

東大初代都検ヘンリー・ダイアーと明治日本
 The First Principal of Tokyo University,
 Henry Dyer and Meiji Japan

Masami KITA

1. Symbolic Glasgow Engineer in an Era of Victorian Prosperity
2. Cradle of the Industrial Revolution: Anderson College
3. Center of Advanced Technologies in the 19th Century
4. First Engineering College of Western Technology in Japan: the Kobudaigakko
5. Introduction of Western Education into Japan
6. Introduction of technology and also of New Ethics—the Idea of Engineers—
7. Relationship between Teacher and Student
8. Concept of Social Evolution
9. Change in National Goal of Japan: from British Democracy to German Monarchy
10. Contribution of Henry Dyer to Modern Japan

1. Symbolic Glasgow Engineer in an Era of Victorian Prosperity

Henry Dyer was born in Lanark shire, Scotland, in 1848. He was the son of a mechanic, an immigrant from Ireland. His father worked at the Shotts iron work and consequently, Dyer attended the Wilson school attached to the factory. He had one elder brother Robert and younger sister Janet. (1)

It was a time of great prosperity in the West of Scotland, and more especially in the city of Glasgow that lay at the heart of the region. Glasgow was often called the Second City of the Empire because was the second largest after London in UK. It had also grown in little under a hundred year into the 5th largest city in Europe — thanks to its tobacco trade with North America, its cotton industry and then the success of its heavy industries.

From the 1840's, the West of Scotland became one of the most progressive industrial centers for modern technological development — iron smelting, railway and locomotive engineering, mechanical engineering and shipbuilding. Thus, when the United Kingdom was called the workshop of the world, West of Scotland was called the heart of the British heavy industries. (2)

When his family moved the short distance to Glasgow in 1865, Dyer followed and became apprenticed to Alexander Kirk, who would later become a very famous marine engineer as

the inventor of the triple-expansion engine. Dyer worked under Kirk's supervision during the day time and attended the evening classes at Anderson College during 1866-67. (3)

2. Cradle of the Industrial Revolution : Anderson College

Scottish engineer made a significant contribution to the Industrial Revolution in the United Kingdom. The Carron Company, an iron smelting and mechanical engineering factory founded in 1760 and which used the steam engine that was invented in Glasgow became the largest and most powerful arsenal in Europe in 1780's. (4)

From then on Scottish heavy industries flourished. An important center for fostering the talent of young engineer was Anderson College, which also became the core body for the 'mechanics institutes' movement throughout Britain. (5)

The College owed its origin to John Anderson (1726-96) the Professor of Natural Philosophy at Glasgow University who was a well known and active scholar. Among other things, Anderson advised the Glasgow merchants to face the reality of the collapse of their successful tobacco trade because of declaration of American Independence in 1776 and to establish a Chamber of Commerce through which to work jointly to prepare the next stage of the City's business development. The Glasgow Chamber of Commerce founded in 1783 was world's first such institution followed in second place by the Manchester Chamber. (6)

Anderson College was founded in 1796 under the terms of Prof. Anderson's will to be a 'civic university' for the ordinary people and in particular to train workers in the new technologies and knowledge relevant to the development of the heavy industries.

In this way it complemented the role of Glasgow and Edinburgh Universities, where invention and experimentation in new machines and processes took place. Prof. G. Birkbeck initiated a class for mechanics at Anderson College in 1823 and went down to London in 1824 to establish Birkbeck College which became the foundation of London University. (7)

She received Japanese Samurai of both the Choshu and Satsuma clans there since 1865. (8)

3. Center of Advanced Technologies in the 19th Century

The center of most advanced technologies in railway and locomotive engineering, mechanical engineering, marine engineering and naval architecture in the 19th century was Glasgow University, in collaboration with the other three Scottish universities of Edinburgh, Aberdeen and St. Andrews. They offered a practical curriculum and profitable subjects to sons of the lairds and the middle classes. In addition, the formation of a Scottish engineers' network was almost complete, together with its counterparts in England, like the Royal College of Mines and the Royal College of Chemistry and Science in London. (9)

