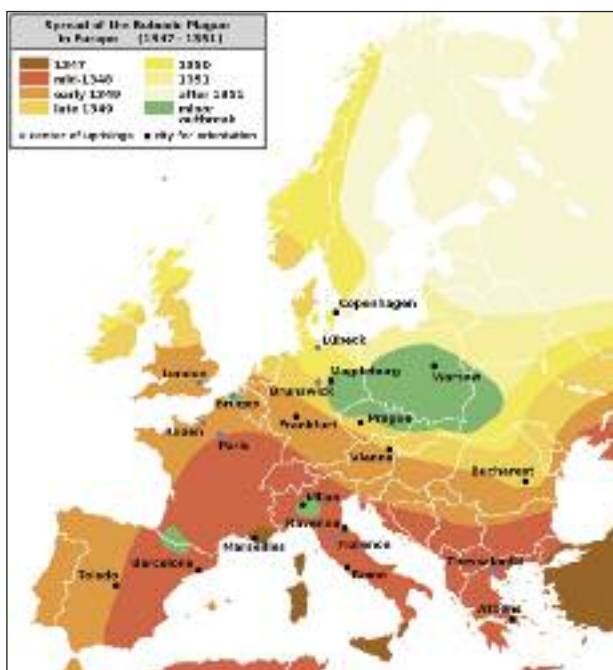
When humans were hunter gatherers, the populations and settlements were not really large enough to sustain persistent transmission of infectious microbes. With the introduction of agriculture thousands of years ago, and permanent settlements being established, cattle and domestic animals lived in close proximity to humans, facilitating the spread and exchange of bacteria and viruses. In addition, humans figuratively spread their wings and the speed of travelling has increased exponentially. Initially disease spread only as fast as humans could walk or run, then as fast as they could ride on

horseback or via transport on other animals.

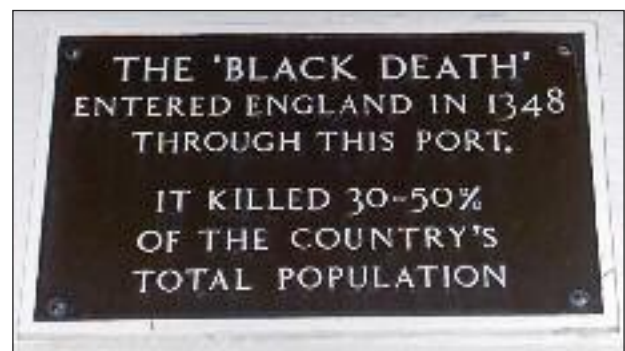
The ages have seen constant acceleration in transport: in 1788 it took a year to travel from England to Australia by ship; a clipper covered the same distance in one hundred days by 1840; a steamboat effortlessly did it in fifty days by 1910; and the cruise liners today do it in a few weeks, and this includes stopping at a few ports on route for excursions. Of course it does not match the possibility for the worldwide transport of pathogens within twenty four hours from any one destination nowadays. Flights depart Heathrow airport to about 180 cities in 85 countries daily; from Vancouver in the west to Tokyo in the east and Sydney and Cape Town in the south. Epidemics and pandemics have shown a similar ability to spread, with the speed and extent dependent on the mode of travel.

The Black Death, Plague, Greatest Catastrophe Ever, Medieval Horror; these are just a few descriptions of the pandemic that decimated the population of Europe between the thirteenth and seventeenth centuries. Caused by the bacterium *Yersinia pestis*, the school textbooks refer to the disease as bubonic plague, either reaching Europe from the east via the ancient silk route, or being transported by the returning crusaders. The oriental black rat, *rattus rattus*, was thought to harbour the organism and to have travelled along with the humans with its resident rat flea transmitting it to humans. A third of the population of Europe, some estimate it to be as much as 200 million, succumbed to the disease, and rats and fleas were blamed for centuries for the Black Death.

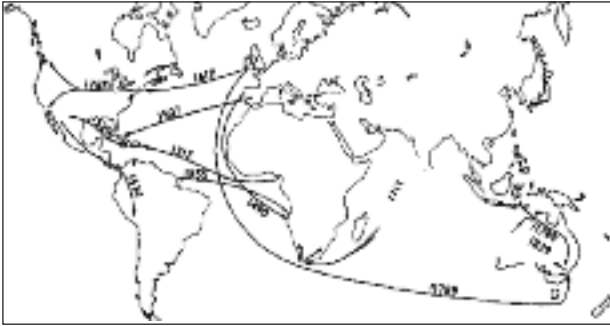
*'When pestilence rides into town, you want to be somewhere far, far away' and 'neither prayers nor demonstrations halted the advance of the pestilence'* aptly describe the fear instilled across the European continent and that was the hallmark of the spread of plague in the 1300's.



Black Death; Spread of plague in Europe



Plague first arrived in England at the port of Weymouth



*The spread of smallpox to the Americas, South Africa and Australia with European exploration and colonization. It is not known whether the outbreaks among Australian aborigines in 1789 were caused by the transmission of the disease by ship from Great Britain or spread from islands of the East Indies to northern Australia.*

Recent evaluation of parish and other records however point to another source for the transmission. It seems that the arrival of plague in a new town coincided with the arrival of a stranger or a returning traveller. It is unlikely that they would have transported rats with them that would explain the importation of the disease. Furthermore it was known that quarantine measures were effective, a scenario that was unlikely to have prevented infection by fleabites. In addition, some areas were also free of black rats at the very time when the Black Death was peaking. It appears likely that the source of transmission was man himself due to his inherent instinct to travel, and the explosive pandemic was pneumonic plague, spread by aerosol droplets between humans, and not bubonic plague, which would have required rats and fleas for its transmission.

Bioterrorism appears to be a modern twenty first century notion but the first documented incident occurred as a direct result of the plague. Present day Russian president Putin seems not the only one putting pressure on Ukraine. The Tartars of central Asia had besieged the Crimean walled port city of Jaffa for three years but were unable to capture it. They resorted to catapulting plague infested corpses over the city walls in 1346 which resulted in the disease spreading amongst the locals and eventually led to the downfall of the city!

Columbus and his men were not the only journeymen on the *Santa Maria*, *Pinta* and *Nina*; pathogens travelled along with them and subsequent explorers searching for populations that harboured no immunity against them. Whole tribes on the Caribbean island of Hispaniola were wiped out by the introduction of smallpox in 1507. By 1518 the disease wiped



*'The triumph of death' by Peter Bruegel depicts the post plague era*

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out nearly half of the population of Santo Domingo, and it subsequently spread further amongst the Caribbean island and then to the American continent itself. The population of central Mexico dropped by a third within ten years, and the first contact with the Europeans often led to the most severe epidemics, mirroring the lack of resistance of the immune naïve locals. Slaves from Africa were also on latter transatlantic journeys, adding to the carriage of pathogens.

It was not only smallpox to which the New World inhabitants lacked immunity. Measles, mumps, influenza and rubella were part of the invaders' arsenal. Empires such as the Aztecs and Incas were decimated. The Americas were conquered not only by might and stealth, but also by overcoming the immune systems of the vulnerable.

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*Columbus sailed the ocean blue,  
Back in 1492.  
He sailed across and spotted land,  
A beach, and people on the sand.  
Ramon Montaigne*



*Numerous paintings allude to smallpox and plague*

