



## Japanese Graduates and their Glasgow Professors

### William John Macquorn Rankine (1820-1872)



Macquorn Rankine was appointed in 1855 to the Regius Chair of Civil Engineering and Mechanics at the University of Glasgow. He has been described as the father of engineering science in the United Kingdom in recognition of his achievements as a theoretical scientist and as an educator.

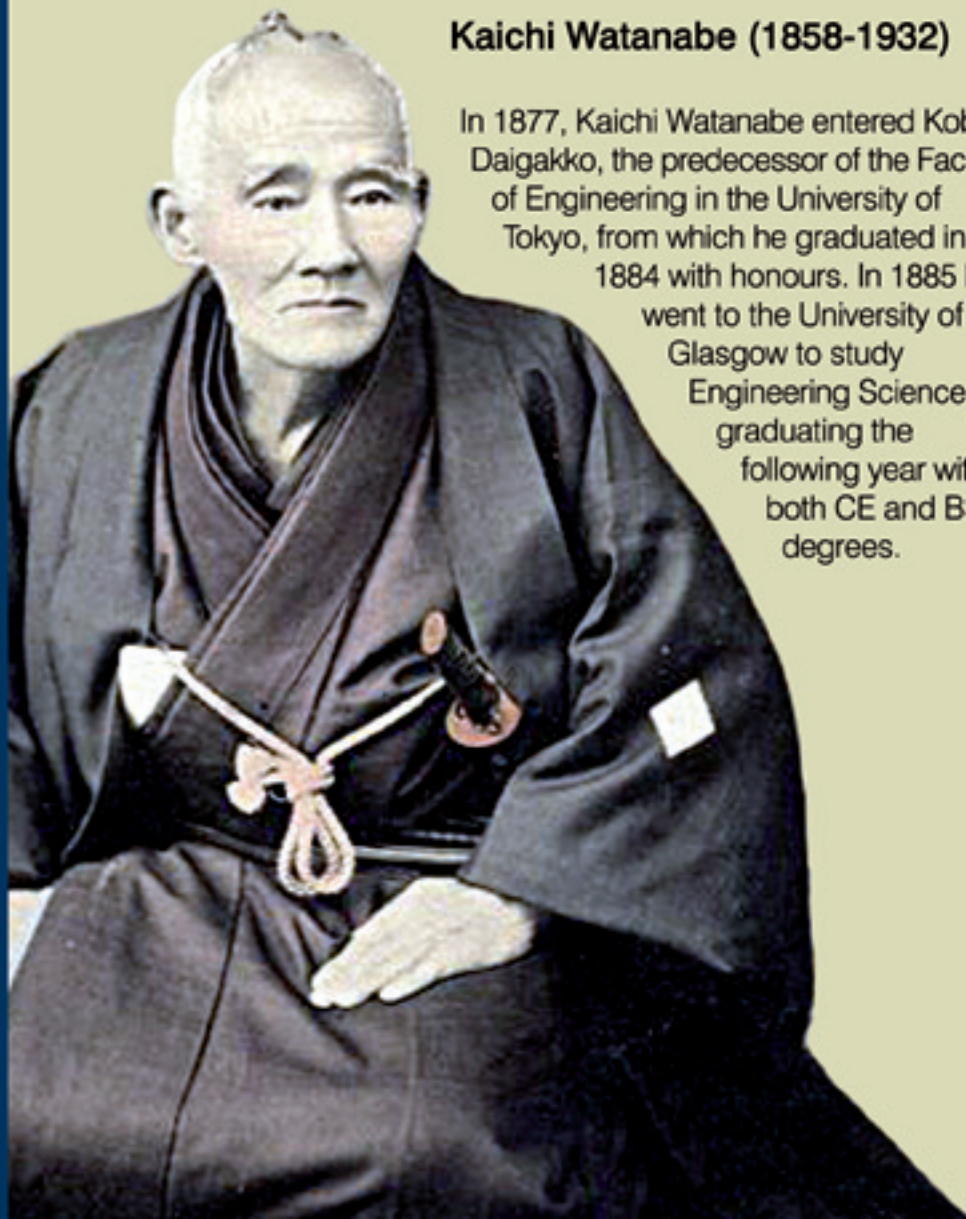
Rankine worked closely with Glasgow shipbuilders on radical improvements to the design of vessels and their engines. He introduced "sandwich courses" that required students to work with local engineering firms during their vacations, and campaigned vigorously for the recognition of engineering as a degree subject. Largely through his efforts, a Certificate of Proficiency in Engineering Science was introduced in 1863 and in 1872 the degree of BSc was offered for science subjects including engineering.