Springburn in the Northern part of Glasgow, was called the capital of the locomotive and railway business, and the Clyde River the capital of shipbuilding with its new inventions like the screw propeller and the double and triple expansion engines etc. (10)

Behind this great success of the Scottish economy lay other aspects of her social and economic development since the Union with England in 1707. In particular, the movement known as the Scottish Enlightenment, lead by Lord Kames and Prof. Adam Smith which was also sometimes called the Scottish Renaissance became a major dynamic of social evolution. (11)

4. First Engineering College of Western Technology in Japan, Kobudaigakko

Tomotsuna Iwakura, son of Tomomi Iwakura, one of the main leaders of the Meiji Restoration in 1868 when Japanese began to learn Western knowledge and technology made a rule in 1871 about which subjects the Japanese should learn and from which nation. (12)

So as to be able to absorb Western technology, a plan for the creation of a Western-style college was proposed by Yozo Yamao, one of the Choshu Five who had been smuggled to London, who studied naval architecture in Glasgow and who returned after the success of Meiji Restoration. (13)

All of the Choshu Five got important posts in Meiji Japan and provided support when Yamao together with an intimate friend Hirobumi Ito made the proposal for a Western college.

Based on his own experience, Yamao proposed a modern college in which theory and practice would be combined. Yamao was astonished to meet Henry Dyer along with other Scottish teachers to help start the college in 1873. while Yamao was in Glasgow, he had worked during the day in Robert Napier's shipyard and attended classes in Anderson College in the evening. Dyer found that Yamao had been a classmate in Dr. Herschell's Natural Philosophy class of 1867-68. (14)

In 1872, when the Iwakura mission was sent to Western Europe to ask for the revocation of the unequal treaties signed by Tokugawa feudal government, Ito was appointed as the Vice-Head of the delegation. He was also empowered by the cabinet to employ foreign teachers for the new college, the Kobudaigakko. (15)

In London, Ito met the Scottish merchant, Hugh Matheson who had returned from Hong Kong where he and William Jardine co-founder of Jardine Matheson & Co had had a difference of opinion over the opium trade. Matheson was the official agent of the Meiji government in London. He was also a good friend of L.D.B. Gordon, the first Professor of Civil Engineering at Glasgow University and of his successor, the even more famous Profes-

sor W.J. Macquorn Rankine who was sometimes referred to as the Father of Civil Engineering. (16)

In the Autumn of 1872 while Ito visited Britain, teachers needed for Japan's new college were recruited through Matheson, Rankine and another of his friends, Lord Kelvin (Prof. W. Thomson) the leading physicist of the time. (17)

When Henry Dyer finished his apprenticeship under Alexander Kirk, he was recommended to Professor Rankine and admitted to enter the 3rd year of Glasgow University in 1868. He had a brilliant academic record and received the Certificate of Engineering in 1872. (18)

He also became one of the first recipients of the Bachelor of Science degree in the same year. On Rankine's recommendation, Dyer was hired to be the Principal and the Professor of Civil Engineering in the Kobudaigakko (former name of Tokyo University) in Japan. Other teachers were nominated by Lord Kelvin. (19)

The group of Oyatoi foreign employees started out from Southampton in April 1873 and arrived at Yokohama in June 1873. (20)

Dyer drew up for draft of the college on the board to Japan and submitted to the Japanese in charge of the project whom he found to be his classmate at Anderson College. They united to work together hard to launch the Kobudaigakko in 1873. (21)

This college was under the Ministry of Public Works (Kobusho), which was established to promote the development of industrialization of Japan under the advice of the Scottish railway engineer, Edward Morrell came from India. (22)

He had also had successful experience of the smaller scale of the Bureau of Public Works in Hong Kong. (23)

