

## Oxford DNB: February 2022

Welcome to the eighty-third update of the *Oxford DNB*, which adds information on the wealth at death of 115 inventors active during the industrial revolution.

From February 2022, the *Oxford Dictionary of National Biography* (*Oxford DNB*) offers biographies of 64,184 men and women who have shaped the British past, contained in 61,852 articles. 11,860 biographies include a portrait image of the subject – researched in partnership with the National Portrait Gallery, London.

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**February 2022: introduction to the update by**

**Sean Bottomley**

**The wealth at death of inventors during the  
eighteenth and nineteenth centuries**

This update provides the wealth at death information for 115 inventors from the industrial revolution period, all of whom have articles in *ODNB*. In and of itself, the newly-added data represents only a marginal change – but it serves to illustrate how *ODNB* helps to inform major historiographical debates: in this instance, how we might account for the origins of the industrial revolution and with it the emergence of modern economic growth.

Since the Victorian period, inventors have been stereotyped as poor and financially exploited. To contemporaries they were ‘the miserable victim of [their] own powerful genius’, ‘Martyrs of Science’ who worked ‘alone, unfriended, solitary’, while ‘the recorded instances of the[ir] martyrdom would be a task of enormous magnitude’ (quoted in C. Pettitt, *Patent inventions: intellectual property and the Victorian novel* (2004), pp. 40-4). And certainly, there are plenty of examples of inventors who although responsible for commercially and technically significant developments, were unable to appropriate even a tiny share of the societal returns of their

technology. For instance, Henry Cort, inventor of the puddling process which enabled the use of coal in refining brittle pig iron into malleable wrought iron, died a bankrupt (the development process had been funded by unauthorised transfers from the Navy).

Amongst many others, one could cite the steam engineer Richard Trevithick, or the textile mechanic John Kay, or the microscopist John Benjamin Dancer, as financially disappointed inventors; examples such as these mean that the supposition that inventors rarely made returns commensurate with the social value of their invention(s) has become axiomatic in the academic literature. And, if inventors did indeed usually fail to obtain financial rewards, this precludes potential explanations of the industrial revolution that invoke incentives to explain the actions of those who invented and commercialised the new technology which industrialisation required (as pointed out by G. Clark, *A farewell to alms: a brief economic history of the world* (2007), pp. 230-58). It also precludes the applicability of endogenous growth theory to the industrial revolution (a theory which earned two of its progenitors Nobel prizes) as it assumes that profit incentives determine the amount of inventive activity that occurs.

The update, however, shows that many (indeed, most) of these 115 inventors died with significant wealth holdings. In some cases, this is reflected in their current *ODNB* biography: although Benjamin Gott's "life was not all profits and paintings" with a personal wealth probated at about £190,000 (placing him in the top 0.01% of the adult male population), it would have contained plenty of the former. In other cases, wealth at death has previously been significantly under-stated (the British probate system(s) for the period are not easy to navigate). For instance, the road pioneer John Loudon McAdam previously had his wealth at death valued at £1500. However, his personal wealth in the diocese of Chester was valued at under £60,000, and in the archdiocese of Canterbury at under £8,000. His total wealth would have been approximately £65,000 – clearly far more than £1500. The biographies of three engineers for whom information on personal wealth has been added in this update, William Tierney Clark, Thomas Grainger, and William Hedley, present a similar picture. Respectively, they were able to accrue approximately £32,500, £31,761 15s., and in the region of £55,000 in personal wealth at death – which would have placed them comfortably in the top 0.5% of the adult male population.

Of course, as we have seen, not every inventor was successful, but enough were to overturn the Victorian

stereotype of the poor artisan inventor. Moreover, the biographies in *ODNB* can be used as a building block for more extensive prosopographical exercises for the period (see especially R. R. Meisenzahl and J. Mokyr, 'The rate and direction of inventive activity in the British industrial revolution: incentives and institutions', in J. Lerner and S. Stern, eds., *The rate and diffusion of inventive activity revisited*, (2012), 443–79; and Anton Howes, 'The Relevance of Skills to Innovation during the British Industrial Revolution, 1547-1851' (working paper, 2017)). The biographies can also be used for a more rigorous investigation into the returns to invention during the industrial revolution – simply because inventors were wealthy, it does not automatically follow that this wealth was derived from their inventions. It may have been inherited and/or accrued over the course of their 'normal' business career.

Although paucity of surviving accounts means it would be impossible to determine returns to invention directly, one indirect approach is to collect the probate information for the brothers of inventors. Brothers are an especially apposite group for comparison: they would have enjoyed a similar inheritance to their brothers (although inheriting financial capital appears to have mattered less than inheriting social capital) and they tended to enter similar occupations to their (inventive) brothers. The results of an exercise described in

Bottomley (2019), establish that inventors were significantly wealthier than their (non-inventive) brothers: invention paid during the industrial revolution.

