



KEEP
CALM
AND
STUDY
HISTORY

Paper Two

Revision Booklet

Paper Two is called Shaping the Nation and is worth 50% of your total GCSE. The two topics on Paper Two, worth 25% each, are:

- Health & the People
- Elizabethan England 1568-1603

Use the information in this booklet to make revision cards and notes to help you prepare for the exam!

Name: _____

Class Teacher: _____

Medieval Medicine

In the Middle Ages (1000-1500AD), doctors lacked scientific knowledge. Religion was very important in the Middle Ages and people believed disease was caused by God as a punishment for sinful behaviour. A popular treatment was praying to God.

Doctors based their ideas on two Greek doctors called Hippocrates and Galen. Hippocrates invented the Theory of Four Humours, which said the body consisted of four humours:

- Black Bile
- Yellow Bile
- Phlegm
- Blood

The Four Humours had to be balanced for good health. Bleeding was used to prevent or treat illness, either through opening a vein or allowing leeches to suck a patient's blood. Doctors used urine charts to diagnose illness.

Galen learnt about anatomy by dissecting animals. Dissecting humans was banned by the Church. As a result he made errors, however his ideas were accepted because the Church banned people questioning his work.

A surgery that doctors performed in the Middle Ages was trepanning. This involved drilling a hole in the skull to let out demons. Warfare helped surgeons improve their skills, for example quicker amputations. New tools invented included the 'arrow cup' which removed an arrow-head from the body without causing damage.

Islamic medicine was much more advanced than in Europe. Islamic doctors wrote medical encyclopaedias and their hospitals trained doctors and treated patients.

Questions on the Exam

Q1) How convincing is Interpretation A about... (8 marks)

- Read and annotate the text
- Write in your answer why the interpretation is convincing by adding your own knowledge to the answer– lots of facts!

Q2) Explain what was important about... (8 marks)

- Complete 2 point, evidence, explain paragraphs about why the topic chosen was important

Q3) Write an account... (8 marks)

- Write a narrative account of the events that happened. Put in lots of knowledge and try and link the events together, if you can in order of time.

The Essex Rebellion, 1601

Towards the end of her reign in 1601 Elizabeth faced a threat from one of her own Privy Councillors, Robert Devereux, the second Earl of Essex.

Essex was one of Elizabeth's closest companions. He became a Privy Councillor in 1593 and led a successful expedition to attack the Spanish port city of Cadiz, returning to England a hero in 1596. However, their close relationship deteriorated when:



Elizabeth twice promoted her advisor Cecil instead of the Earl of Essex, who was sent to Ireland to defeat a rebellion. Instead, Essex made peace with the rebels against Elizabeth's orders. He was then banned from court and financially ruined. By this point Essex was a desperate man and set out to seize power. He attempted to gather the people of London to start a rebellion and overthrow the government, but failed and was executed for [treason](#) in 1601.

Public Health in the Middle Ages

Public Health in towns

This was very poor. The King and towns did not get involved in ensuring people were healthy, it was left up to individuals to sort out. Most towns had poor sanitation with dirty drinking water. Sewers ran open in the streets and there was human waste and animals wandered the streets producing their own waste. The waste from the privy (toilet) fell into a cesspit where it was collected by the gong farmer. Most people did not wash regularly. Hospitals were linked to monasteries, they had very few doctors and provided rest and care rather than surgery.

Public Health in monasteries

Monasteries were much cleaner. Monks could read so they were informed about public health. Monks had a fresh water supply and stored water in wells or reservoirs. They filtered and purified water. Monks also bathed regularly and privies were separated from kitchens.



The Black Death

The Black Death swept through England in 1348, killing nearly half of Europe's population. There were two types:

- Bubonic Plague— cause by fleas on rats
- Pneumonic Plague— spread by coughing/sneezing

Symptoms of the plague included fever, boils, spasms and vomiting.

What did people at the time think caused the Black Death?

People had supernatural explanations, they blamed it on:

- God punishing them for being sinful
- Astrology, the movement of the planets
- Jews were blamed for poisoning the wells
- Bad smells (also known as miasma)

Cures for the Black Death

As people did not know the cause of the Black Death, cures were ineffective. These included:

- Bloodletting
- Smelling fresh flowers
- Having a bath in urine
- Praying to God
- Tying a chicken to a boil

Impact of the Black Death— Many died of starvation as there were too few people to harvest food. Inflation rose and food prices quadrupled.

Elizabeth and Mary, Queen of Scots

Mary, Queen of Scots was Elizabeth's cousin. She was a Catholic who had been married to the King of France. When he died she married Lord Darnley and had a son, James. Darnley was a violent drunk who was murdered. Mary then married the chief suspect in the murder, the Earl of Bothwell. Some people thought she was involved in the crime and Mary fled to England in 1568. Mary hoped Elizabeth would help her, but she decided to keep her under house arrest in isolated areas. This was because she was worried about Catholic plots and their plans to overthrow Elizabeth and replace her with Mary.

The Babington Plot led to Mary's downfall. She wrote letters to French ambassador Anthony Babington (a fellow Catholic) in secret code and hatched a plot to kill Elizabeth and put Mary on the throne. Mary's letters were caught and decoded by a secret agent. This was the proof people needed to put Mary on trial.

