

Public Health 1800- 1999

By Hannah and Fleur

Issues - 19th Century

- Diseases (Cholera, Typhoid, TB etc.)
- The Great Stink
- Poverty
- Shared toilets
- Shared water supplies
- Waste from cesspits was carried through the streets in carts
- Many still believed that miasma caused illnesses
- Still using home remedies and superstitions to treat many illnesses
- Healthcare was expensive – many families couldn't afford treatment
- Factories polluted air with smoke from coal burning.
- Child Labour
- The industrial revolution brought about an increase in many new illnesses like scrotal cancer, 'phossy-jaw' and pneumoconiosis.

The Great Stink

- Dry weather had combined with waste - human and industrial- as there was no rain to wash it down the river Thames.
- This combination caused a terrible smell to radiate from the river, worrying the public as they still believed in the 'miasma theory'.
- The problem had been going on for years as the sewers emptied straight into the river.
- The fear of 'miasma' called for action from the local and national administrators who started to wonder about possible solutions.

The Spanish Lady

- Began in 1918 and spread across the entire world killing an estimated 20 – 40 million.
- Thought to originate from Bird Flu in China.
- Many believed it to be German Warfare like mustard gas.
- Due to mass troop movements in the war, disease was spread within armies.
- Homecoming soldiers then spread the disease throughout the civilian population.
- The government tried to reduce panic by issuing censorship, however newspapers were allowed to report the 7 million deaths in Spain.
- Originally labelled the 'Three-Day Fever' due to the general symptoms and quick recovery.
- Up to 20% of infected, died.
- In a few months, 280,000 in the UK died.
- There were no recognized treatments or antibiotics.

Issues - 20th Century

- Not everyone had access to free healthcare.
- Fumes from cars and smoke from factories caused pollution (Killer Smog).
- Home remedies were still being used.
- Towns became more crowded as the population grew due to advances in medical care.

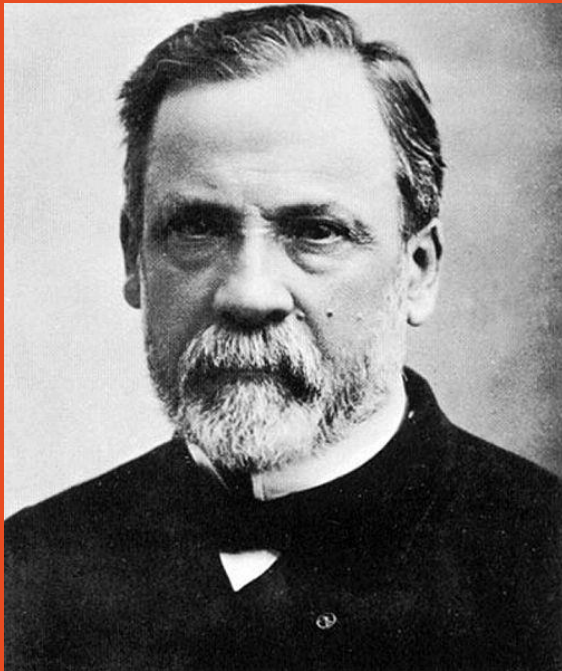
Killer Smog

- Air pollution and coal smoke got trapped over the city from 5th – 9th December 1952.
- 12,000 people died as a result and 100,000 were taken ill.
- As a result of this, the government passed the Clean Air Acts in 1956 and 1968 which tried to reduce coal fires.
- New towns like Milton Keynes were built to attempt to move people to greener settings where home and industry were separated.
- Houses were built with spacious gardens, and cycle paths and pedestrian ways were to be created.
- Council houses and slums were offered as 'decent housing'.
- Modern tower blocks were built with central heating, bathrooms and fitted kitchens.

