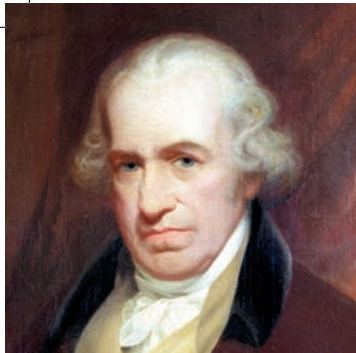


James Watt
1736 - 1819



James Watt

1736 - 1819

This leaflet celebrates James Watt by linking his life and achievements to Inverclyde and the effects of his technologies on its industrial development.

James Watt was born in Greenock. The town was a herring fishing port and Watt's family played an active part in community life. His grandfather had taught navigation and mathematics in Cartsdyke, an older Clyde fishing village which has become part of Greenock. His uncle, who practised as a surveyor in Glasgow, produced the first survey of the River Clyde. In the 1730s, Watt's father, who had been apprenticed as a carpenter and a shipwright, set himself up in business in Greenock as a general merchant and a ship owner.



His parents were responsible for his early education due to his ill health. It was not until he went to the Grammar School at the age of 13 that his mathematical ability was obvious. At night he worked in his father's Greenock workshop making models and repairing nautical instruments.

In 1755 Watt went to London to serve his apprenticeship as an instrument maker. He spent a year working for John Morgan, mastering in 12 months the craft which normally required three or four years training.

His first job was at Glasgow University restoring astronomical instruments. When his first shop opened within the University precincts in 1757, Watt styled himself as 'Mathematical Instrument Maker to the University'.

In 1765 a model of a Newcomen Engine was given to Watt to repair. He had already experimented with steam power and this gave him the chance to learn more about the subject. Although he did repair the model, he was not satisfied with its performance, and devised a means of increasing its efficiency by using a separate condenser. This overcame the problem of heat loss in the alternate heating and cooling of the cylinder.

In the same year he was asked to design a pumping engine for a mine at Kinneil. It was beset with financial and technical problems. In order to make money Watt turned to civil engineering and surveying projects. Between 1769 and 1774 he was responsible for improvements to Greenock's harbour and designed the first horse driven pump to discharge water from Port Glasgow's dry dock. He also planned and constructed two dams to provide a water supply for Greenock.

In 1769 Watt was granted a patent for his methods of fuel economy in steam engines and he met Matthew Boulton, an English manufacturer, with whom he was to form a mutually beneficial partnership.

In 1774 Watt moved to Birmingham taking the Kinneil engine with him. The works at Soho, which Boulton owned, were modern. With skilled labour at his disposal, he soon managed to get the Kinneil engine operating. Having solved this problem, Watt then developed methods of adapting his beam engine with its up and down or reciprocating motion to perform the circular motion required to drive machinery. The rotative engine opened up a new range of applications for steam power in industries including weaving, mining, milling, ceramics and in iron works.



*Thomas Watt, 1642 - 1734
Grandfather of the inventor.*



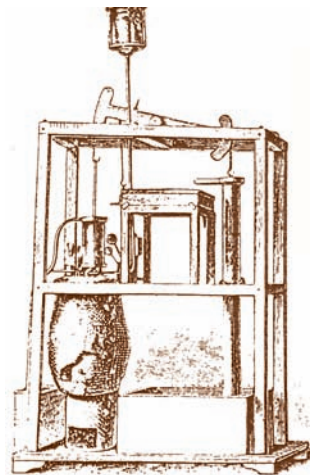
*James Watt, 1698 - 1782
Father of the inventor.*





