

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