Key Individuals

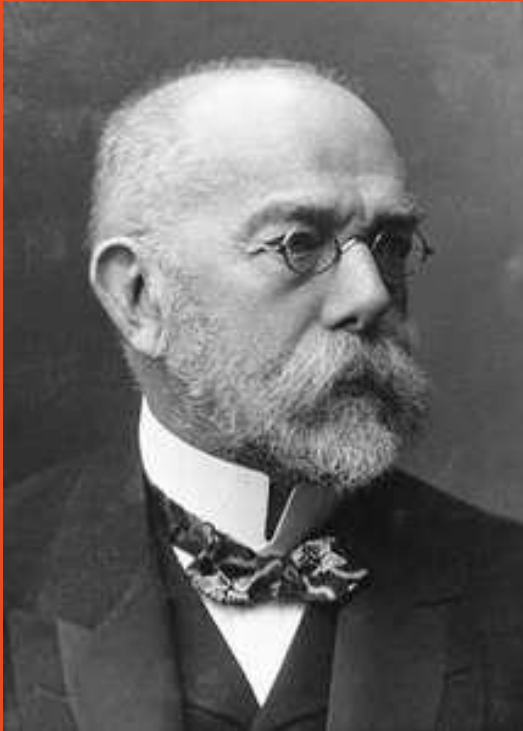
- Louis Pasteur
- Robert Koch
- Paul Ehrlich
- James Simpson
- Joseph Lister
- John Snow
- Alexander Fleming
- Charles Booth
- Seebohm Rowntree
- Edwin Chadwick

Louis Pasteur



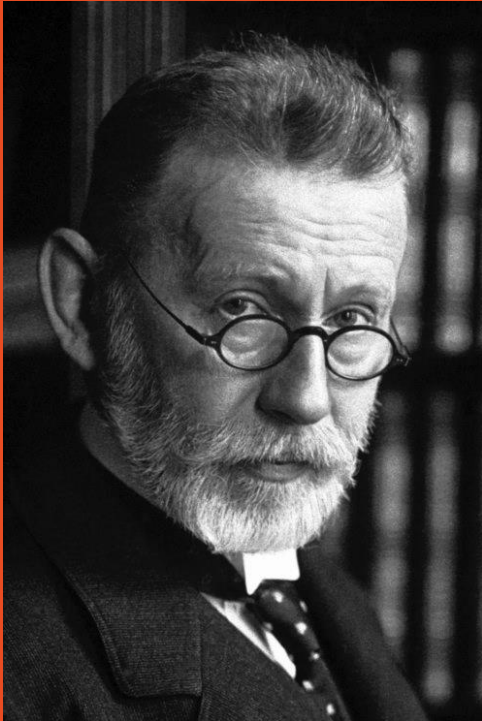
- Before him, many believed that life appeared spontaneously – a belief held by Aristotle.
- In 1859 he disproved this by showing how food went off due to contamination by microbes in the air.
- He went on to argue that these could cause disease.
- His “germ theory” was very controversial as he was a chemist not a doctor.
- He invented pasteurisation in 1863 for Napoleon III to save the French wine industry.
- Also discovered, in 1865, that infection was transmitted by parasites.
- This led him to his discovery that weakened strains of disease helped animals develop immunity whilst working with chicken cholera.
- He drew on others’ findings to develop a vaccine for anthrax, successfully immunizing 31 farm animals.
- He trialled a vaccine for rabies on Joseph Meister, a boy bitten by a rabid animal, in which he survived.

Robert Koch



- He discovered how to stain bacteria so it was easier to see under a microscope.
- Discovered a way to grow bacteria in a Petri dish.
- He discovered what bacteria caused...
 - Anthrax (1876)
 - Septicaemia (1878)
 - TB (1882)
 - Cholera (1883)
- Developed a procedure for researchers to follow to find a disease.

Paul Ehrlich



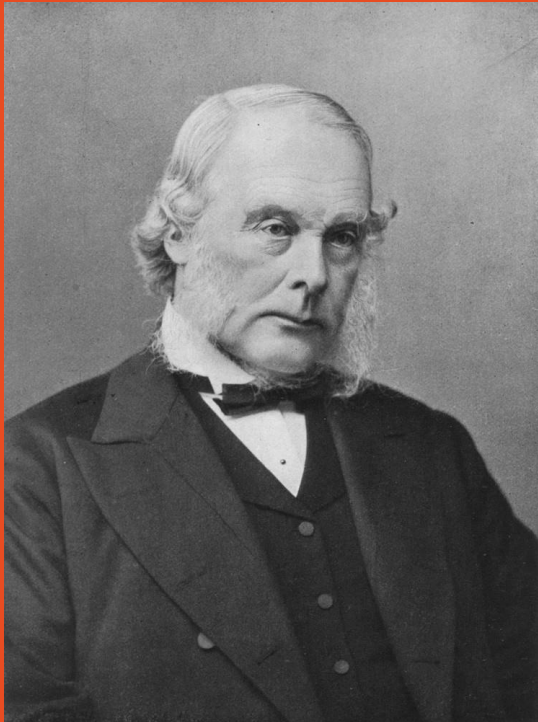
- He initially worked for Koch.
- He used staining techniques to study blood cells under a microscope.
- He then worked on immunity, leading him to develop an anti-diphtheria serum.
- His work on chemotherapy led to the idea of 'magic bullets' that would target specific organisms in the body.
- He then developed Salvarsan (compound 606) as a treatment for syphilis.