Mary was put on trial, found guilty of treason and executed in February 1587. Elizabeth felt very guilty over the situation. She had signed Mary's death warrant but claimed it was only a precaution and the Privy Council had acted without her consent in executing Mary. The execution made Mary a martyr and it led King Philip of Spain to declare war on England in 1588.



Catholic Rebellions against Elizabeth

Date	Plot	Elizabeth's action
1569 - The Northern Earls' Rebellion	The Catholic Earls of Northumberland and Westmoreland hatched a plan to get Mary, Queen of Scots out of jail and on to the throne. They gathered an army of 6,000 soldiers in their attempt to return England to Catholicism.	Elizabeth got wind of the plan and sent a huge army to crush the rebellion. Elizabeth put 800 rebels to death and the two Earls fled to Scotland.
1571 - The Ridolfi Plot	Roberto Ridolfi, an Italian banker, planned to assassinate Elizabeth and make Mary queen. He had the support of King Philip II of Spain, the Duke of Norfolk, and Mary, Queen of Scots herself.	The plot was uncovered by Elizabeth's advisor, Cecil. Ridolfi and the Spanish ambassador were arrested and expelled from the country.
1583 - The Throckmorton Plot	A young Catholic man, Francis Throckmorton, organised a plan for a French army (paid for by the Pope and King Philip II of Spain) to invade England and replace Elizabeth with Mary, Queen of Scots.	Throckmorton was executed and Mary was moved to Tutbury Castle in Staffordshire, where she was held in isolation and allowed no visitors.
1586 - The Babington Plot	Sir Anthony Babington planned to rescue Mary, Queen of Scots from jail and murder Elizabeth. Secret letters between the plotters and Mary were discovered which gave Elizabeth's advisers the evidence needed to prove Mary's guilt.	This finally led to the execution of Mary Queen of Scots, Babington and six other plotters.



Renaissance: Vesalius, Pare and Harvey

The Renaissance began in around 1500AD. It was a time when medical ideas began to make progress, as well as art, literature and inventions. The three most important Renaissance individuals are Vesalius, Pare and Harvey.

Vesalius

Vesalius dissected humans rather than animals. This gave him knowledge of human anatomy and proved Galen was wrong in a number of ways. He did dissections at his lectures so students could learn about the body.

Vesalius published his beautiful anatomical drawings in books. The books were sent to England, which influence and inspired surgeons.



Elizabeth and the Catholic Threat

Many Catholics had enjoyed freedom under the reign of Elizabeth's sister, Queen Mary. They now felt threatened and were unhappy with the 'Middle Way'. Some Catholics failed to attend Protestant church services. Some Catholics went even further and plotted against Elizabeth, hoping to overthrow her and replace her with her Catholic cousin, Mary, Queen of Scots.

From 1569 there were a number of rebellions against Elizabeth by Catholics (please see table on opposite page). Elizabeth became increasingly worried about these threats.

In 1570, the Pope issued a Papal Bull and excommunicated Elizabeth. The Pope encouraged Catholics to rebel. After this Elizabeth introduced a series of laws against Catholics. In 1581 Catholics who refused to attend Protestant services were fined £20. Anyone ordained as a Catholic priest would be accused of treason.

1569 - Northern
Earls' Rebellion

1571 - Ridolfi Plot

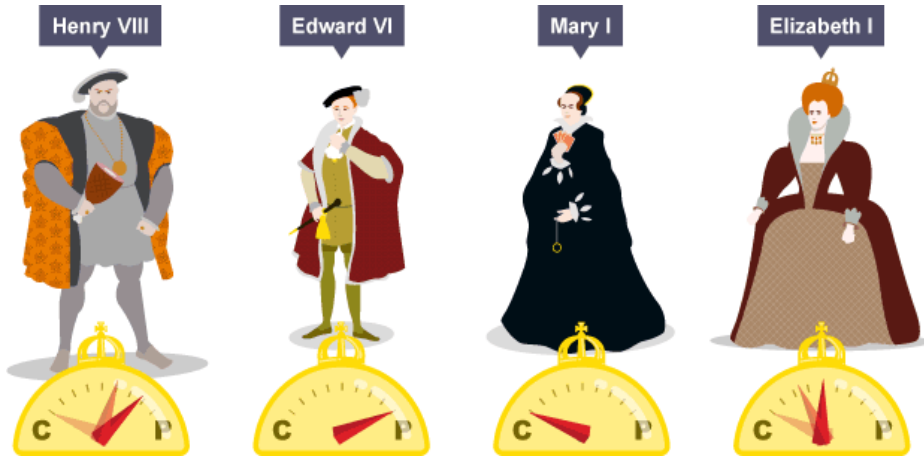


1583 -
Throckmorton Plot

1586 -
Babington Plot



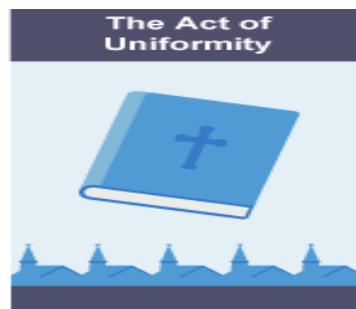
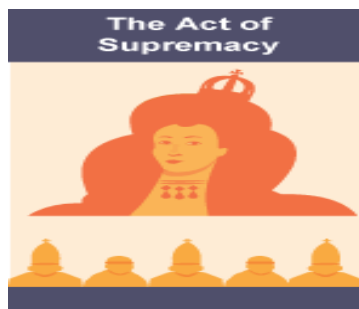
Elizabeth and Religion



