

RICHARD SENNETT, F.R.S.N.A.

(1847-1891)

BY

THE LATE ENGINEER CAPTAIN EDGAR C. SMITH, O.B.E., R.N.

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Richard Sennett was the first naval engineer officer to be 'Engineer-in-Chief' of the Navy, and he was also the youngest holder of that post, being but 40 when appointed. Of his two civilian predecessors, Thomas Lloyd was made 'Engineer-in-Chief of the Navy' at the age of 57, and Sir James Wright was made 'Engineer-in-Chief' at the age of 48. Sennett's immediate successors, Sir John Durston and Sir Henry Oram, were 42 and 49, respectively. Later Engineers-in-Chief have been somewhat older. From the time that Sennett



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began his training in the 'Steam Factory' at Devonport Dockyard as an 'engineer boy', a name almost immediately altered to 'engineer student', his great abilities attracted attention, and one of his fellow students, A. E. Seaton, wrote in 1921 that 'Sennett was certainly our engineering and mathematical genius'. His name is on the Roll of Honour of Devonport Dockyard School, he passed out of the Royal School of Naval Architecture and Marine Engineering at South Kensington as a first-class Fellow, and he was one of the three assistant engineers—T. A. Harson and John Yeo being the others—who were fortunate enough to gain Whitworth Scholarships before the decree went forth that Admiralty-trained engineers were no longer to be considered eligible for these prizes; they had sufficient advantages already. Sennett's service career was as notable as his student career. When promoted from

Engineer to Chief Engineer he passed over the heads of more than 300 of his brother officers, and at the age of 38 he made another bound forward, when he was given the rank of Inspector of Machinery Afloat.

The history of the early Admiralty training institutions, the Dockyard Schools, and the first and second Schools of Naval Architecture at Portsmouth, was fully told in *Engineering* in 1926 and 1929 by Sir Arthur Johns, while in 1923 a sketch of the South Kensington School was contributed by Sir William Smith. To the first and last of these institutions Sennett was much indebted, but he was destined to achieve distinction in any case. Born near Penzance on October 25, 1847, exactly a year after Durston was born at Plymouth, by open competition he became an engineer boy in May, 1862, and during the next four years had a thorough training in mechanical engineering as applied to ships, while attending the dockyard school for theoretical instruction. There was no similar system of training elsewhere in the country, and Sennett made full use of his opportunities. The number of youths so trained was not nearly sufficient to meet the needs of the rapidly growing Engineering Branch of the Navy and in the early '60s of last century the entries of assistant engineers from private yards and works far exceeded the number recruited from the Royal Dockyards; the respective numbers in 1861-62 were 163 and 23. Three events tended to alter this position, one, being the raising of the standard of examination on entry, another the opening in 1864 of the school at South Kensington for clever and ambitious shipwright apprentices and engineer students, and the third the enlistment into the Service in 1868 of fitters, smiths, boilermakers, etc., as Engine-Room Artificers to do the work hitherto performed by junior engineer officers and chief and leading stokers. For many of the junior engineers there was little hope of promotion to the higher ranks, and some of the chief and leading stokers were really capable mechanics. With the passage of years, the number of direct entries practically ceased and during the '70s and '80s naval engineer officers came almost exclusively from the student class. Sennett passed into South Kensington as a student in 1866 and passed out as an assistant engineer in 1870. During those four years he had had the privilege of studying the higher branches of the profession under Woolley, Merrifield, Cotterill, Unwin and other distinguished men of science.

His first appointment was to the *Crocodile*, one of H.M. Indian troopships, the only vessels in the Navy which did any considerable amount of continuous steaming. In her he had experience with box boilers, fed with salt water and working at 30 lb. per square inch, and compound engines, a type around which raged a long and tangled controversy. The horizontal two-crank engine of the *Crocodile*, made by Humphrys and Tennant, had high-pressure cylinders placed behind the low-pressure cylinders. The engine was intended to develop about 4,000 h.p. Among other troubles there was abnormal cylinder wear, difficulty with the gudgeon bearings, and constant leakage from the cylinder jackets, formed of wrought iron plates and supplied with superheated steam. This was one of the Navy's first compound jobs and it surprised no one when the set was removed and replaced by a more reliable and better-understood simple-expansion engine. From duty in this troublesome ship Sennett was relieved in 1872 and appointed junior inspector under Wright, who had just been made Engineer-in-Chief; he never went to sea again. To his inspection duties were added, in 1873, those of lecturing on marine engineering at the newly-opened Royal Naval College, Greenwich. His next appointment came in 1875, when he returned to Devonport Dockyard as first assistant to the Chief Engineer, the redoubtable John Trickett, who was then much engaged on the work of the long-winded Boiler Committee of 1874. Included in Devonport's contribution to the Committee's

investigation was the construction and operation of an experimental boiler working at the then high pressure of 55 lb. per square inch, of which details are to be found in the Committee's report, which runs to 1,400 closely-printed pages and weighs 14 lb. Today, it is difficult to sort the wheat from the chaff in the report, but some little amusement can be obtained from the views expressed, and there are sidelights on several interesting personalities. Besides making boiler experiments, superintending repairs and trial trips, Sennett had the task of superintending the training of students and, in 1880, gave the first lectures in the new 'Royal Naval Engineering College, Devonport'; a name giving to the 'Training School for Engineer Students' by the students themselves, but not officially recognized for 20 years. As Sennett says in the preface to his treatise, *The Marine Steam Engine*, published in 1882, the book was the outcome of his lectures at Greenwich and Keyham.