James Simpson



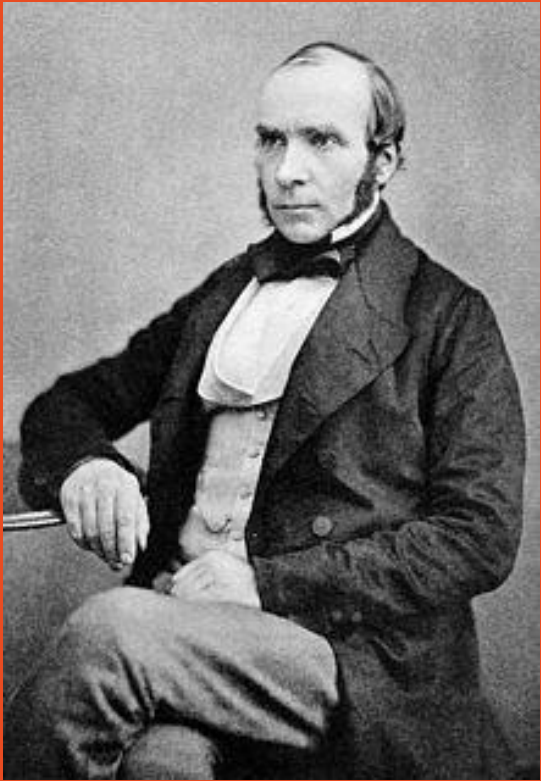
- Famous for his work with anaesthetics during operations.
- Before him, many surgeons believed that patients *should* experience pain.
- In 1847 he used chloroform after experimenting on himself and his friends, to reduce pain during childbirth.
- The use of chloroform was quite controversial until in 1853 when Queen Victoria used it while having a baby.
- During his work as an obstetrician - a surgeon who deals with child birth- he improved the design of forceps used for delivering infants.

Joseph Lister



- He discovered that using carbolic acid sprayed over the patient kept infection at bay.
- He trialled this idea on frogs as it was easier to observe the impact of the changes he was introducing on cold-blooded animals.
- He sterilized his instruments with carbolic acid as well.
- He sometimes soaked the wound in this acid, and sterilized dressings too.
- By doing this he managed to reduce the death rate from 46% to 15% in 3 years.
- In 1871 he invented a machine to spray carbolic acid over the entire operating room and all of its contents – including the people.

John Snow



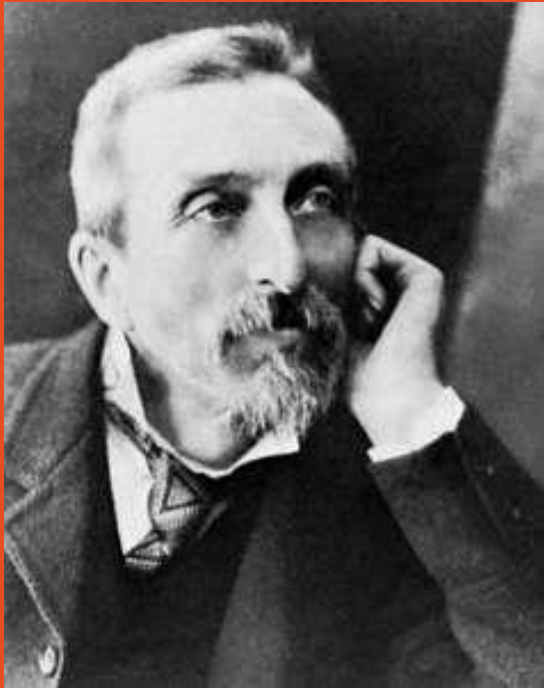
- He had a surgery on Broad Street, London.
- In 1849, just after the 1848 cholera outbreak, he published a book arguing that cholera was spread through dirty water rather than miasma, but it wasn't taken seriously.
- He carefully mapped out the location of each of the 700 deaths in his local area in the outbreak of 1854.
- This led to his discovery that they all collected their water from the same pump on Broad Street.
- He also noticed that the working men who drank beer instead of water weren't suffering from cholera.
- He ordered for this pump to be removed, after which he noticed the immediate decrease in cholera cases.
- It was later discovered that a cesspit less than a metre away had leaked into the water supply, contaminating the water.

