An Extraordinary Career

Samuel Bentham was born on 11 January 1757 in London, the son of Jeremiah Bentham, a lawyer with aristocratic and political connections. He was the younger brother of Jeremy Bentham (1748-1832), philosopher of Utilitarianism and founder of University College London. Their mother died in 1759 with only the two sons surviving – there had been five intervening births all of whom died young. In consequence father and two sons remained close to each other through life.

In 1771 Samuel was apprenticed to a shipwright at Woolwich. He completed his apprenticeship in 1778 and worked for a while at Portsmouth where he is reputed to have made a number of suggestions for improvements which were well received. However he considered his employment at Portsmouth to be unsatisfactory and decided to travel (presumably funded by father and brother) to gain more experience in shipbuilding and allied industries. In 1780 he arrived at the Black Sea and saw rapidly developing port and industrial facilities in that region of Russia. His brother Jeremy then suggested he move on to St Petersburg to present his (Jeremy’s) proposed legal reforms to the Empress Catherine (there is no record of how these were received!). He there came into contact with Prince Potemkin who was possessed of enormous estates and was in the process of developing and industrialising them, and was looking for engineering talent to advise him. He therefore recruited Samuel and sent him to Siberia to analyse and report on its industries.

Samuel was back in St Petersburg in 1783 and met and fell in love with a Russian Countess of his own age, the niece of Prince Golitsyn, the Governor of St Petersburg. Although the match was initially encouraged by the Empress, the affair was inevitably doomed, and to get Samuel away Potemkin offered him the rank of Lt. Col. of Infantry and took him on a tour of his newly acquired estates in the Crimea. (The Crimea had just been annexed by Russia from the Ottoman Empire). During the tour Potemkin, presumably recognising his potential, decided to appoint Samuel to manage his estate of Krichev on the border of Poland. This turned out to be over 100 square miles and included five towns and a population of around 80,000 nearly half of whom were serfs. Samuel’s objective was to build up the industry of the region, particularly developing shipbuilding and associated activities. He had total autocratic authority and an unlimited budget! Potemkin was an ardent anglophile and suggested that “experts” be imported from England to assist. Following a plea to Jeremy and their father for help, a chaotic collection of fraudsters and impostors arrived and the project initially descended into farce. Nevertheless Samuel succeeded in his object and the industries burgeoned. During his time there he designed and built a variety of vessels including some warships, 13 yachts and 12 luxury barges to enable the Empress to inspect her newly acquired domains in the south. For one of these Bentham coined the name “vermicular” – an oar propelled articulated floating train – a six section...
barge 252 feet long with 120 oars. It was actually used in the spring of 1787 for the Empress’s famous trip to the Crimea down the river Dnieper accompanied by Potemkin and the Ambassadors of all the Great Powers.

Later in 1787 Potemkin sold the Krichev complex to a consortium of Poles and Bentham was given command of a naval squadron in the Black Sea where he distinguished himself briefly in a campaign of the Russo/Turkish wars of 1787-1792. In 1788 as a Brigadier General he was despatched in command of two army battalions to the Chinese border, instructed to discover new lands, make alliances especially with the Mongols, and to open trade links with Japan and Alaska. During this time he is said to have hatched a plan to conquer China with a Russian Army but it seems wiser councils prevailed. However, while in the Far East he took the opportunity to study Chinese shipbuilding and industrial technology.

For his service to the Russians he was awarded a Knighthood of St George (KSG) which title he continued to use when back in England, as well as his Russian military rank! He also was said to use his Russian army uniform on all possible occasions.