Rankine conducted pioneering research in the fields of railway engineering, molecular physics and thermodynamics. He wrote more than 150 scientific papers as well as manuals and textbooks, which became standard works of reference for students.

His reputation was international and students from around the world attended his classes. He was consulted by Ito Hirobumi (later to become the first prime-minister of Japan) as to who would be a suitable candidate for the post of Principal and Professor of Engineering at the new Engineering College (Kobu Daigakko) in Tokyo. He recommended one of his former students Henry Dyer for the post.

### Kaichi Watanabe (1858-1932)

In 1877, Kaichi Watanabe entered Kobu Daigakko, the predecessor of the Faculty of Engineering in the University of Tokyo, from which he graduated in 1884 with honours. In 1885 he went to the University of Glasgow to study Engineering Sciences, graduating the following year with both CE and BSc degrees.



Watanabe went on to work as a construction foreman on the Forth Railway Bridge. On his return to Japan in 1888, he worked as chief engineer for the Nippon Doboku Company and then for several other companies. In 1899 he was granted a Doctorate in Engineering from the Imperial College of Engineering.

Later in his life Watanabe worked as president of many companies including Sangu Railway Company, Kansai Gas Company, Tokyo Ishikawajima Shipyard, and Keio Electric Railway Company. Watanabe was a gifted and talented man and his achievements in engineering studies remain in the form of construction rather than of essays. "He was not a man who wanted to write about his work. He was a man who wanted to build".

### Sir William Thomson, Baron Kelvin of Largs (1824-1907)

William Thomson, 1st Baron Kelvin, was one of the most famous scientists of his age. He entered the University of Glasgow in 1834 at the age of 10 and was Professor of Natural Philosophy at the University from 1846 to 1899.

During his 53 years as a professor, Thomson attracted and taught some 7,000 students from all over the world, and established an advanced class in mathematical physics and a laboratory in which they could undertake experimental work. The laboratory students worked mainly on problems derived from Kelvin's own scientific and engineering research in electricity, establishing a "school of electrical engineering".

Thomson was as famous for his inventions and commercial business ventures as for his teaching and research. He published more than 600 scientific papers during his lifetime and earned international acclaim for proposing an absolute scale of temperature now known as the Kelvin Scale and for his pioneering research in the fields of mechanical energy and heat. He was equally well-known for his work on planning the Trans-Atlantic telegraph cable and his invention of the Kelvin Compass and sounding machine.

### Aikitu Tanakadate (1856-1952)

Aikitu Tanakadate studied electricity and magnetism under Kelvin at the University of Glasgow from 1888 to 1890. He became one of Japan's most renowned geophysicists. He was involved in earthquake investigation and research and through this work went on to found the Institute of Seismology at Tokyo University. He was instrumental in the establishment of the Mizusawa Astro-Geodynamics Observatory. Dr Tanakadate was a member of the League of Nations Committee to Promote Intellectual Co-operation from 1927-1933. Other committee members were Marie Curie and Albert Einstein.



In 1928 he received the Legion of Honour from the French Government for his contribution to aviation. This was followed by the order of Cultural Merit from his own government in 1944.