Peter Kendall. *The Royal Engineers at Chatham 1750-2012*. English Heritage 2013 ISBN 978-1-84802-098-6. (Hardcover). Price £50.00.

Timothy Crick. *Ramparts of Empire: The Fortifications of Sir William Jervois Royal Engineer, 1821-1897*. Exeter: The Exeter Press, University of Exeter, 2012 ISBN 978-1905816040. (Hardcover). Price £60.00.

These two titles provide an excellent opportunity to reflect on the relationship between the British Army and sea power. The first examines the long relationship between the Royal Engineers and Chatham, the second the career of an outstanding Engineer who spent his life securing the key positions of a maritime empire against sea based threats.

When the Royal Navy began using Chatham on the River Medway as an anchorage and refitting station in the 1550s it required fixed defences. At the same time Chatham occupied a commanding position alongside the main road from Dover to London, and controlled the last bridge over the Medway. The defences failed in 1667, for although Upnor Castle held out, saving the dockyard, the Dutch were only driven off after humiliating the Stuart kingdom by towing away the fleet flagship. Additional forts were built to secure the upper reaches of Medway, and Sheerness Point. In 1708 plans were drawn up to fortify the dockyard, but nothing was done. Finally in 1744 defensive earthworks were built, the 'Chatham Lines'. At this time Engineers were employed by the Board of Ordnance, and linked to the Artillery, but the Corps only achieved military rank in 1757, becoming Royal in 1787. It consisted entirely of officers until that year, when artificers were added, renamed Royal Sappers and Miners in 1813 to reflect their skills. In 1857 the other ranks finally became Royal Engineers. These skilled men received higher rates of pay than other troops.

The wartime built lines were earthworks with some brick supports, backed by barracks. During the 1779-82 invasion scare some 10,000 troops were stationed to defend Chatham, and counter-attack an invading army advancing on London. Royal Marine barracks and dockyard extensions reflected the critical role of the dockyard in the naval defence of empire, but plans to build major defences at Chatham, Portsmouth and Plymouth in the 1780s were properly voted down by the House of Commons, which preferred spending money on the fleet. The period between 1803 and 1809 also witnessed considerable spending on enhanced dockyard defences, but this fell away rapidly. The improved defences secured the dockyard, and the major gunpowder magazines at Upnor.

In 1812 Chatham was chosen as the site for the Engineer's Training School, for both officers and men, directed by the dynamic Colonel Charles Pasley. Pasley remained in command until 1841, writing the text-books of the programme and developing new techniques. Pasley's school transformed an inefficient under-strength Corps into a powerful, professional body with outstanding technical skills, designing new dockyard structures, forts and pontoon bridges, working closely with Civil Engineers on railways, docks and cable telegraphs, while occupying an ever larger role in the Army. With his colleagues John Fox Burgoyne and John Jones Pasley transformed the Corps, educating

officers, pushing the role of the Engineers in strategic thought, defence policy and Imperial administration. For most of the nineteenth century the top men from the Woolwich Academy chose the Engineers over the Artillery. Pasley also pioneered underwater demolition, famously blowing up the wreck of HMS *Royal George* between 1839 and 1843 to clear the anchorage at Spithead.

One feature of Pasley's training programme was using the Chatham Lines to practice siege techniques, with locally based Infantry and Royal Marine units also involved in large exercises. It was entirely appropriate the Royal Engineers learnt their siege craft attacking a naval base. The primary offensive role of the British Army in a major war in the nineteenth century would be to capture and destroy hostile naval bases. The Crimean War would be dominated by the twelve month siege of Sevastopol, but few remember that after the city fell the Engineers spent months blowing up the Russian naval base and dockyard complex, a task they carried out with the same thoroughness they had applied to the Napoleonic docks at Flushing in 1809.

In the 1860s the Engineers played major role in the design and construction of a major dockyard extension to build and service ironclad steamships. The site is now entirely covered by modern housing. At the same time both land and river defences were upgraded, including submarine mines, which became a Royal Engineer mission. By now the Royal Engineers, less than 1000 officers and men in 1815 were over 4,000 strong, and rising fast as the expansion of empire called for the application of their unique skills in every corner of the globe. The Chatham School also trained surveyors for the Ordnance Survey, military photographers and balloon pioneers.

When the dockyard defences were pushed out, to counter the increased range and precision of rifled artillery, the cost of defence began to outstrip the value it could provide. In 1889 live fire siege training moved away, as urban encroachment left no space for more powerful artillery. By 1914 the Royal Engineers had reached a total of 25,000 of all ranks, increasing to 230,000 by 1918 – placing a heavy demand on the training facilities. Later developments included early anti-aircraft batteries, air raid shelters and the re-sue of the old lines as tank defences in 1940. They have become a public park. Post-1945 contraction of the Defence estate saw the infantry and marines move out, then the Nore Command was abolished in 1961, and in 1984 the Dockyard closed. The Royal School of Military Engineering is now the only remnant of what was once a massive defence presence in the town. There were 9,700 Royal Engineers at the time the book was written.