On a final note, corroborative evidence for this conclusion has emerged from America. Using evidence from the 1860 and 1870 censuses, Khan has shown that at a time when per capita wealth was declining generally, and that of manufacturers and artisans especially (the 1860s being the decade of the American Civil War), the wealth of inventors increased appreciably and attributes this to the returns they were able to secure from their inventions – specifically, to their capacity to assign and licence patent rights for technology (B. Zorina Khan, *Inventing Ideas* (2020), pp.228-31). As British patents could also be assigned and licensed with relative ease, it stands to reason that the same process also operated here (S. Bottomley, *The British patent system* (2014), pp.202-30).

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British industrial revolution', *Economic History Review*, 72  
(2019), 510-30.

**February 2022: list of articles with newly-added  
wealth at death data**

**Abraham, Robert** (1775–1850), architect

**Ackermann, Rudolph** (1764–1834), publisher

**Aikin, Arthur** (1773–1854), natural scientist and author

**Alexander, Daniel Asher** (1768–1846), architect and  
engineer

**Anderson, James** (1739–1808), agriculturist and political  
economist

**Archer, Frederick Scott** (1814–1857), inventor of the  
collodion process in photography

**Aspdin, Joseph** (*bap.* 1778, *d.* 1855), cement maker

**Atwood, George** (*bap.* 1745, *d.* 1807), mathematician

**Bage, Charles Woolley** (1751–1822), structural engineer

**Bakewell, Robert** (1725–1795), stock breeder and farmer

**Bancroft, Edward** (1744–1821), chemist and spy

**Baskerville, John** (1706–1775), printer and typefounder

**Bate, Robert Brettell** (1782–1847), maker of scientific instruments

**Bell, Patrick** (1799–1869), Church of Scotland minister and inventor of agricultural machinery

**Bentham, Samuel** (1757–1831), naval architect and inventor

**Bickford, William** (*bap.* 1774, *d.* 1834), currier and inventor of the safety fuse

**Blenkinsop, John** (1783–1831), developer of the steam locomotive

**Boulton, Matthew** (1728–1809), manufacturer and entrepreneur

**Bremner, James** (1784–1856), civil engineer and shipbuilder

**Brindley, James** (1716–1772), civil engineer

**Brockedon, William** (1787–1854), painter, writer, and inventor

**Brown, Sir Samuel** (1776–1852), civil engineer and naval officer

**Brunel, Sir (Marc) Isambard** (1769–1849), civil engineer

**Buchanan, Robertson** (1769–1816), mechanical and civil engineer

**Buddle, John** (1773–1843), mining engineer



**Burrell, Joseph** (1759-1831), agricultural machinery  
manufacturer

**Campbell, John** (*b.* in or before 1720, *d.* 1790), naval officer

**Cartwright, Edmund** (1743–1823), Church of England  
clergyman and inventor of a power loom

**Cayley, Sir George, sixth baronet** (1773–  
1857), aeronautical designer

**Champion, Nehemiah** [iii] (1678–1747), metal  
manufacturer and merchant

**Chapman, John** (1801–1854), engineer and political  
economist

**Chapman, William** (1749–1832), civil engineer

**Clanny, William Reid** (1776–1850), physician and inventor  
of a mining safety lamp

**Clark, William Tierney** (1783–1852), civil engineer

**Coade, Eleanor** (1733–1821), manufacturer of artificial  
stone

**Colby, Thomas Frederick** (1784–1852), surveyor and army  
officer

**Congreve, Sir William, second baronet** (1772–  
1828), rocket designer

**Cookworthy, William** (1705–1780), porcelain manufacturer  
and Quaker minister

**Cooper, John Thomas** (1790–1854), chemist

**Daniell, John Frederic** (1790–1845), experimental philosopher and businessman

**Darby, Abraham** (1711–1763), ironmaster

**Davy, Sir Humphry, baronet** (1778–1829), chemist and inventor

**Dempster, George, of Dunnichen** (1732–1818), agriculturist and politician

**Dodd, George** (*bap.* 1782, *d.