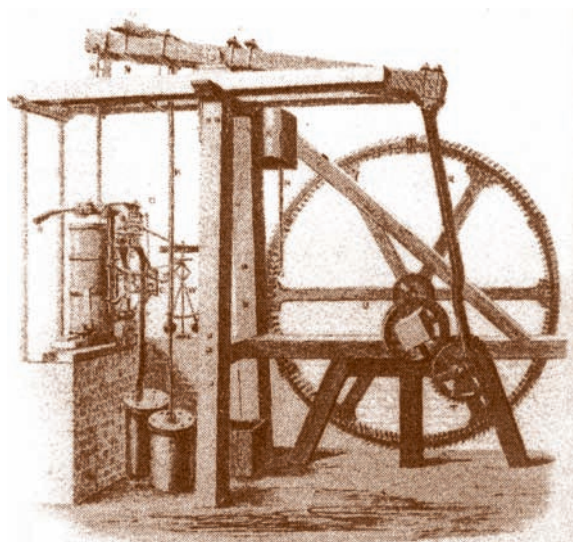
In 1800 when Watt's original patent expired engineers who had been restricted by it were free to experiment. Even though Watt had always been sceptical about the use of steam engines in ships, his work was taken forward by others. The 'Comet', which was the first seagoing commercial steamboat in Europe was built in 1812 by John Wood of Port Glasgow for Henry Bell. Boulton and Watt engines were used two years later in the 'Prince of Orange' and the 'Princess Charlotte' which were built by James Munn of Greenock.

Throughout his career, Watt also worked on inventions which were unrelated to steam engines. One of the first was a perspective drawing machine and his last was for copying sculpture. The inventions which must have been of most value to Watt himself were the printing presses which he patented in 1780. These were a screw down press and a roller press which could reproduce technical letters and drawings from an inked original onto semi-transparent paper.



In 1816 Watt donated £100 to the Magistrates of Greenock to be spent on setting up a Scientific Library. He specified that the books should cover subjects ranging from the properties of fluids to the art of shipbuilding and these were added to the collections of the Greenock Library, which had been founded in 1783. When James Watt died in 1819, the townspeople of Greenock commissioned a marble statue of Watt by Sir Francis Chantrey. James Watt's son offered to provide a building to house the statue and the collections of the Greenock Library. The site, in Greenock's Union Street, was donated by the Shaw Stewart family and the library opened in 1837. The Watt Hall and McLean Museum were added in 1876. Today the Watt Library houses material relating to Inverclyde local history and archives.

In 1908 the Watt Memorial College, which was endowed by Andrew Carnegie, was opened in the area of Greenock where Watt had spent his childhood. Marine engineering and navigation were the main subjects taught, and as Greenock and Port Glasgow had busy docks, the college was convenient for seamen who wanted to study while in port. The Watt Memorial College closed in 1973 when the new James Watt College opened. This College is now part of West College Scotland and offers a broad range of courses.



Technological Change in Inverclyde

Prosperity in Inverclyde's three main towns of Greenock, Port Glasgow and Gourock was derived from the technology which James Watt did so much to develop.

Although the towns of Port Glasgow and Greenock were not noted for shipbuilding prior to the 19th century, both had yards producing fishing and sailing vessels. Change came quickly with the application of steam power to navigation.

By 1850 two thirds of Britain's tonnage in iron steam ships was produced on the Clyde. Many of the ships were built in Greenock and Port Glasgow where the technology required in constructing iron hulled vessels was very different from the traditional methods used in building wooden sailing ships.

Industries closely associated with shipbuilding, such as engine works and steering gear manufacturers became established in Inverclyde and the boom in shipbuilding continued into last century.





By 1864 almost a quarter of Britain's sugar refineries were in Greenock and Port Glasgow and these, as well as the textile mills, were directly and indirectly dependent on steam power.

Steam technology contributed to the development of Gourock as a Victorian seaside town. It was the first 'resort' stop down the river for the legendary Clyde Steamers and grew rapidly after 1890 when the Caledonian Railway completed the line from Glasgow.

In 1913 Demand for ships reached its peak. Since then the decline continued, particularly since the 1950s.

In 1955 27 new ships were launched from Inverclyde's yards, twenty years later the number was 10. In 1864 there were 14 sugar refineries, today there are none.

Textile mills and rope works have gone but new industries have come to the area.

In 1951 IBM United Kingdom Ltd. introduced the electronics industry to Greenock. Many people however relied on Inverclyde's traditional industries which have been severely affected by worldwide recession and the emergence of third world competition. The community has suffered the repercussions of redundancies and closures.



There are many analogies between Watt's time and the present day. Inverclyde is once again experiencing technological change. It is hoped that this process of change will inspire enterprise and enthusiasm in Inverclyde's people in the way the steam engine did 200 years ago.

