

Sir William Anderson, 1834-1898

William Anderson was one of the country's foremost engineers in 1897 when he received his knighthood in the New Year's Honours List.

Queen Victoria had already made him a Companion of the Bath at the dissolution of Parliament in 1895 in recognition of his services to the War Office. In 1889 he became the first civilian director of Ordnance factories and in 1894 had endeared himself to the Liberals by introducing the eight hour day for his 17,000 workers and demonstrating that output did not suffer from the reduction of hours from 54 to 48 per week.

Yet one generation later he seems have been almost forgotten and today if one thinks of local engineers the mind goes to his rival Sir Hiram Maxim (knighted 1901), generally known for his machine gun and his experiments with flight at Bexley, or to Richard Trevithick, who died at Dartford in poverty in 1833 after a lifetime spent developing the steam engine, or even to Henry Maudsley, born in Woolwich in 1771 and buried there in 1831, who qualified for a chapter in Samuel Smiles' "Industrial Biography of 1863".

No-one seems to have produced anything later than an obituary for William Anderson, probably because his name is not connected with any popular invention but his interests ranged widely and he was outstanding in turning new ideas into large scale production, often for export. For example, he developed the machinery and installed three large sugar factories in Egypt in 1871, a paper mill in Japan in 1874 and water works for Antwerp in 1879. During this period he also designed gun mountings for 40 and 50 ton guns made at Erith for the British, Russian, and American navies. In fact the last mounting he designed was a high-angle mortar carriage for America in conjunction with Colonel Razkazoff of the Russian Navy. "This was adopted at once in America, and largely made there". (1)

He translated a variety of Russian technical papers. He lectured a great deal, e.g. on the conversion of heat into useful work (R.S.A. 1884-5), on hydraulic machinery to the School of Military Engineering, Chatham, and in 1893 he gave the first James Forrest lecture to the Institution of Civil Engineers on the interdependence of

abstract science and engineering. For some years he was an examiner to the Royal Indian Engineering College at Coopers Hill, (Egham, Surrey, founded 1871), and in that capacity he "instituted a novel mode of examination, which he considered more effective than the usual method in bringing out the real merits of the students. They were allowed reasonable time to write their answers at home, with free access to their books and notes, but without communicating with another". (2) He was one of the official engineers of the Royal Agricultural Society and in 1888, with Lord Kelvin, tested the first oil engine for that Society, the engine patented by Dent and Priestman in 1886 and given the Society's silver medal in 1889.

It was this interesting man who brought the first heavy engineering works to Erith in 1864, when he designed and operated the Erith Iron Works at Anchor Bay for the "old established" (1837) Southwark firm of Easton & Amos, who had outgrown their Southwark Street "Grove Works". By 1872, the firm was known as Easton and Anderson, and had moved its entire works to Erith. The two original partners had retired in 1866. Easton senior had specialised in hydraulic machinery, Amos had been a paper maker. The firm based their expansion on these two fields, even installing the hydraulic lifts in the Mersey Tunnel which opened in 1886.

William Anderson was born in St. Petersburg, 5 January 1834, Christmas Eve in Russia at that time; he was the fourth son of John Anderson, a member of the firm Matthew Anderson bankers and merchants of that city, where the family had settled from Newcastle in the middle of the 18th century and had a good deal of share in the Baltic trade.

William went to school from 9 to 14 years old at the Commercial High School which had been founded there by the foreign trading community; his school subjects had included modern languages, history, political economy, statistics and the natural sciences. He became Head Boy and silver medallist; "with this was associated the freedom of the city of St. Petersburg which was not withheld from him although he had become a subject of the Queen's". (3) French and German were in general use in that city at that time, so that with English and Russian as his two mother tongues William was well equipped to take part in international trade. He continued his education in England by taking a three year course at the Applied Science Department of King's College, London, where he won many

prizes before moving to Manchester for a further three years as a pupil of Sir William Fairbairn, from whom he learnt a great deal. Besides developing his theoretical studies he was sent to install various kinds of machinery in Wales and Ireland.

In 1854 he became manager, and the next year partner, in the firm of Courtney and Stevens of Dublin where much of his work related to construction of ironwork for railways and canals, including the manufacture of turntables and signalling equipment. Other work was included and while he was inspecting some faulty gearing at a Dublin brewery his right elbow was smashed. He recovered without amputation but afterwards always drank using his left hand, being unable to raise his right above his chin.