Alexander Fleming



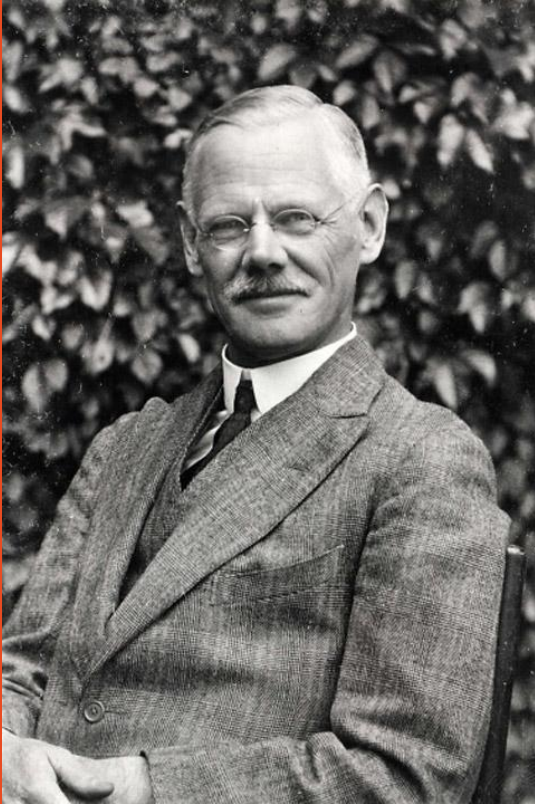
- He trained as a doctor and served in the Army Medical Corps during World War 1
- Became a professor in 1928 and published many papers on bacteriology, immunology and chemotherapy.
- During the war he observed that antiseptics were unable to prevent infection in deep wounds.
- In 1928 he noticed a mould - penicillin- that grew on one of his petri dishes that had killed off the staphylococci bacteria contained in the same dish.
- He called it an antibiotic, meaning 'destructive of life'.
- Published his findings in 1929, but couldn't raise enough money to develop the drug.
- Experimented on a police officer who was scratched badly by a rose bush, who ended up dying 5 days after their supply of penicillin ran out.

Charles Booth



- He discovered the high level of poverty in parts of Liverpool.
- Famous for his documentations of the level of poverty in London 1880s and 90s.
- Before his investigation, the public were misinformed that only 25% of the working population were living in poverty.
- To disprove this, Booth hired his own team of investigators and between 1886 and 1903 he investigated over 4000 families.
- He published his findings in his report *Life and Labour of the People of London*.
- In this report he stated that 30% of Londoners were living below the Poverty Line.
- He also discovered that 85% of poverty was caused by unemployment and low wages.

Seebohm Rowntree



- He had heard of Booth's findings and wanted to see whether the same could be said for York.
- He conducted his research between 1899 and 1901.
- He then produced a report labelled *Poverty, A Study of Town Life*.
- He reached the conclusion that 28% of people in York lived in Poverty.
- He divided Poverty into 2 groups:
 - Primary Poverty-never able to provide themselves with an adequate amount of food, clothes shelter etc.
 - Secondary Poverty- could just about survive as long as there were no unexpected costs.
- 10% of York was in primary Poverty, 18% in Secondary.
- He also highlighted the fact that Britain had fallen behind Germany and the USA in industrial power as our workers were too weak. Germany already had a welfare system to help the poor.

Government

- 1834 Poor Law Amendment Act – set up workhouses for the poor.
- 1848 Public Health Act – setting up of a Board of Health, and gave towns the right to appoint a Medical Officer of Health.
- 1853 Vaccination Act – vaccination of children against smallpox is made compulsory.
- 1866 Sanitary Act – ensured that closed sewage systems were introduced and overcrowded residences became illegal.
- 1875 Public Health Act – enforced laws about slum clearance and provision of sewers and clean water.
- 1875 Food and Drugs Act – ensured that all food and medicine sold is of a reasonable quality and safe for consumption.
- 1906 Workmen's Compensation Act – granted compensation for injuries at work.
- 1906 Education Act – introduced free school meals.