Under Henry Dyer and the other Scottish teachers, the Kobudaigakko was expected to take the leading role played by Glasgow University in Scottish engineering education while four new Shughiko (job training school) were attached to the Denshinryo (Bureau of Telegraphs), Todairyo (Bureau of Lighthouses), Tetsudoryo (Bureau of Railways) and Sokuryoyo (Bureau of Survey) to carry out the role Anderson College. The former produced very able professional engineer and the latter provided knowledgeable assistant to help them to promote national development. (24)

5. Introduction of Western Education into Japan

The Meiji Restoration was a change of political power from the feudal Tokugawa regime to the leaders of local, Seinan Yuhan (South West) clans of Satsuma, Choshu, Tosa and Hizen. Of these, the Choshu and Satsuma were the major powers. The Kobusho was the ministry to promote the industrial development of the nation which was at first practically

monopolized by the Choshu clan, and the Kobudaigakko was backed financially by the Choshu clan as well. (25)

A famous Scottish engineer from London (Henry Maudeslay) was surprised to see the size and level of equipment of the college workshop on his visit there. (26)

There was the rival school against kobudaigakko with its roots in the feudal period. This was the so-called Kaiseiko, which was supported by the Satsuma clan and by the Monbusho namely Ministry of Education. (27)

This Kaiseiko was guided by G.H.F. Verbeck who had come to Japan from American Dutch Reformed Church and taught a number of young samurai of the old regime who subsequently became leaders of the Meiji government at Nagasaki and Yokohama. (28)

He also advised the importance of sending delegations abroad to visit both old and young countries of Western World. (29)

As the rival to the Kobudaigakko, the Kaiseiko mostly encouraged the teaching of English and other foreign languages, to fit its graduates to new posts within the Meiji government. (30)

6. Introduction of New Ethics- the Concept of the Engineer

Before the Meiji era in Japan, there was a old ethic relevant to a feudal society —the SHI-NO-KO-SHO social hierarchy of Bushi (warrior), No (farmer), Ko (industrialist) and Sho (merchant)— but it became necessary to replace this with a new value system emphasizing the necessity of diligent work by hand. (31)

In Western societies during medieval times the three occupations of medical doctor, lawyer and priest were especially esteemed as the professional work. Then in Scotland, in the course of the Industrial Revolution (32), it was asserted by Lord Playfair at Edinburgh University and agreed to by Scottish workers producing new appliances and instruments that, like the priest working for Heaven the lawyer to keep civil society by law and the doctor for the patients, an engineer should be included among the class of professionals necessary to a civil society. (33)

A typical Scottish workers' ideology was that the engineer must be a leader of social evolution in all aspects of his life. For that purpose, professional engineering associations were founded over the industrial towns in Scotland through which to share successful experience and to conduct tests among themselves of qualification to pursue new developments. Accordingly, Dyer and Yamao jointly established the Nippon-Ko-Gakkai (Japan Engineers Association), and the *Journal of Civil Engineering* in Japan began to be published. (34)

Recently in Japan, Prof. Hayami has emphasized that the reason for the success of the Japanese Industrial Revolution was the diligent character of Japanese workers, even in feudal society. He called it the Industrious Revolution. This means that Japanese people in the early Meiji period were ready to choose the new ethics of working hard that were embedded in the professional values of the engineer. (35)

7. Relationship between Teacher and Student

Dyer instructed all his colleagues to call students by the title Mr'. This idea gave a big surprise to students who had been educated under Confucianism only to show obedience to senior people and naturally convinced them of the goodness of Western education. The younger Scottish teachers also lived closely with students in the dormitory so as to teach students day and night through conversation. They showed the virtues of Western education through their own daily behaviours. (36)

It has been noted that even the Tokugawa government dispatched three delegations abroad during the feudal days — two to Netherland and one to the USA. In addition, members of the Choshu and Satsuma clans were smuggled to the UK thanks to Jardine Matheson & Co and Thomas Glover, the Scottish merchant at Nagasaki. (37)

Even in the antagonistic atmosphere created by the Second Opium War in China and the Sepoy Revolt in India, those young people who had visited the Western world after their return became united under the Meiji emperor soon after the collapse of Tokugawa regime to conquer the fear of Japan being colonized. (38)

