Miasmatic Theory

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Dating as far back as ancient Greece and surviving well into the late nineteenth-century, many people believed in the idea that bad or corrupt air was the causation of illness and disease. Such an idea was called the miasmatic theory. Those who regarded the miasmatic theory to be true believed that typhoid, cholera, malaria, the bubonic plague and other various diseases were not transmitted from person to person, but rather were caused by foul odors from decomposing matter, such as sewage, rotting vegetation, and decaying corpses, and were transmitted by air (Halliday 1469 and Moffett 540). Even though the belief that the causation of diseases through miasma dates back to ancient Greece, the Oxford English Dictionary shows that the word “miasma” was first used in 1665. Throughout history, there have been many influential supporters of the miasmatic theory: Hippocrates (an ancient Greek physician and the father of medicine), David Barnes (a scientific historian and author of The Great Stink of Paris and the Nineteenth-Century Struggle Against Filth and Germs), and even one of the world’s most famous nurses, Florence Nightingale (Hueppe 384 and Pennington 1740), just to name a few. In Notes on Nursing: What It Is, and What It Is Not, Nightingale wrote that “the very first canon of nursing...the first essential to the patient, without which all the rest you can do for him is as nothing...is this: to keep the air he breathes as pure as the external air” (Scovil 355). Nightingale was a firm believer that foul air was the most important and prominent cause of infection. She also attributed smallpox, measles, and scarlet fever to “the practice of building houses with drains beneath them from which odors could escape and infect the inhabitants” (Halliday 1469). Not only did the theory have the backing of many famous individuals within the scientific community but more importantly, most, if not all, civilians believed this theory to be true. Today, however, we know the miasmatic theory to be untrue, due to the advances made in biology and medicine through John Snow, Louis Pasteur, and Robert Koch with the discoveries of germs and germ theory.

I think it is safe to say that one of the most terrifying periods of history was, no doubt, when the bubonic plague ravaged the human population; Europe, the Middle East, Asia, and Africa were all devastated by the so-called Black Death. Through years of influence under the miasmatic theory, many civilians and those within the scientific community believed that foul air and rats were not only causing the disease, but that they were also spreading it. Now, how would rats play any sort of role in the causation and spreading of disease if, during this historical period the miasmatic theory explained the causation of diseases? Well, for a long time there had existed scientific belief “that rats – as well as snakes and similarly loathsome vermin – were born of the miasmas produced by putrefying refuse, stagnant water, or swampy earth, all considered local causes of pestilence” (Barker 664). If bad air was the cause of this horrifying disease, then what did doctors and physicians recommend the people of this time to do? During some of the major waves of the plague, Italian physician Marcantonio Ciappi, in his 1630 disquisition of the disease, urged and recommended that people combat the miasma with floral perfumes by filling their homes with heaps of roses, violets, and myrtle (Barker 674). An example of an early theory on the etiology or cause of the disease was brought by Wu Xuanchon, a Chinese physician from Wuchan. Wu believed that the Black Death was caused by qi, foul air vapors that rose up from the ground. He believed that the miasma could become trapped inside poorly ventilated buildings; therefore, dark and sunless houses, like those in cities, were more likely to be infected than were the houses in the open spaces of the country side.
According to Wu, rural areas were more immune than the cities because they had more fresh air. He also concluded that because the poisonous air had to pass through the rats’ burrows on its way to the surface, that is why the rats were affected first and for the same reason, the ground floors of buildings were more dangerous than the upper stories. Wu believed in preventative measures and therefore warned people to be on guard for the rats that were believed to help cause the disease and even urged civilians to go and bury any dead rats they saw, but only after plugging their nostrils and keeping their faces turned away from the rats to avoid breathing in the miasma (Benedict 137, 138).

One of the earliest contributions to the idea that something other than foul air as the causation of diseases is attributed to John Snow. Snow was unconvinced that miasma was the cause of the 1854 Broad Street cholera outbreak in London, England. As the General Board of Health favored the miasmatic idea of disease transmission, they tested the air in the district to see if they could filter anything that could be associated with cholera. All that was found was fungus, dust, and mold spores, yet nothing that could be associated with cholera. Unconvinced by this miasmatic theory, Snow believed that the fecal matter of those infected with the disease had somehow contaminated the water systems and had infected the drinking water. Snow used statistics to show that the outbreak correlated with a particular water pump on Broad Street, which was located at the center of the neighborhood where the outbreak originated, and after even more investigation, it was revealed that there was broken lining and the Broad Street pump had, in fact, been dispensing “sewage-tainted” water that had caused the outbreak (Moffett 540, 541). Though Snow’s efforts and data had some imperfections, he can still be attributed with some of the earliest work of developing the germ theory and improved hospital and public sanitation.

Professor H. Booth once wrote that “from inhaling the odor of beef the butcher’s wife obtains her obesity” (Halliday 1469). Today we would think that statement made by Booth to be totally absurd and completely ridiculous, but during the time when miasmatic theory was dominant, it would have been a normal thought for you to become obese from to the smell of meat in the air. Thanks to the hard work of many individuals throughout the nineteenth century, we now have the germ theory. It was through this theory that the miasmatic theory was ultimately thrown to the wayside by the scientific community. The development of this theory was a crucial moment in the advancement of biology and medicine. As Paul E. M. Fine wrote, the germ theory’s “impact was enormous, leading all of the biomedical sciences away from previously held notions of miasmas and humours, towards more rigorous concepts of specific aetiologies and appropriate preventive and therapeutic measures” (347). The germ theory proved that it was not through foul smelling air that diseases came about, but through understanding of “human-microorganism discovery that transmissible agents are responsible for diseases that were never suspected of being infectious in origin” (Gibbons 627). Because of the germ theory, we have come to know that the bubonic plague was not caused or created by foul air, but by Yersinia pestis, a type of bacterium that is transmitted by fleas that were dwelling on the rats (Sebbane et al. 5526). Even though the Chinese physician Wu gave great advice to be wary and on guard for rats, he basically signed the death certificates of those who listened to him and made an attempt to go and bury any dead rats they saw. The fleas that carried Yersinia pestis actually lived on rats and by trying to bury them individual put themselves at risk of being bitten by the fleas on the rats and then contracting the plague. Cities were uprooted by the plague, not because they had less fresh air, but because of the high populations of humans and rats and the unbelievably low (basically nonexistent) standards of public sanitation and personal hygiene. It was through the work of very dedicated and hard working individuals that medicine and science took a giant leap from the primitive thought of contracting disease by inhaling foul smelling air, to a more modern medicine and the causation of illness from microbes, germs, and viruses through the germ theory.
Works Cited


Moffett, John R. "Miasmas, Germs, Homeopathy And Hormesis: Commentary On The Relationship Between Homeopathy And Hormesis." Human & Experimental Toxicology 29.7 (2010): 539-543