Elizabeth was a Protestant. Under Edward and Mary, England has changed from Protestant to Catholic. She rejected Catholic beliefs and Puritan ones. However, she decided on a 'Middle Way', a compromise to make sure all religious faiths got on. She passed two laws about religion early in her reign:

- Act of Supremacy— made Elizabeth 'Supreme Governor' of the Church.
- Act of Uniformity— attendance at Protestant church services were made compulsory. Bible services should be in English. As a compromise Catholic candles and colourful robes were allowed.

Many Catholics and Puritans were unhappy with this compromise.



Renaissance: Vesalius, Pare and Harvey

Pare

Pare was a French Army surgeon. He experimented on wounded soldiers to discover better ways to prevent bleeding.

Hot oil had been used to seal wounds, which was very painful. Pare ran out of oil so one day made a cream made of rose oil, egg yolk and turpentine which worked much better.

To prevent bleeding after amputation, Pare used ligatures to tie wounds instead of cauterising them with a hot iron.

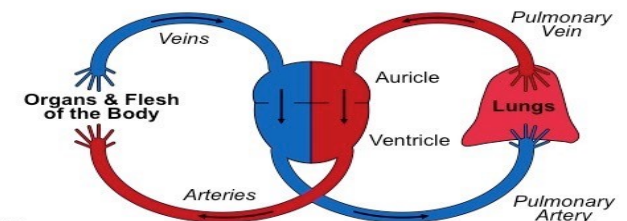
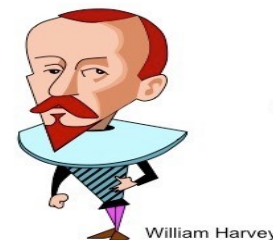
Pare's work became famous in Britain, however not all surgeons accepted them.

Harvey

Harvey was a doctor in England. He was a doctor to King Charles I. Harvey discovered that veins in the body had valves and that blood was pumped around the body by the heart.

Harvey challenged Galen's idea that it was the liver that produced blood. Many of Galen's supporters rejected Harvey's ideas because of this.

Harvey's ideas have influenced medicine in the present day, as blood tests, blood transfusions and heart transplants would not work without his idea of blood circulation.



Treatments in the 1600s and 1700s

Although the Renaissance saw advances in medical knowledge, getting treatment depended on what they could afford. You could get medical treatment from:

- Barber-surgeons– poorly trained, they could give you a haircut and small operations such as pulling teeth or bloodletting
- Apothecaries– sold medicine or potions
- Wise women– treatments that used herbs and relied on superstitions
- Quacks– travelling salesmen who sold medicines

Bloodletting was still a popular treatment. Ordinary people began to use books with herbal remedies, for example Nicholas Culpepper's 'The Complete Herbal'.

Explorers on voyages of discovery brought back new natural medicine, for example:

- The bark from the Cinchona tree from South America was used to treat malaria
- Opium from Turkey was used as an anaesthetic
- Tobacco from North America, wrongly thought to cure the plague



Elizabeth and Marriage

There were three suitors (people who could marry Elizabeth):

1. Robert Dudley: Dudley, the Earl of Leicester, was an ambitious, good looking courtier. Elizabeth spent a lot of time with him and people thought they were in love, but there was a big problem: he was already married. When his wife was found dead there was a scandal and rumours circulated. This led Elizabeth to withdraw from Dudley as her reputation and position as queen were threatened.

2. King Philip of Spain: In the 1560s, King Philip proposed to Elizabeth. He was a Catholic who had been married to Mary, Elizabeth's sister. MPs were not in favour of this alliance for fear of causing religious unsettlement and creating a foreign influence in government. Elizabeth cautiously rejected this offer.

3. Francis Duke of Alencon: Marriage negotiations went on for nearly a decade with Francis, who was heir to the French throne. There were many political advantages to be gained from this alliance, for example influence over French policy in the Netherlands, and Elizabeth used this to her advantage. However, Francis died in 1584 and after that Elizabeth was destined to be alone.

Elizabeth never married. Instead she said she was married to her people and country.

Elizabeth and Marriage

Elizabeth and Marriage

MPs and councillors expected Elizabeth to marry because:

- They questioned whether a woman could rule England alone
- They wanted a marriage to make an alliance with a foreign power
- They wanted to produce a heir to rule after her

There were many advantages and disadvantages to getting married:

Advantages

Staying single meant that Elizabeth could keep sole control of English affairs, namely government and religion. Elizabeth had a range of suitors from different countries. Her refusal to choose between them allowed her to keep her options open in foreign affairs, whilst at the same time this enabled her to play countries off against each other, making her a strong negotiator. She remained the focus of all power since there was no apparent successor.

