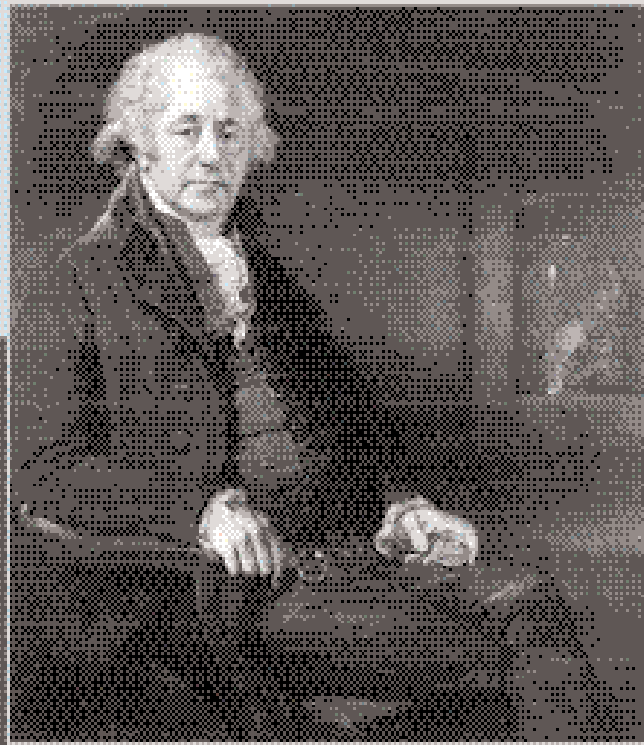
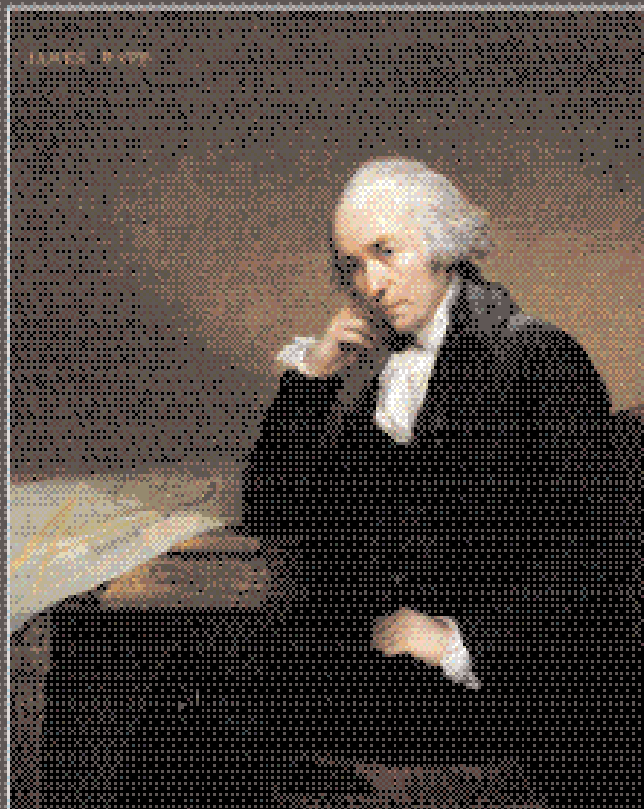