Sir William Jervois, pronounced Jer-vus, provides a different perspective on the Royal Engineers. A brilliant student he became a favourite of Charles Pasley, and then John Burgoyne. His first project, the defence of Alderney, occupied the middle years of the 1850s and segued neatly into the Secretaryship of the Defence Committee in 1855 and then the same role on the 1859 Royal Commission on the Defence of the United Kingdom, which took the basic concept of Alderney, using forts to defend a vital naval facility onto the mainland. Placing the interests of the Corps above the country John Burgoyne advised fortifying every fishing port on the south coast against invasion! Jervois

proved more astute, his Secretarial input helped secure an Engineer solution, which he proceeded to plan, designing much of the impressive defensive systems built around Portsmouth, Plymouth and Milford Haven. Jervois' ability to tailor his designs to each location, and his attention to detail produced a series of works that were held in the highest regard. These works made it impossible for a small raiding force to threaten the dockyards, enhancing Britain's deterrent capability.

Even the restricted programme of works needed to defend the naval bases ran to over £12 million, a colossal sum when a first class battleship only cost £400,000. They seemed even less attractive by the time they were completed, the French Navy having collapsed in the wake of the Franco-Prussian War. After setting up the programme Jervois set off on a strategic reconnaissance of the United States and Canada in 1863, just in case war broke out. In 1869 he drew up war plans, which involved seizing naval bases and imposing a blockade. Unimpressed by American coast defences, and their massive smooth bore cast iron artillery, Jervois discovered that the naval base at Bermuda would be the first target of any American attack. This information generated the massive forts that still dominate the islands. His inspection was part of an imperial tour in which he reported on vital coaling stations and communications hubs including Aden, Perim, Mumbai, the Hughli River, Rangoon (Yangon), before a career combining Imperial Government in Malaysia, Australia and New Zealand with defence advice.

Crick argues that he missed out on the top post of Inspector General of Fortification because of close personal and political connections between liberal statesman Hugh Childers and the rather less distinguished General Sir Andrew Clarke. Returning home in the late 1880s Jervois argued that the nation's coastal defences should be manned by the Navy, in line with practice in the rest of Europe. His Army colleagues disagreed, choosing to ignore French and German practice. In 1894 Jervois became Colonel Commandant of the Engineers, but died in 1897 after a carriage accident.

Although he never conducted a siege, defended a position, or served under fire, and his forts were similarly unengaged, not a single one ever had to fire a shot in anger, Jervois made an immense contribution to British security between 1852 and the end of the century. Although Colonel George Sydenham Clarke RE criticised Jervois' work in the 1890s, his comments were typically caustic, exaggerated and obtuse. Far from being 'Palmerston's Follys', Crick contends the forts were outstanding examples of contemporary fortification engineering, widely praised by leading European experts, including the Belgian Henri Brialmont and the Russian hero of Sevastopol Franz Todleben. They were far stronger than the American and French forts torn to pieces by rifled artillery in the Civil and Franco-Prussian conflicts. He judges they would have met the test of war, but they worked even better as part of a system that deterred great power conflict.

Both books are occasionally at sea on naval issues and consistently overrate the possibility of a French invasion. In addition Crick's discussion of the Crimean War, the Baltic campaign of 1854, and the role of Sir John Burgoyne, who insisted on a regular siege of Sevastopol when the plan had been for a high tempo raid, and definitely not a

siege, requires significant revision. That said these are major contributions to the history of the Royal Engineers and the defence systems they created. Jervois consistently stressed to consider each coastal fortress and system as a potential combination of both land and sea based systems, but never became Inspector General of Fortifications, where he would have had the opportunity to address the wider strategic pattern. In this area George Sydenham Clarke's blue-water views were unusual, and resulted in his becoming the first secretary of the Committee of Imperial Defence. Both men understood that the Royal Engineers' mission was to protect the naval bases from which Britain exercised sea power, and destroy those of hostile powers. Based on extensive archival research, field work and in Crick's case a professional expertise in mechanical engineering these books stress the synergy between sea power and land defences, rather the old approach of treating land and sea in isolation. Both are exceptionally well illustrated, reproducing numerous plans, diagrams and images, dominated by forts and other buildings, many from national collections. The books will be essential reading for students of the Victorian Army and the Victorian fortress.

PROFESSOR ANDREW LAMBERT
King's College London