Disadvantages

Ongoing uncertainty over who would inherit the throne had the potential to lead to plots and attacks to overthrow Elizabeth. For example, plots from foreign, Catholic powers, such as Mary, Queen of Scots. The Privy Councillors and MPs were frustrated because the succession wasn't settled and they felt this made the country vulnerable.

The Great Plague of 1665

The Great Plague killed around 100,000 people in London. Like the Black Death, people still believed the Plague of 1665 was caused by God. People still blamed the planets and miasma (poisonous air).

Cures were similar to those in the Black Death, for example using leeches or bloodletting, praying to God or smelling fresh flowers.

However, there was a more organised approach to dealing with the plague than the Black Death. For example, Plague doctors were hired by towns who wore beaks. Watchmen were employed to stop people entering and leaving infected houses. People were locked up in their houses who had the plague, and their door was painted with a red cross. Also, some people began to observe that death rates were higher in poorer, dirtier places.



Hospitals in the 1700's

The Church's role in hospitals reduced as many became funded by rich people through donations. In these hospitals not only were the sick cared for, but the doctors of the future received training. Individual wards were developed for different types of disease.

Doctors would see poor people for free, and would earn money from seeing rich private patients.

However, some aspects of hospitals were still old-fashioned, for example nurses were still untrained and many doctors still based their advice based on the four humours,

Thomas Coram's Foundling Hospital was opened in 1741 to support and educate vulnerable children and orphans until the age of 15.

John Hunter

John Hunter was a skilled British surgeon who encouraged investigation and experimentation:

- He trained many British surgeons who were inspired by him, including Edward Jenner
- He encouraged human dissection to understand anatomy
- He told surgeon's to trust the body's natural wound-healing process
- He wrote many scientific books which influenced others, for example a book on dentistry

Elizabeth and Parliament

Parliament

The Elizabethan Parliament was very different to the Parliament of today; it was much less powerful and not fully representative of the population. There was no Prime Minister, no political parties, Members of Parliament (MPs) were all men, and they were all voted in by wealthy landowners.

Elizabeth tightly controlled Parliament:

- Parliament could only meet if Elizabeth called it, and she set the agenda.
- Parliament could only talk about what Elizabeth allowed it to discuss.
- Elizabeth mainly used Parliament to grant her taxes - this was her main income.
- Elizabeth could close (prorogue) Parliament at any time.
- Parliament only met 13 times in her 45 year reign for an average of three weeks per year.
- Elizabeth made sure her Privy Councillors sat in Parliament to help control proceedings.



The Privy Council

The Privy Council was a group of trusted ministers who helped Elizabeth govern England. They only had 19 members for efficiency, and it became a group of full-time politicians.



Key Members of the Privy Council:

1. William Cecil - Elizabeth appointed Cecil as the Secretary of State in 1558. He was her most important minister and guided her wisely for 40 years. In 1571 he received the title Lord Burghley.
2. Robert Dudley - Earl of Leicester and a trusted adviser until he died in 1588. He and Elizabeth were very close and there were rumours that he and Elizabeth were lovers.
3. Sir Francis Walsingham - was in charge of Elizabeth's secret service and advised on foreign affairs. In 1586, he uncovered the plot that led to Mary, Queen of Scots' execution.

Edward Jenner and Vaccination

Smallpox is a terrible disease that causes blindness, scarring and frequently death. In the 1700's inoculation was widely used to prevent smallpox. This involved giving a low dose of smallpox to people to make them immune. However, there were many problems with inoculation, not least religious objections and that sometimes people were given a dose of smallpox which killed them.

Edward Jenner was a surgeon who noticed that milkmaids who caught the disease cowpox did not get smallpox. To test the theory that cowpox gives you smallpox immunity, he gave cowpox to an 8 year old boy called James Phipps. Phipps was then given a smallpox inoculation and he didn't get the disease, he was immune.

Jenner further tested his vaccine on 16 other people and used this to prove cowpox protected humans from smallpox.

Although many people disagreed with vaccination, it was widely used and smallpox was eradicated in 1980.



Louis Pasteur's Germ Theory

In the 1700's and 1800's, people believed that disease was caused by miasma (bad smells) or spontaneous generation, the idea that microbes appeared by magic.

Louis Pasteur was a scientist who challenged this idea. He was asked by a brewery to investigate why beer went sour or off. He designed an experiment to show that if air was kept out of a flask, the liquid inside it would not go off. This proved that germs were airborne.

The Germ Theory is simply that germs causes diseases. The germs could be found in places they could reach easily, infected things and turned them bad.

He also found that heating liquids could kill all the germs (pasteurisation)

Robert Koch

Koch was a German scientist who developed Pasteur's theory. His main idea was that specific germs cause specific diseases. His other work included:

- Identifying the germs that cause anthrax, cholera and tuberculosis
- Grew microbes on seaweed, which encouraged them to grow
- Used dyes to stain microbes so they could be identified under a microscope
- Used photography to prove his findings

Elizabeth's Character, Progresses and Portraits

Elizabeth suffered early in her life. Her mother Anne Boleyn was executed by her father, Henry VIII. She was accused of treason on two occasions.

Her personality was self-reliant, determined but cautious. She was very well educated. She ruled for 45 years.