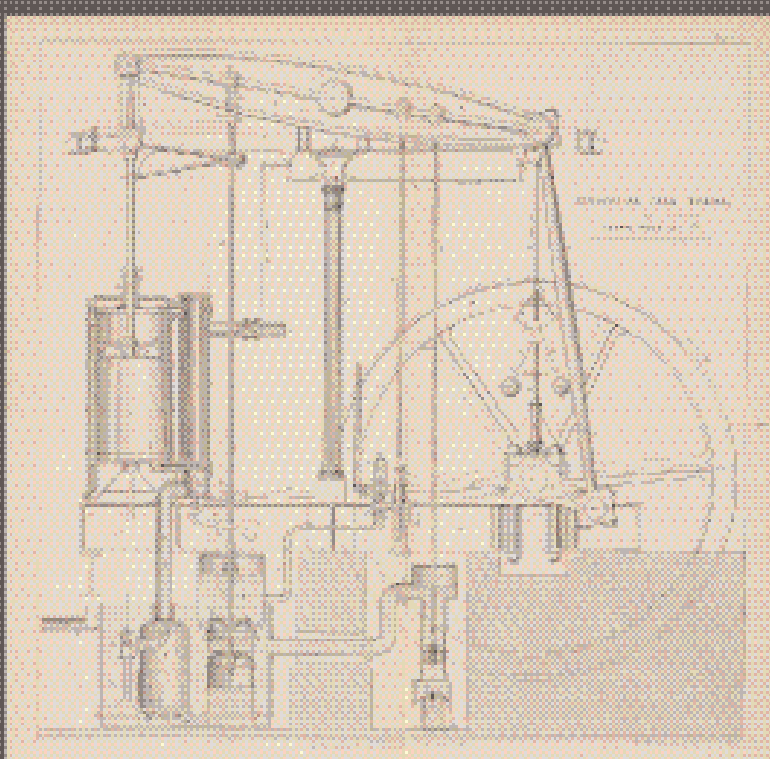
# A TREMENDOUS BORE TWLL ENFAWR



Matthew Boulton, business partner to James Watt and manufacturer of John Wilkinson's tokens.  
Matthew Boulton, partner busnes James Watt a gwneuthurwr tocynnau John Wilkinson.  
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James Watt, engineer and inventor.  
James Watt, peiriannydd a dyfeisydd.  
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Watt's steam engines powered the Industrial Revolution.  
Peiriannau stêm Watt yrrodd y Chwyldro Diwydiannol.  
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James Watt's steam engine powered the Industrial Revolution. He patented his invention in 1769. However, Watt's engine needed accurately made cylinders to work properly and Watt couldn't find any cylinders made to the standards he required. Only the best ironmaster and engineer could solve Watt's problem. In 1773 Matthew Boulton, Watt's new business partner, introduced him to John Wilkinson.

Wilkinson experimented. Initially he tried adapting his cannon boring machine. Then he built a new machine at Bersham that could bore cylinders of various sizes. In April 1775 Wilkinson delivered the cylinders to Watt in Birmingham and the steam engine worked. In 1776 the two inventors installed a steam engine at Wilkinson's blast furnace in Bradley, Staffordshire. It was a great success. Orders soon followed from other ironmasters. The engines were sold to use in the mines and the cotton mills. Boulton & Watt recommended all their steam engines be fitted with Wilkinson cylinders made at Bersham.

Peiriant stêm James Watt yrrodd y Chwyldro Diwydiannol. Cafodd batent ar ei ddyfais yn 1769. Fodd bynnag, roedd peiriant Watt angen silindrau manwl gywir i weithio'n iawn ac ni allai Watt ddod o hyd i unrhyw silindrau a wnaed i'r safonau gofynnol. Dim ond y meist'r haearn a pheiriannydd gorau allai ddatrys problem Watt. Yn 1773 cyflwynodd Matthew Boulton, partner busnes newydd Watt, ef i John Wilkinson.

Arbrofodd Wilkinson. I ddechrau ceisiodd addasu ei beiriant tyllu gynnu mawr. Yna adeiladodd beiriant newydd yn y Bers a allai dyllu silindrau o bob maint. Ym mis Ebrill 1775 anfonodd Wilkinson y silindrau i Watt ym Mirmingham a gweithiodd y peiriant stêm. Yn 1776 gosododd y ddau ddyfeisiwr beiriant stêm yn ffwrnais chwyth Wilkinson yn Bradley, Swydd Stafford. Roedd yn llwyddiant mawr. Dilynodd archebion yn fuan oddi wrth feistri haearn eraill. Gwerthwyd y peiriannau i'w defnyddio yn y mwyngloddiau a'r melinau cotwm. Argymhellodd Boulton a Watt osod silindrau Wilkinson a wnaed yn y Bers yn eu holl beiriannau stêm.

"Wilkinson hath bored us several cylinders that doth not err to the thickness of an old shilling in no part."

Matthew Boulton, 1776

## John Wilkinson's Cylinder Boring Machine, 1775 (simplified drawing) Peiriant Tyllu Silindrau John Wilkinson, 1775 (darlun syml)

