

Steam engine

- Heron of Alexandria 50 ad
- Jet/steam turbine
- Ancient Chinese also had it as well
- Was not invented to power factories, was a solution to another problem
- Navy - needed special large trees to build the mass
- Wood was running out so hard to get wood for power
- Over night Britain switch to coal
- Steam engine was re-invented to mine coal

Thomas Savery - did not invent the steam engine

- Did get the patent for it and became wealthy because of it
- Called it Miner's friend
- Copied Edward Marquise of Worcester
- He understood that the engine doesn't work for under 12m
- Never bothered with it
- That thing was a vacuum pump
- Limited to about 12m

Denis Papin

- Unfortunate person since he was French and so the Royal society didn't treat him well. - British didn't like French so they didn't like him. 1690 - First piston steam engine -> steam boat, He invented it based on ancient document which basically powered the industrial revolution type steam engine later on.
- Why was he removed from history? Inadequate technology (could not be built at the time) (established internal) Or social issues (external-new)
- Communicated to Robert Boyle - Hooke - Thomas Savery - Isaac Newton. Nothing was built due to his social connections
- Needed to find patient, worked as an assistant to Robert Boyle which took most of the credit of Denis Papin because of connections to the Royal society and money
- Turns out Robert Hooke was later hired by Boyle and became friends with Papin. But then later they both died and Newton became the head of Royal society
- Proposal for a steam boat needed 15 pounds and Member of royal society couldn't give him the money because they would go against Isaac Newton and tried to wipe him from history. As best friend of Newton's biggest enemy he had it tough.
- Thomas Savery sent a nasty letter denouncing Papin saying that he was a fraud and that Thomas was the only inventor of Engine. Newton rejected Papin: "you should try the simplest and cheapest experiments first." Which Papin already did so it was an insult. Papin became homeless and vanished so he died somewhere

Thomas Newcomen

- Claimed that he invented the piston steam engine - stolen from papin
- Hot water was boiled and admitted into the cylinder at the same time colder water injected into the cylinder which created a partial vacuum that created the motion
- A model of Steam engine breaks at Glasgow University

James watt

- Was fixing broken equipment at the University
- External Condenser - Made the engine extremely efficient
- Changed to a steam push vacuum pull system

Matthew Boulton

- Realised money could be made and got the patent for the James Watt steam engine
- Opened the first engine factory
- Lunar society - textbook reading (important)
- Basically Matthew Boulton provided all the money for James Watt
- Problem: They could not obtain the precision to make the mass production possible because of the cylinders and pistons

Solution: invention from ancient China

- Cannons
- They was friendly firing on allies because barrels keep exploding
- Needed a new method to make cannon not break

John Wilkinson - apparently a really shitty dude

- Obsessed with standardization
- Invented the Cannon boring machine -> helped James watt

James watt later invented a new engine

- "revolution" -> crank/flywheel got patent afterwards
- Cheated James Pickard from his engine and money

Factory System

- Before the factory system, there was Putting-out system Aka cottage system which Contracted work - at worker's home, Paid on your own hours by your output and allowed you to stay with family - life was good
- Then the first factories came because machines got too large

Factory - new technology of labour organization

- Workers removed from families/homes (minimal wages). Destroyed old system which had bad wages that people can't buy food. At the time poverty was seen as a punishment from God as a sin. When the fathers at factories cant provide. Brought in Wives and children and people started dying. Made the few owners hella rich. The Silk mill in Derby Paradigm of factory - powered by water

Marc Brunel

- Automated production/assembly line
- Essentially invented full automated assembly line
- Portsmouth block mills factory became the famous factory back in 1800s
- Comes back to the Navy (desired steam engine)
- To automate building ships in parts

This means factories can move away from the river systems

- Removed the biggest cost of factories - shipping
- No longer dependent on water - moved into cities - workers - modern industrial society
- Enormous value for the factory owners at the time but really terrible for the workers
- No female engineers
- Women were highly restricted towards almost everything that had to do with innovation and engineering till 1957

Queen Victoria 1819 - 1901

- The Royal commission - prince Albert/social programs integration of art and industries competition for design
- This was because people started to realise how poor the working conditions for the people and that was caused by how factories ran
- Use these programs to improve the working conditions for people in the factories
- "people who are well fed provide higher quality works"
- Poor way of going about it
- No one could produce him the building large and cheap enough to house such an exhibition

Joseph Paxton - Gardener

- Obsession with Green houses, led to Great Conservatory. Complete failure in its purpose to house plants but It was a glass "house" that paved the way to what glass skyscrapers look like now. Submitted Design using a napkin in a pub. 9 months later the crystal palace was constructed. Regarded as a temple/church for the worshippers of technology (religion). Product of industrial revolution - new religion of the new age.

Fruits of the industrial revolution - bring industries and arts together - Great exhibition of 1851

- Presentation section restricted to technological revolutions: Grand piano invented around this time
- First printer scanner and fax machine Invented by Alexander Bain Operated with electrochemistry. 2 electric pendulums that moved the scanning line by line. Special ink that can be read by electrical signals. 1865 first fax line. Incredible quality for the time. Used to confirm peoples signature (banks) Send samples of new patterns in the textile industry. Talking telegraph (very spooky/creepy)
- Visited by over 6 million people, Directly resulted in changes in applied art

Singer machine - sewing machine (Domestic revolution)

- First machine to have applied art, Drawings on machine that made it loop.
- First time someone built a machine that was designed towards women at the time. Gave women the independence which was very revolutionary at the time since most was dependent on husband on money.
- Allowed women to do full time jobs at home and bring income directly to them. One of the first machines to be associated with women. Installment plan give the machine to women and allowed them to pay it back installments until you pay off the machine (think about buying cars today)
- Photography, Start of when women started establishing themselves in industry.