Elizabeth used progresses to maintain her image. A progress is when the Queen and her court travel and stay with powerful nobles. It was expensive to entertain the Queen but gave them access to power. It was also used as propaganda by Elizabeth to show off her wealth and power.

Elizabeth had many portraits made of her during her reign. These were approved portraits which artists had to copy, and showed her as young, powerful and wealthy.

The Queen's Court

The Queen's Court was a collection of people. It included the Queen, her advisers and servants. She had about 500 courtiers who lived with her. Elizabeth encouraged loyalty from these people by giving them duties at court (called patronage). As well as work at Court there were also massive feasts and plays.



Elizabethan England,

1568-1603



Anaesthetics

Pain relief had been used in operations since the Middle Ages, the most popular being opium and alcohol (which made the heart beat quicker and caused greater blood loss).

New anaesthetics to numb pain were developed in the 1700's and 1800's:

Nitrous Oxide

More commonly known as 'laughing gas', this was developed by Humphrey Davy in 1795. He describe how the gas made him feel giddy and relaxed, but was used as a fairground novelty rather than in surgery.

Ether

Developed by American dentist William Clark, this was used first in a tooth extraction and then in a leg amputation. Although effective, it had its drawbacks, as it caused vomiting and was highly flammable.

Chloroform

This was discovered by a Scottish doctor James Simpson in 1847. He and his friends were testing substances in his living room when someone knocked over a bottle of chloroform, which sent them all to sleep!

Simpson used chloroform in operations and encouraged its use. However, there were some objections. Some surgeons thought patients should feel pain. Some died by being given too much chloroform, they did not know different sized people needed different doses. A famous example is Hannah Greener who died during an operation to remove a toenail.

These objections were overcome when Queen Victoria began to use chloroform in childbirth, which helped popularise its use.

Antiseptics

Joseph Lister was a surgeon who believed that infections could only happen when the skin was broken, when germs would get into it and start an infection. Lister tried placing a chemical barrier where the skin was broken. He first tried this on Jamie Greenlees, a young boy run over by a cart. His leg was broken and instead of amputating, Lister put dressings over the leg covered in carbolic acid. The boy survived.

Lister began to use the antiseptic carbolic acid in surgery. It was sprayed in the operating theatre on the surgeon's hands, the wound and on surgical instruments and bandages.

After using carbolic acid, the mortality rate in surgery fell from 46% to 15%. However, Lister's methods were not accepted by everyone because:

- Carbolic acid slowed operations
- It made operating conditions unpleasant
- Some surgeons thought their methods were better than Lister's so did not try them

Later aseptic surgery was developed, which cleaned operating theatres before surgery.



How to answer the questions (after you've read through and annotated)

1) *How useful is source A to a historian studying [factor]..? (8)*

Source A is useful for studying [factor] as it shows/says... [item of content]. *I know that at this time...* [explain your knowledge of the content].

Source A is also useful because it shows... [do the same thing again; content and knowledge].

The origin is also useful because... [explain why the author, time and audience may make it useful].

2) *Explain the significance of [factor] to [event]... (8)*

One way in which [factor] was significant was...

Another significant thing was...

Finally [factor] was also significant because...

[For these three you must give a way that the factor was important and explain the effects].

3) *Compare X with Y... In what ways were they similar? (8)*

One way in which they are similar is...

Another way that they are similar is...

[This question requires you to explain two ways in which X and Y are similar. You must give specific details about these similarities.

You will be asked for Similarities or Differences, but not both.

4) *Has X affected Event Y? (16 + 4 SPaG)*

X affected Y by... [explain your knowledge of the topic and how the given factor had an effect].

Whereas A also had an effect... [explain your knowledge of the topic and how a second factor had an effect].

Another factor that affected Y is... [explain a third factor].

I would judge that [a factor] was more significant to Y because... [your opinion goes here and should compare the given factors]

Checklist

Medieval Medicine	
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Hospitals in the 1700's	
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Louis Pasteur's Germ Theory	
Anaesthetics	
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Public Health in the 1800's	
John Snow and Cholera	
Government Intervention	
Penicillin	
Alternative Medicine	
Impact of War and Technology	
Booth, Rowntree and Liberals	
Beveridge and the NHS	

Public Health in the 1800's

During the 1800's, many people moved from the countryside to the towns for jobs in the new factories. However, the population increase in the towns was so quick that there was not enough housing for everybody, and overcrowding became a problem. The population of Manchester increased from 70,000 in 1801 to 303,000 in 1851. New houses were built but they were often of a very poor quality.