By 1863, still in his twenties, he had become the President of the Institution of Civil Engineers of Ireland and was ready to move to London when Easton and Amos gave him the opportunity to build them a new factory in the country beside the Thames. The resulting works were outstandingly efficient for handling raw materials and finished products however large, as they were served by both railway and boat.

In 1864 when he first arrived in Erith, William Anderson was appalled by the lack of available education. He immediately joined some other newcomers as subscribers to the small school in the Avenue Hall which, although supported by voluntary subscriptions of local parishioners, virtually belonged to the Congregational Church but was open to children of all creeds. He was reported to have said of that time that "Something like 1,000 to 1,500 children ran about the streets, strangers to the wholesome restraint and discipline that follow the tuition of the schoolmaster". (4)

His urge to contribute to the welfare of his newly adopted town led him to become the first Chairman of its Local Board besides being on the governing body of the Avenue Hall schools. Immediately on the passing of the Foster Education Act of 1870 Erith School Board was one of the first to be set up under that Act and later it was reported to have been "amongst the foremost in the South of England" (5); Anderson served on it for 27 years and from 1886 until the year of his death he was its Chairman. The same year he handed on to his son Edward his position as Superintendent of the Christ Church Sunday Schools which he had held from 1873. William Anderson's connection

with the Christ Church dated from the establishment of the parish about 1870 when he accepted the post of treasurer of the Church Building Fund. He was a licensed lay reader frequently taking services at the Arthur Street Mission Church and in 1897, when his church magazine gave an outline of his life on the occasion of his knighthood; it stated "He now conducts the children's service in the Parish Room after morning school nearly every Sunday". (6) He was President of the Church Band of Hope and from 1875 had been clerk of the Church and kept the Vestry Minutes.

He lived at the top of The Avenue in Lesney House until 1898 when he moved to his official house in Woolwich Arsenal to save himself the journey when his health began to deteriorate. In Woolwich also he had shown his continuing interest in education, for he was one of the trustees of the infant Polytechnic and was a member of its governing body in 1893. On 30 June 1894 the Polytechnic closed through lack of funds but managed to re-open in the September under new management of the Technical Education Board of the London County Council. On 25 January 1895 it was handed over to its own Board of Governors with Quentin Hogg as Chairman and William Anderson representing Her Majesty's War Department.

Also on the Board of Governors of the Polytechnic was Col. Edwin Hughes, M.P., L.C.C. who formed another link with Anderson's many interests. On Whit-Monday 25 May 1896 in Woolwich the 28th (National) Co-operative Congress was held and on the previous Saturday at the Drill Hall, Beresford Street an exhibition of the Manufactures of Co-operative Production Societies was opened by William Anderson, Esq., C.B., D.C.L., F.R.S., M.I.C.E., (Director General of Ordnance Factories) and his Chairman was Col. Hughes, the M.P. for Woolwich and solicitor to the Royal Arsenal Co-operative Society. William Anderson had been elected a Fellow of the Royal Society in 1891 and in 1889 the University of Durham had conferred on him the honorary degree of D.C.L., when he was acting as President of the Mechanical Section of the British Association at their Newcastle Meeting.

It is not easy to discover more about William Anderson's Co-operative activities but there is an intriguing reference to him in the Jubilee History of the R.A.C.S., by Walter T. Davis (1922), which says he was "so keenly interested in co-operation that he had been instrumental in forming a Co-operative Shop in Erith about the year

1868" (7) (which was the year the R.A.C.S. itself was formed). "This shop, however, was closed because the working class people for whom it was formed did not approve the no-credit system... and because it was not meant for the well to do who did."

Mention has been made above to 1889 as the year in which Anderson gave up his connection with the Erith firm bearing his name at which, early that year, he was already working on a project for the Explosives Committee of the War Office to design machinery for the manufacture of Cordite, a smokeless explosive which had just been invented. He passed that project on to his son, Edward, when he accepted the post of Director of Ordnance Factories which was a new post recommended by the Morley Committee which had reported in 1887 on the state armaments industry. (8) The first director had been promoted from superintendent, Royal Gun Factory in January 1888 (with a salary of £1800 a year) and when he retired in the summer of 1889 he was succeeded by William Anderson whose salary, including emoluments, reached a total of £2,500 per annum. The Ordnance Factories which he directed included four different entities at Woolwich Arsenal, the small-arms factories at Enfield and at Sparkhill, Birmingham, together with the gunpowder factory at Waltham Abbey, meaning that the post required the highest administrative skill. One of his obituaries recalled that "his long and extensive commercial experience enables him to correct many wasteful tendencies with general advantage to the nation from the saving thereby effected". (9)