Government

- 1907 Education Act – introduced school medical inspections and scholarships for poor children.
- 1907 Matrimonial Causes Act – maintenance payments for divorced women.
- 1908 Children's and Young Person's Act – made it illegal to sell drugs, alcohol or fireworks to children and neglected children were visited.
- 1908 Old-Age Pensions Act – over 70s received money to live on.
- 1909 Labour Exchanges Act – helped people get back into jobs.
- 1909 Housing and Town Planning Act – made it illegal to build back-to-back houses.
- 1909 Trade Boards Act – minimum wage for sweatshop workers.
- 1911/12 National Insurance Act – sick and unemployment pay introduced if you paid contributions to the scheme.
- 1948 – NHS introduced.

Science and Technology – 19th Century

- Louis Pasteur's discovery of 'germ theory' led to the invention of vaccines that specifically target the disease.
- Robert Koch linked particular germs to different diseases, discovering the bacteria responsible for cholera thus proving the work of John Snow.
- Paul Ehrlich developed the first effective treatment for syphilis, Salvarsan 606.
- Ehrlich also developed 'magic bullets', these were carefully designed drugs that targeted specific areas of the body.
- 1816- the stethoscope is invented in Paris.
- Thermometers became very popular in the 1850s.
- Single lens microscopes remained popular.
- 1895 – the first X-ray machine invented.

Science and Technology – 20th Century

- X-ray units now made mobile for easy use in the war.
- Doctors began to develop radiotherapy to target cancerous cells without the need for invasive surgery.
- Karl Landsteiner discovers blood groups, leading to the invention of blood transfusions.
- Anti-coagulants added to blood to keep it fresh for 28 days.
- 1952 – first kidney transplant.
- 1961 – first pace-maker developed.
- 1967 – first heart transplant, patient lived for 18 days.
- 1972 – hip replacements introduced.
- 1978 – first test tube baby successfully created.
- Imaging technology allows for earlier and clearer diagnosis.

Science and Technology – 20th Century

- 1953 – DNA discovered, improving the medical profession's understanding of how the body functions.
- Non-invasive surgery using radiation or a miniature cameras allows a surgeon to see inside the patient without cutting open the body.
- Keyhole surgery is now commonplace reducing the intrusiveness of operating on someone.
- Laser treatment is now widespread, especially for eye operations and cancer as it takes a fraction of the time, with a much faster healing process.
- Mortality rates are now closely monitored, and league tables within hospitals allow patients to choose the 'best' place for treatment.
- CAT scans, MRI scans and endoscopes all allow surgeons to see inside the body.

Communication

- 1842 – Edwin Chadwick published *Report on the Sanitary Conditions of the Labouring Population*, discussing the links between poor sanitation and disease, low life expectancies and high mortality rates.
- 1889 – Booth published *Life and Labour of the People in London*, coming to the conclusion that 30% of people were living in poverty.
- 1901 – Rowntree published *Poverty, A Study of Town Life*, further proving the research of Booth and that it applied to York where he also discovered that people needed to earn at least 21 shillings a week in order to stay out of poverty.
- 1942 – Beveridge wrote *Social Insurance and Allied Services*, identifying the 5 'giant evils' of poverty: disease, want, idleness, ignorance and squalor.

War

- Florence Nightingale cleaned up hospitals and cut the mortality rate down from 40% to just 2% in the Crimean War.
- The First World War provided inspiration for Fleming to create an effective antiseptic to prevent infection in deep wounds.
- 1915 – Casualty Clearing Stations (CCS) were set up as near to the Front as possible, organizing injuries into 3 types: slightly wounded; those who need hospital care; and those beyond help.
- The Second World War was a huge incentive for developing penicillin, and was used for the first time on troops in 1943.
- William Rivers developed the 'talking cure' for those suffering from shellshock (PTSD).
- Harold Gillies developed skin grafts to treat facial injuries from the war.

Case Study – Alice Finch

- Bookseller's daughter.
- Age 7.
- Spoiled by her parents.
- Try to keep her away from other kids in the area.
- Has measles.

Where could she have gone for help?

How do we prevent measles today?