- A large family might live in a small room
- Toilets (privies) and water pumps were shared by many families
- Infectious diseases, such as cholera, spread very quickly
- Sewers still ran down the middle of the street
- Water was very dirty and often mixed with human waste
- No rubbish collections, street cleaners or sewers
- Industrial accidents common in the factories
- No food regulation— milk might be watered down and recoloured using chalk powder
- Back-to-back housing poor quality, damp and mould

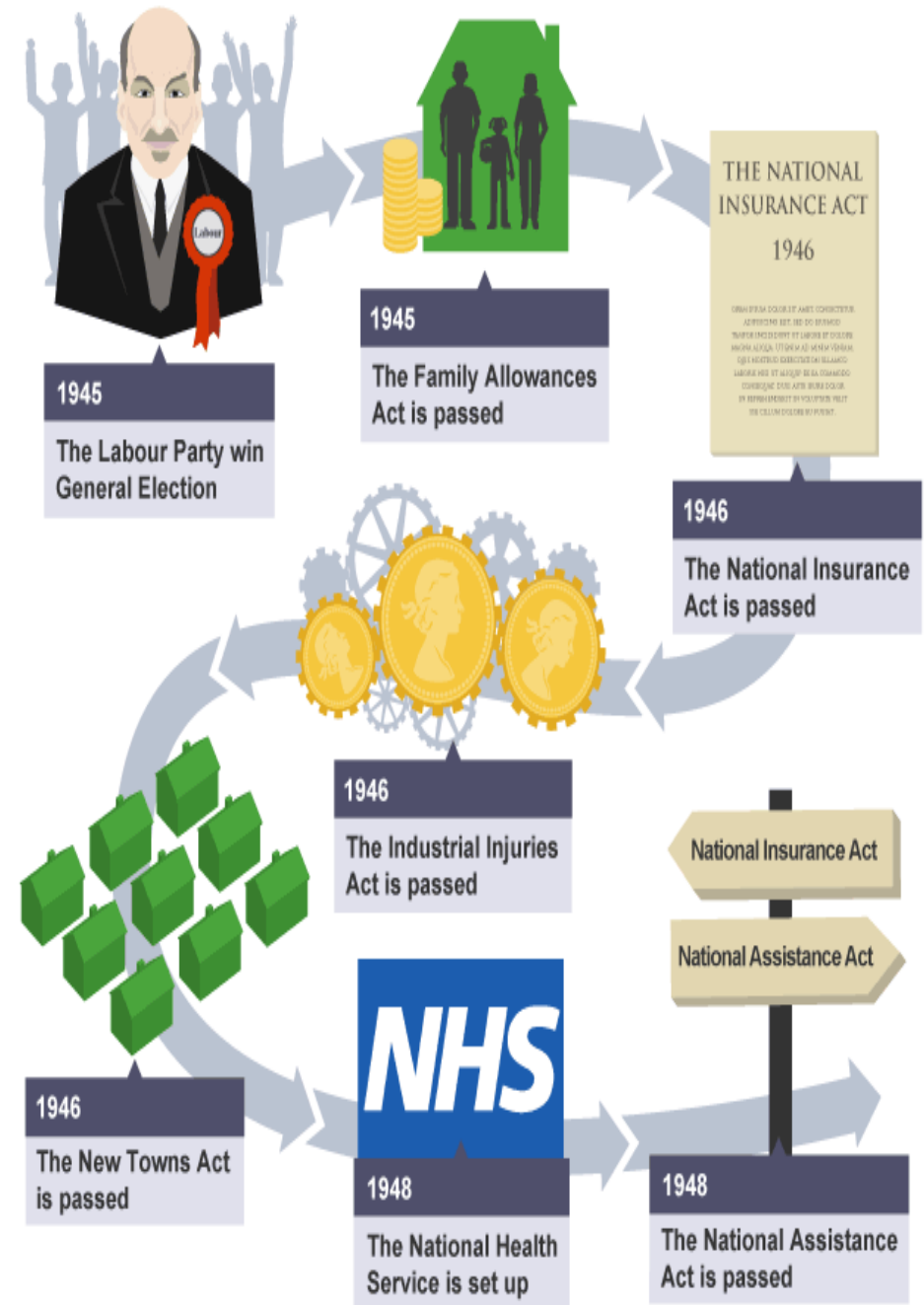
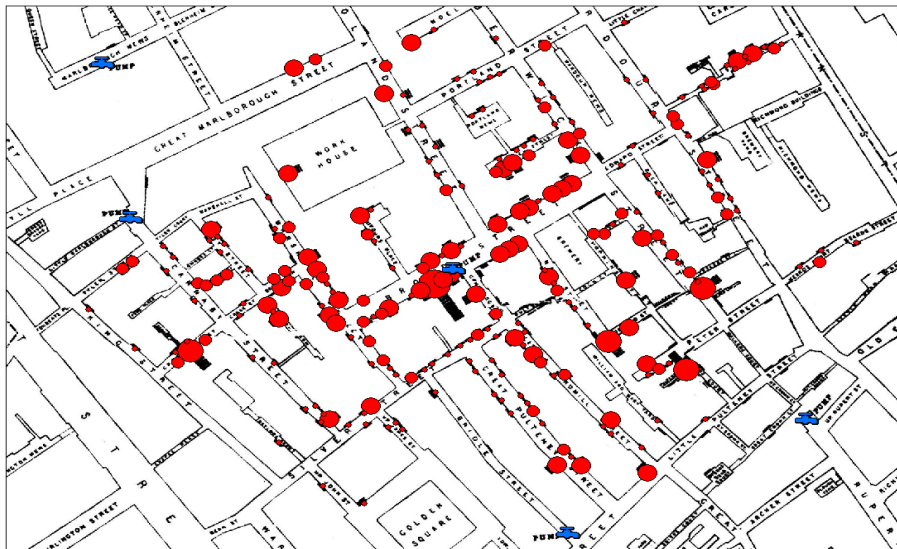


John Snow and Cholera

Cholera was a terrible disease caused by dirty water. There were many outbreaks in the 1800's, particularly in the slums. People suffered from diarrhoea and vomiting, their skins turning black before they died. However, people did not know the cause of cholera, they blamed it on miasma.

