

### **Charles Darwin:**

When: (1809-1882)

Where: England

Who: Darwin, Charles Lyell (Earth's surface shifted to form geological features over a long period), Jean Baptiste Lamarck (multiple species formed through adaptation to the environment), Herbert Spencer

What: Charles Darwin began his life as a very religious individual, adopting atheistic beliefs following his trip on the HMS Beagle through the Western Hemisphere in the 1830s. His meticulous collection of specimen and the foregoing ideas of Lyell and Lamarck led him to draw the conclusion that species had evolved from a single predecessor as environmental and other challenges would kill off the "unfit" variations of the species. He expressed his theory in his book: *On the Origin of Species by the Means of Natural Selection*. Although no genetic evidence would surface until after his death, he was the first to offer a solution as to how evolution could have occurred, and his work was the topic of much debate. -His atheistic proposal backed the ideas of both Karl Marx's Communism and Comte's stages of knowledge.

Why: (1) Religious Conflicts arose from his theory (2) Herbert Spencer's application of Darwin's theory to create Social Darwinism would justify Industrial changes (Survival of the Fittest)

### **Joseph Lister:**

When: 1827-1912

Where: England, Germany, Europe

Who: Joseph Lister, Louis Pasteur (Germ Theory)

What: Gathering that bacterium in the air could infect wounds in a way similar to how they would spoil food, Lister proposed that disinfectant could be applied to wound dressing and cease the festering of the particles. This became known as the Antiseptic Principle and would be perfected by German surgeons by the 1880s, who would expand the idea to include sterilization of everything that came into contact with the open injury.

Why: His idea would salvage millions of otherwise lost lives.

### **Jeremy Bentham:**

When: 1748-1832

Where: England

Who: Jeremy Bentham, Edwin Chadwick, Benthamites

What: A philosopher who pushed for rationality and scientific research when solving issues, Bentham argued that these solutions should improve the lives of the greatest number of people, not simply the upper-class— as had always been standard. The weight of his idea would impel Chadwick to concoct his sanitary idea (clean up of cities would prevent disease) and his conclusion that poverty was yielded by death and illness, not the other way around. Chadwick thrust public health concerns onto the mind of the government and proposed sanitation and sewage systems be implemented after his study of the communal Poor Laws, which was widely embraced in the U.S as well as France and Germany.

Why: (1) He was an influential classic liberalist (2) he would inspire Chadwick to push for the cleaning up of cities