The appearance of his well-arranged and clearly-written text-book was most timely, for it gave naval engineers just what they wanted. It had a considerable influence on Sennett's career. He had dedicated it to Admiral the Right Hon. Sir Astley Cooper Key, G.C.B., F.R.S., who, 40 years before, had read Tredgold and de Pambour and had been largely responsible for the allocation of H.M.S. *Marlborough* at Portsmouth, and the building of Keyham College, for engineer students. Among others to whom Sennett presented copies was the engineer George Wightwick Rendel, who, in 1882, severed his long partnership with Armstrong at Elswick to occupy a seat on the Board of Admiralty in the unusual role of 'Extra Professional Civil Lord.' There was little about warships and their machinery that Rendel did not know and he was the leading designer of hydraulic mountings for big guns. In a scrap-book of Sennett's, lent to me 25 years ago by his brother, Engineer Rear-Admiral Marrack Sennett, was a cutting from a Plymouth paper, the *Western Daily Mercury*, dated May 1, 1882, which ran: 'On dit that a well-known and popular officer of the Engineering Department of Devonport Dockyard, and a successful author to boot, will shortly be required for important duties with "My Lords". Mr. Rendel is credited with a penchant for clever young men as his aides-de-camp and if his rumoured selection in this instance proves a fact he will not only be ably assisted but will be opening a wider field for the exercise of undoubted talent in the national interest.' On the following day, May 2, Rendel wrote to Sennett from London, thanking him heartily for a copy of his book. Another probable recipient was Thomas Brassey, afterwards Lord Brassey, who compiled the monumental work *The British Navy*, 1882, my copy of which is inscribed 'R. Sennett, Esq., R.N., from the author.' All these individuals were members or officers of the Institution of Naval Architects, to which Sennett had contributed papers on compound engines. Considering all things, it is not surprising that, in the following year, 1883, Sennett found himself again at the Admiralty, this time as senior inspector; that, two years later, he received special promotion; or that, after another two years, he was made Engineer-in-Chief in succession to Wright.

Every period in naval engineering history is a record of experiment, transition and development. This was notably true of the period 1870 to 1890, and it is possible to trace the progress made by comparing the various editions of Sennett's book, as revised by himself and afterwards by Sir Henry Oram. The introduction of box boilers, cylindrical boilers, water-tube boilers, the rise in steam pressures, the increase in piston speeds, the introduction of torpedoes and air compressors, the electric light, evaporating plant, hydraulic machinery, etc., are all referred to. Sennett's edition of 1882 contained the specification of a set of compound engines of 7,000 h.p., working with steam at 90 lb. pressure; his edition of 1885, the specification of triple-expansion

engines of 12,000 h.p. with steam at 130 lb. It was during his period of office that the triple-expansion engine was adopted for all ships. Every innovation brought its own problems and, with the new building programmes, the Engineering Branch was approaching a most difficult time. Why, after two years as Engineer-in-Chief, Sennett chose to give up rank and post and throw in his lot with Maudslay, Sons and Field, Limited, has not been revealed. Though of a family to which consumption had brought losses, he had been singularly active and enduring, but perhaps the strain was proving too great. Resigning in May, 1889, he became a director at Lambeth, only, however, to fall seriously ill in 1891. A voyage to the Cape led to no improvement, and he died at Walton-on-Thames on September 4, 1891, at the early age of 43. His retirement from the Navy had been regretted by all who knew him, and this found expression in a finely-illuminated address presented to him by the engineer officers of the Navy. After referring to their sense of loss at his severance of his connection with the Service, the address continued 'They wish to take this opportunity of testifying to you their fullest appreciation of the many eminent professional and other qualities which have distinguished you through the whole of your career in H.M. Service; of the ability, tact and courtesy with which these qualities have always been exercised by you, which have tended so greatly to benefit the Navy, to develop and elevate the Naval Engineering profession, and which have gained you the respect and admiration of the whole of the Engineer Officers of the Royal Navy.' The address was signed by Engineer H. J. Walker, Chief Engineers W. W. Wootton and R. W. Edwards, and Staff Engineers J. Rigler, F. Ford and W. J. Pettit.