During the 1854 cholera epidemic, a London surgeon called John Snow proved cholera was caused by dirty water.:

- He did house-to-house interviews and mapped the location of each cholera case.
- He worked out that the houses infected with cholera used a water pump on Broad Street. He removed the handle of the pump and the outbreak stopped
- It was found that a leaking cesspit nearby had leaked into the drinking water



Beveridge and the NHS

During World War Sir William Beveridge was asked to write a report about how to improve Britain after the war. His Beveridge Report, published in 1942, aimed to get rid of 5 giant evils:

- Disease
- Want
- Idleness
- Squalor
- Ignorance

The Beveridge Report was very popular and the Labour Party, elected in 1945, promised to turn the report into law. They:

- Introduced family allowance to pay for childcare
- Gave benefits to the very poor
- Raised the school leaving age to 15
- Demolished slums and built new housing

Their biggest reform was introducing a NHS in 1948. This was developed by Minister of Health Aneurin Bevan and provided healthcare free at the point of use, funded by taxation. Although many doctors initially opposed the NHS, many joined when offered more money. The NHS greatly improved poor people's healthcare. It aimed to provide healthcare 'from the cradle to the grave'.

Government Intervention

In the 1800's, government had a 'laissez-faire' attitude. This meant that they did not want to get involved in sorting out public health. However, gradually attitudes began to change.

Edwin Chadwick

Chadwick researched living condition of the poor in towns, and in 1842 produced his 'Report on the Sanitary Conditions of the Labouring Population'. He linked poverty to poor living standards and health.

Governments began to intervene more in public health:

- The 1848 Public Health Act allowed council to raise money to improve conditions in their town. However, this was voluntary
- The 1875 Public Health Act was compulsory and forced councils to provide clean water and appoint medical officer of health



Penicillin

An antibiotic is a medicine that can cure infections. The first antibiotic discovered was penicillin.

Alexander Fleming

Fleming was a scientist studying the staphylococcus germ, which caused a wide range of diseases. Fleming went on holiday in 1928, and when he returned he noticed a blob of mould on one of the staphylococcus petri dishes. The mould had floated up the stairs and landed on the petri dish. It was the penicillin mould and it had killed the germs! Despite this discovery, Fleming's ideas were not developed for another 10 years.