He used his Presidential address to the Institute of Mechanical Engineers in 1892, to give an interesting account of the administration of the Ordnance Factories and also to defend governmental methods of which many inventors complained as being obstructive. He said that the sheer size of the military machine meant that innovations had to be thoroughly tested to be sure that they would be worth the upset caused by operations of 'drill' throughout the world; products also needed testing for fitness for storage over several years as well as suitability in all climates from the arctic to the tropics. He also mentioned that state industry had to be protected from price-fixing rings of contractors. This address included a reference to "Erith, where I live" on the subject of street lighting. He said that in Erith gas was both rare and dear and oil lighting was of great benefit both from its cheapness and from the fact that it could be installed away from expensive gas mains. The great disadvantage of oil lamps was their

tendency to blow out in storms and he hoped a fellow member of the institution would invent a means of avoiding that.

Cordite, mentioned above, was patented by Sir Frederick Abel (born in Woolwich and from 1856 Chemist to the War Office) and Sir James Dewar on behalf of the British Government in 1889 and it was the subject of two lengthy law cases in which William Anderson, who was in charge of its manufacture, was named as Defendant and both of which he won for the Government. The first was brought by Alfred Nobel, who had invented gelignite and the second by Hiram Maxim and the Nordenfolt Gun Co. who had patented a similar explosive, also in 1889, although Anderson's son in a paper to the Institution of Civil Engineers in 1888 had quoted the formula used by the government. The Hiram case occupied the first seven months of 1897, only being completed on July 12th, so that when William Anderson died in December the following year, it was these two cases, with details of the Judges and the Appeal Judges, which occupied more space in The Times obituary than any of the deceased's own achievements. **(10)** In fact, these achievements were somewhat diffuse, being firstly those of a successful developer and exporter of new machinery; next a leader and educator of his profession; and latterly a most valuable civil servant.

His funeral was most impressive, without being in any way a state affair. The mourners included the President of the Ordnance Committee and the Permanent Under Secretary of State for War. A special train was used to convey the coffin to the train from Woolwich Arsenal to Erith. Woolwich Arsenal workers carried the coffin to the train at Woolwich, and workmen from the Erith Iron Works did the same from the train to the hearse at Erith. The service took place at Christ Church and the interment was in the family grave in the churchyard of St. John's, Erith. The gravestone can still be clearly read and it begins with details of Sir William's father stating that he too was born in St. Petersburg, 26 June 1796 (while Catherine the Great was on the throne there) and died in Erith, 22 January 1870.

W.T. Vincent produced a short biographical account of William Anderson for inclusion in the handbook which he edited for the Co-operative Congress held in Woolwich in 1896. Visitors to present day Erith can still see several visible reminders of Sir William other than his gravestone. There is, in Queen Street, a foundation stone, dated 31st July 1877 **(11)** laid by him for the Baptist Chapel, planned to seat

200 people in the congregation which had grown from about 14 in 1875 when their first pastor, the Rev. J.E. Martin arrived in Erith. Inside Christ Church there are four stained glass windows representing the Parables, on the north side. The Prodigal Son and the Good Shepherd were presented by Sir William in memory of his daughter Katherine Mary who died in 1892, aged 26 and two erected by "the teachers, children and friends of the Sunday School" as a memorial to Sir William himself and fittingly representing The Sower, and the Good Samaritan.

References

1. **Proceedings of the Institute of Mechanical Engineers**, 1898.p.697
2. **Proceedings of the Institute of Mechanical Engineers**, 1898.p.700
3. **Proceedings of the Institute of Mechanical Engineers**, 1898.p.696
4. **Bexleyheath and Erith Observer**, 16.12.1897 (obituary)
5. **Bexleyheath and Erith Observer**, 16.12.1897 (obituary)
6. Christ Church, Erith, **Parish Magazine**. January 1897
7. **History of the R.A.C.S., Ltd., 1868-1918**. Walter T. Davis, 1922 p.64
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9. **Proceedings of the Institute of Mechanical Engineers**, 1898 p.699
10. **The Times**. 12.12.1898 and 15.12.1898
11. **Queen Street Baptist Church Monthly Messenger**. February 1975 (insert p.IV)