1756 Completed apprenticeship as instrument maker.

1763 Repaired model of Newcomen engine.

1765 Invented the Separate Condenser
Started work on the Kinneil pumping engine
Designed perspective drawing machine.

1769 Granted patent for a 'New method of lessening the consumption of steam and fuel in fire engines'.

1772 Worked on improvements to Greenock Harbour.
Carried out scheme to provide water supply for Greenock.

1773 Surveyed for canal route through the Great Glen.

1775 Extended his patent for 25 years.

Partnership with Matthew Boulton was established.
Kinneil engine taken to Birmingham where problems were solved. Orders placed for first Boulton and Watt Engines.

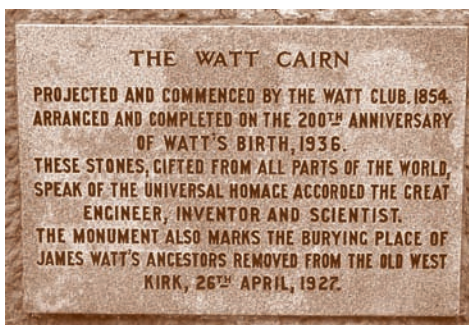
1780 Patented two methods of reproducing drawings and letters.

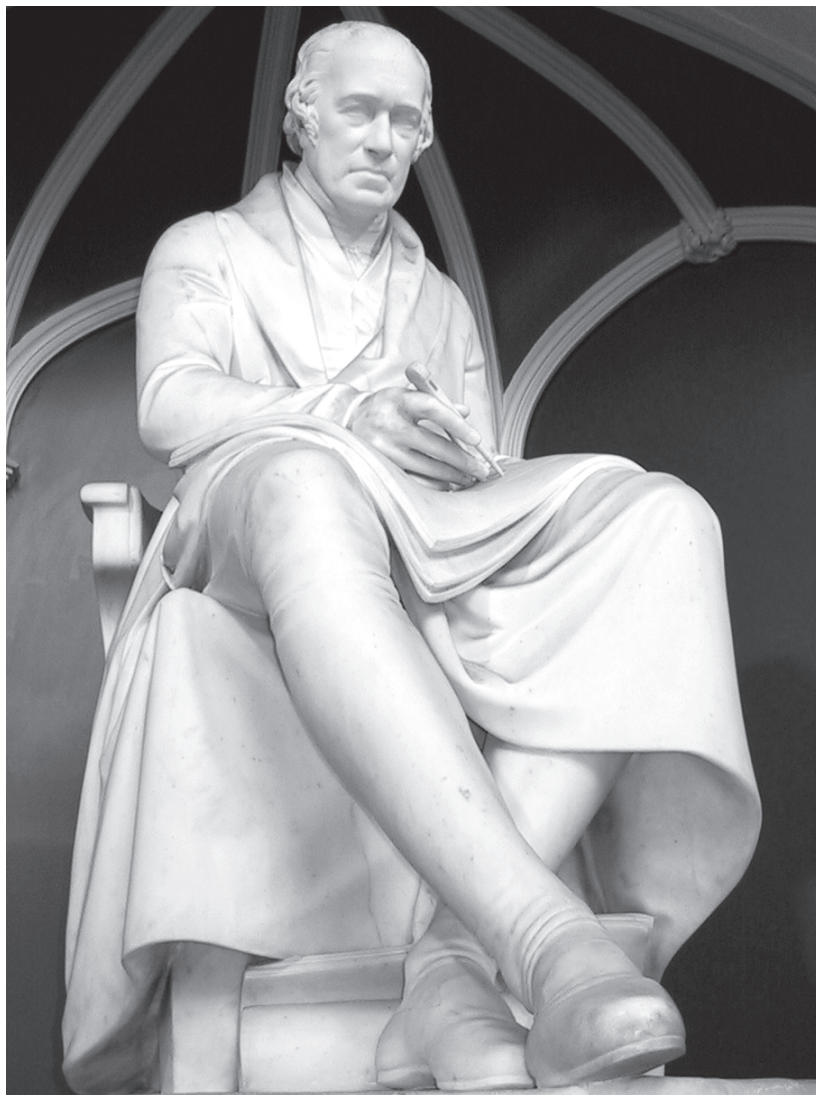
1781 Patented methods of 'rotary motion'.

1783 Set the standard unit of 'horsepower'.

1800 Original patent expired. James Watt retired.

1816 Donated £100 to help set up a Scientific Library in Greenock.





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