* 1827), civil engineer

**Donkin, Bryan** (1768–1855), inventor and engineer

**Drummond, Thomas** (1797–1840), administrator in Ireland and military engineer

**Edmondson, Thomas** (1792–1851), inventor of ticket-printing machinery

**Edwards, William** (1719–1789), bridge-builder

**Ewart, Peter** (1767–1842), engineer

**Farey, John** (1766–1826), geologist and surveyor

**Farey, John** (1791–1851), mechanical engineer

**Gibb, John** (1776–1850), civil engineer and contractor

**Gibbons John** (1777–1851), ironmaster

**Gilbert [*formerly Giddy*], Davies** (1767–1839), scientific administrator and applied mathematician

**Giles, Francis John William Thomas** (1787–1847), civil engineer

**Gott, Benjamin** (1762–1840), cloth merchant and manufacturer

**Grainger, Thomas** (1794–1852), railway engineer

**Green, John** (1787–1852), architect and civil engineer

**Hackworth, Timothy** (1786–1850), locomotive engineer

**Hadley, George** (1685–1768), natural philosopher

**Handyside, William** (1793–1850), engineer

**Hawks, Robert Shafto** (1768-1840), iron manufacturer and engineer

**Hawks, William [ii]** (*bap.* 1730, *d.* 1810), iron manufacturer and engineer

**Hazeldine, William** (1763–1840), iron-founder

**Hedley, William** (1779–1843), designer and maker of steam locomotives

**Holtzapffel, Charles** (1805–1847), mechanical engineer and technical writer

**Homfray, Samuel** (1762-1822), ironmaster

**Hulls [Hull], Jonathan** (*bap.* 1699, *d.* 1758), mechanical inventor

**Jardine, James** (1776–1858), civil engineer

**Jessop, William** (1746–1814), civil engineer

**Johnson, Percival Norton** (1792–1866), metallurgist

**Jones, Henry James** (1812–1891), inventor of self-raising flour

**Jones, William** (*bap.* 1762, *d.* 1831), maker of scientific instruments

**Kater, Henry** (1777–1835), geodesist and metrologist

**Kenrick, Archibald** (1760-1835), hardware manufacturer

**Macintosh, Charles** (1766–1843), manufacturing chemist and inventor of mackintosh waterproof fabrics

**Mansfield, Charles Blachford** (1819–1855), chemist and traveller

**Marsh, James** (1794–1846), chemist

**Martin, Edward** (*c.* 1763–1818), mineral surveyor and civil engineer

**Massey, Edward junior** (*bap.* 1768, *d.* 1852), maker of clocks, watches, and nautical instruments

**Maudslay, Henry** (1771–1831), mechanical engineer

**McAdam, John Loudon** (1756–1836), builder and administrator of roads

**Morton, Thomas** (1781–1832), shipbuilder and inventor of a ship-building slip

**Mudge, Thomas** (1715/16–1794), horologist

**Neilson, James Beaumont** (1792–1865), engineer and  
inventor of the hot blast in iron manufacture

**Palmer, Henry Robinson** (1795–1844), civil engineer

**Peel, Sir Robert, first baronet** (1750–1830), calico printer  
and politician

**Penn, John** (1770–1843), engineer

**Radcliffe, William** (1761?–1842), improver of cotton  
machinery

**Ranger, William** (1799–1863), civil engineer and sanitary  
inspector

**Ransome, Robert** (1753–1830), agricultural machinery  
manufacturer

**Rastrick, John Urpeth** (1780–1856), civil engineer

**Rendel, James Meadows** (1799–1856), civil engineer

**Rennie, John** (1761–1821), engineer

**Reynolds, Richard** (1735–1816), ironmaster and  
philanthropist

**Robison, Sir John** (1778–1843), inventor and scientific  
administrator

**Roebuck, John** (*bap.* 1718, *d.* 1794), ironmaster

**Schank [Schanck], John** (1740–1823), naval architect and naval officer

**Seaward, John** (1786–1858), civil engineer

**Seppings, Sir Robert** (1767–1840), naval architect

**Shrapnel, Henry** (1761–1842), army officer and inventor of the Shrapnel shell

**Simpson, Sir James Young, first baronet** (1811–1870), physician and obstetrician

**Six, James** (1730–1793), silk weaver and natural philosopher

**Smith, Thomas** (*bap.* 1752, *d.* 1815), lighting engineer

**Spode, Josiah** (1755–1827), potter and merchant

**Stanhope, Charles, third Earl Stanhope** (1753–1816), politician and inventor

**Strutt, William (1756-1830)**, cotton manufacturer

**Stubs, Peter** (1756–1806), toolmaker and innkeeper

**Telford, Thomas** (1757–1834), civil engineer

**Troughton, Edward** (1753–1835), maker of scientific instruments

**Trubshaw, James** (1777–1853), builder and civil engineer

**Tull, Jethro** (*bap.* 1674, *d.* 1741), agricultural innovator and writer

**Vivian, John Henry** (1785–1855), industrialist and politician

**Walker, Samuel** (1715-1782), iron, steel, and lead  
manufacturer

**Whitehurst, John** (1713–1788), maker of clocks and  
scientific instruments, and geologist

**Wilkinson, Isaac** (*bap.* 1695, *d.* 1784), iron-founder

**Wollaston, William Hyde** (1766–1828), chemist, physicist,  
and physiologist