His experiences had clearly been followed by the British Admiralty who persuaded Potemkin to release him (under some diplomatic pressure and probably financial incentive) and in 1795 he resigned from Russian service and returned to England to help in the reorganisation of Portsmouth Dockyard in the light of the war with France. Here he completed a radical reassessment and redesign of the yard, which included the introduction of steam power, much mechanical woodworking machinery as well as rolling and forging mills. Marc Brunel’s famous block mill was part of this grand scheme. In 1796 Bentham was appointed the first (and only) Inspector General of Navy Works with the task of managing and modernising all the Naval Dockyards. He was however extremely frustrated by the obstructionist bureaucracy of the Admiralty (especially after the free hand he had had in Russia). He is recorded as having complained to the Lords of Admiralty of “the lack of attention to mechanical principles in warship design, leading them to being costly and weak”. As a sop he was authorised to build a number of ships without Admiralty interference. From 1795 he designed and built two sloops, ARROW and DART, four war schooners, NELLY [NETLEY?], ELING, REDBRIDGE and MILLBROOK, and a fresh water supply ship. The principles of his designs were:

- Strength and durability
- Low initial cost
- Efficiency

They had a high L/B ratio and sharp entry and no tumblehome for better sea-keeping. Internal structure was fir for resistance to tension, with beech and elm for wet structure. He also included fixed structural bulkheads for stiffness (replacing the traditional hanging bulkheads) and level structural decks. Timbers at the ends were rearranged to simplify and lighten the structure and diagonal bracing was introduced (some years ahead of Seppings). The bulkheads were also made watertight “as practiced by the Chinese”. Tinned copper water tanks were fitted (double the capacity of casks in the same space).
and deck heights were increased to improve ventilation. Either or both of ARROW and DART had Schank’s sliding keels.

In a footnote from “Battles of the British Navy” by Joseph Allen published in 1853 DART and ARROW are described as “sharp both forward and aft like a wherry, and sailed very fast in fine weather; The rig was peculiar, and altogether they were perfect originals. The armament was 30 carronades and 32 pounders, fitted on the non-recoil principle, which, whatever the disadvantages, enabled the men to load and fire with great celerity”. The complement of the ships was only 120 men.

On 6 July 1800 DART attacked and cut out from Dunkirk the 40 gun frigate DESIREE in 15 minutes with one killed and 11 wounded against the French around 100 killed and wounded; on 13 November 1800 MILLBROOK engaged and captured the 36 gun French frigate BELLONE. Both ARROW and DART were present with the “bombs” at the north end of the line at the first battle of Copenhagen in 1801. ARROW was sunk off Malta in February 1805 in company with a bomb vessel protecting a convoy from attack by two French frigates. The convoy escaped.

Returning to Samuel Bentham at the age of 40 in 1797 he married Mary Sophia Fordyce, 10 years his junior, the daughter of a Scottish doctor and scientist. She was accustomed to helping her father with his scientific and engineering experiments and was a great help to Samuel in his own work. They had two sons (the eldest died at the age of 17) and three daughters. He also appears to have had three illegitimate daughters before going to Russia, who he supported financially via his brother Jeremy. In 1805 he was sent on a diplomatic mission to Russia, which achieved little, and on return to England in 1807 he discovered his post had been abolished. The family always believed that the mission was means of getting him out of the way, because of his continuous importuning of the Admiralty to make changes (and in his attempts to reduce fraud and corruption).

In 1814 he moved the France and tried to cultivate an estate on industrial principles but it was not successful and he returned to England in 1826, primarily on account of his two younger daughters – his eldest daughter had made a disastrous marriage to a Frenchman. He continued to work and experiment on naval matter, particularly the effect of hull forms on manoeuvrability, until his death in 1831. There is a portrait of him in the National Portrait Gallery painted by Henry Edridge.

His younger son George became a famous botanist who worked with Hooker at Kew, became a FRS and President of the Linnaean Society. Neither George nor Jeremy ever married and the Bentham name died out.

As an interesting sideline, Samuel first conceived the idea of the “Panopticon” which was pursued by Jeremy. The concept was that each manager of an enterprise should be able to see from his office all matters that he commanded, so that for example the main office was at the centre of an expanding web of activities or buildings. He was unsuccessful in incorporating the idea in the Dockyards, but it became a model for prison design, where the prison wards radiate out from a central hub so that the warders can see down all the wings from one place. Milbank Prison in London was the first (now demolished) but
there are still a number of examples around the world, as well as some hospitals.

References:

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