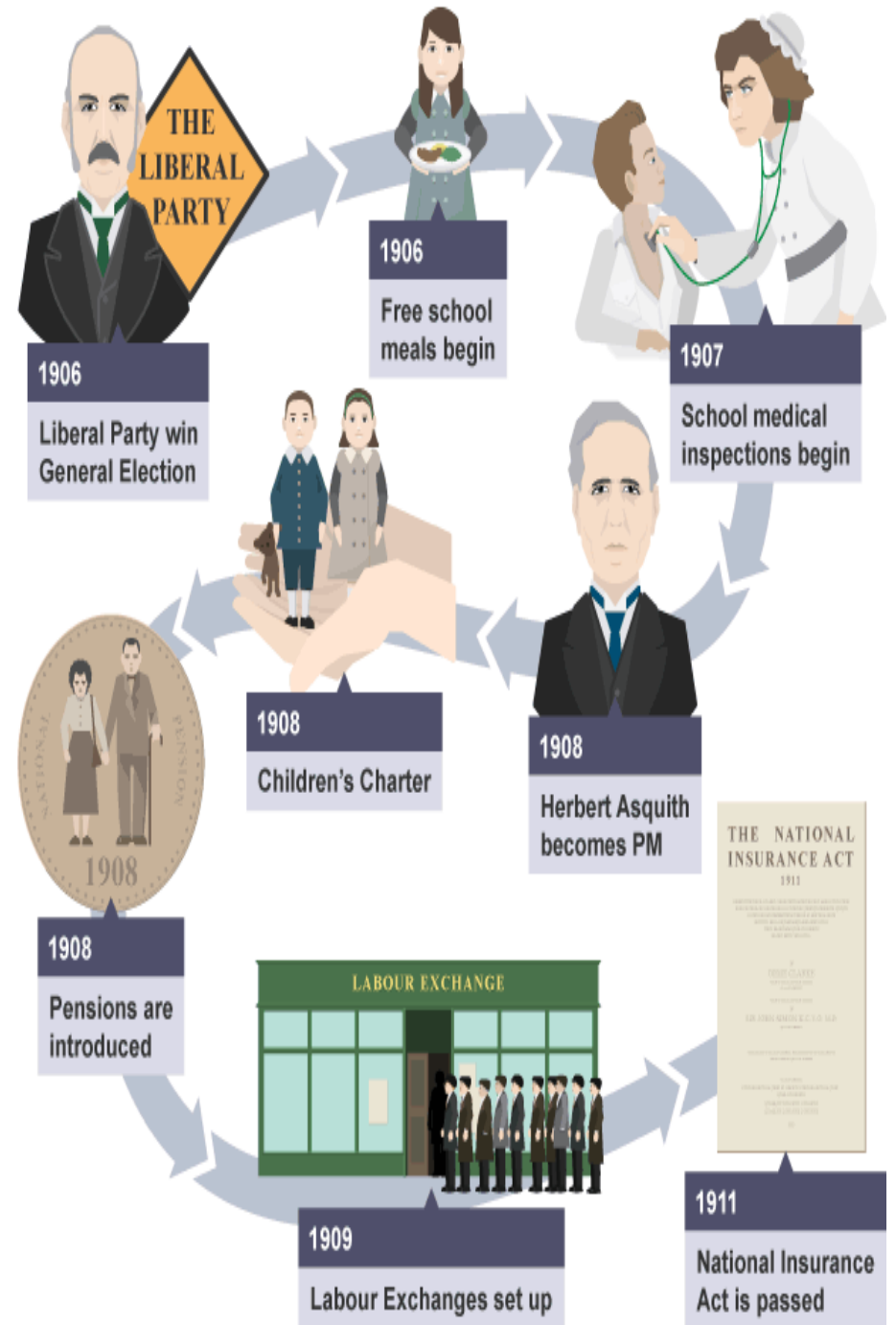
Florey & Chain

Florey & Chain read Fleming's work and decided to develop penicillin. They tested it successfully on 8 mice. They then used penicillin on Albert Alexander, a policeman who had an infection from a rosebush. His infection began to clear up but they only had enough penicillin for 5 days and he died.

Florey & Chain eventually got money to make penicillin when the USA and UK governments realised its potential use on soldiers in World War Two.

Impact of penicillin

- 250,000 soldiers in WW2 were treated using penicillin
- 15% of US/UK soldiers would have died without being given penicillin
- It became available after WW2 for doctors to cure patients, and it has saved the lives of millions of people



Booth, Rowntree and Liberal Reforms

Problems with Health around 1900

- In 1889, Charles Booth's report found 35% of Londoners were living in poverty
- In 1899, 40 out of every 100 volunteers for the Boer War were rejected as they were unfit to fight
- In 1901, Seebhom Rowntree discovered half of York's population lived in poverty. He defined the term 'poverty line', below which people did not have enough money to survive on their income from work

In 1906, the Liberal Party won the election, and began to introduce laws to improve the lives of the working class:

- 1906 School meals Act– free school meals for poor children (but not all schools did this)
- 1908 Old Age Pensions Act– people over 70 received a pension. However, the average life expectancy was 50
- 1909 Labour Exchanges Act– set up job centres for the unemployed
- 1911 National Insurance Act– Contribution scheme for workers to give them benefits if they became sick or unemployed. However this did not cover wives or children

Alternative Medicine

Conventional medicine is based on science and experimentation and is used by most people, However, some people do not have confidence in this type of medicine, for example concern about the side-effects of drugs, and have turned to alternative medicine. The 4 main types are:

- Aromatherapy– Using oils from fruits and flowers which are massaged onto the skin, which are said to promote healing and influence emotions
- Hypnotherapy– A therapist hypnotises the patient. When totally relaxed, the patient can be relieved of stress or addictions such as smoking
- Homeopathy– Patients take a medicine (plant, animal or mineral) which causes similar symptoms to the illness they are suffering from. The idea is that similar symptoms will stimulate a patients natural defences
- Acupuncture– Needles are placed at key points around the body. The needs are said to allow energy to flow again and relieves pain



The Impact of War and Technology on Surgery

World War One killed over 10 million people, and many more injured. New and deadly weapons such as shells and gas caused terrible injuries. There were a great number of medical advances in WW1:

- X-Rays. Mobile X-Ray machines were used near the trenches to find out in the soldier's body bullets or pieces of shrapnel were without having to cut them open
- Plastic Surgery— Many soldiers were disfigured by shells and shrapnel. A London doctor names Harold Gillies set up a special unit to transplant skin and treat man suffering facial wounds. He and his colleagues had treated over 5000 men by 1921
- Blood transfusions— In 1900 Karl Landsteiner discovered blood groups, which helped doctors work out a transfusion could only work if the donor's blood group matched the receiver's. To make sure blood didn't clot when stored, in 1914 it was found adding glucose and sodium citrate to the blood stopped it clotting
- Broken bones— New techniques were developed to repair broken bones, for example the Army Leg Splint which helped bones knit together



The Impact of War and Technology on Surgery

In WW2, heart surgery progressed. American army surgeon Dwight Harken cut into beating hearts and used his bare hands to remove shrapnel. Penicillin was used successfully in WW2, and diets improved with rationing as people were encouraged to grow vegetables, poor people received meat in their ration and sugar was cut. Evacuees from the towns were sent to the countryside experienced a cleaner and healthier lifestyle. Plastic surgery was further developed by Gillies' cousin Archibald McIndoe.

Many more technological breakthroughs have been discovered in the 20th Century, including:

- Improved anaesthetics allow patients to be unconscious for longer
- Better antiseptics increase the success rate of difficult operations
- Keyhole surgery using small fibre-optic cameras linked to computers meant surgeons can perform operations through very small cuts
- Radiation therapy has been used on cancer patients to shrink tumours and kill cancer cells
- Using lasers in surgery