From the beginning, the Meiji government had a policy of employing brilliant young teachers of four or five years older than Japanese students for a period of 3 to 5 years in any field of science with a very good salary. Most of the Scottish young teachers worked so hard that even while in employment in Japan they kept in touch with the British academic world through their adviser of lord kelvin of Glasgow University. In fact, W.E. Ayrton, D.H. Marshall, E. Divers, E.F. Mondy, W.G. Dixon, J.M. Dixon, J. Perry, and J. Milne of Kobudaigakko and J.A. Ewing of the Kaiseiko became distinguished scholars when they backed home to Britain. (39)

The Iwakura mission 1871-1873 took with it a group of brilliant young Japanese boys and girls to be educated on foreign soil. (40)

One of them, Koichiro Sughi 17 years old was left with the Stevenson family in Edinburgh to learn the business of light house construction and to study engineering drawing at Edinburgh University. Two year later when he returned Japan, Sughi became the first Japanese professor of the Kobudaigakko college. (41)

The Meiji government dispatched the best students of Kaiseiko and Monbusho, as well as of Kobudaigakko and Kobusho, abroad so as to be able to replace foreign teachers by Japanese graduates as soon as possible. For example, Rinzaburo Shida, the best graduate of the Kobudaigakko, went to Glasgow University with other brilliant graduates in 1880-1883. He was a favourite student of Lord Kelvin and received the Cleveland Gold medal in 1882, which was given to the best graduate of the year in Glasgow University. (42)

In addition, his Japanese colleagues showed their marvelous capabilities in both classes and practical work. (43)

8. Concept of Social Evolution

It was said that the Industrial Revolution of Japan was a unique development carried out without the Protestant ethic that Max Weber theorized had provided the social and economic dynamic to end medieval society and to initiate the modern society of reason and science. (44)

In terms of world history, many countries not related to Protestantism have been concerned with uncovering the reason of Japanese prosperity after the middle of 19th Century in world economy. Another characteristic of Japanese development after the Meiji Restoration was the harmonized progress of both technological and managerial development which might be rooted in the Japanese idea of evolution based on Mahayana Buddhism. (45)

Japan composed of small islands in the Far East which was under the influence of Western Powers in late 19th century, was changed from a feudal society to a modern civil society in only 40 years between from the Meiji Restoration in 1867 through the Sino-Japanese War of 1894-95 to the victory in the Russo-Japanese War of 1904-05. (46)

When Henry Dyer was asked to write a book to help Western people understand the history of Japan's development, he used the title of *DAI-NIPPON (Great Japan), the Britain of the East : A Study in National Evolution* (London, Blackie & Son, 1904). While Dyer was in Tokyo, he met E. Morse, an American teacher at Tokyo University who found the shale mound at Oomori of Tokyo in 1877 and was the father of archeology in Japan, as well as Dr. H. Faulds, a Scottish Presbyterian from Anderson College who found the footprint of old Japanese at the ancient earthenware of the same site. These men discussed the origins of the Japanese at meetings of the Asian Society and tried to figure out why and how the Japanese absorbed modern technology and Western philosophy so quickly by comparison with neighbouring countries like China and Korea. (47)

The European intelligentsia of the time influenced by Charles Darwin were concerned with the biological evolution of animals and plants. At the same time, Hebert Spencer developed an explanation of history using the concept of national evolution in terms of race and folk.

Therefore Dyer tried to explain the development of Japan in terms of a national evolution based on a unique history and loyalty to the nation. (48)

When Dyer returned to Glasgow, he applied for the Professorship of Naval Architecture in the University in 1883 and again in 1886 without success. He also applied unsuccessfully for the Principalship of Heriot-Watt College in Edinburgh. He was confident of the relevance of his Japanese career for such posts but in reality he was turned down by British academic world. He asserted that he had sufficient knowledge and experience to apply for the Naval Architecture professor post in Glasgow University, but the university committee did not agree with his assertion. This was a big difference between Dyer and his other Scottish colleagues following careers in Japan. (49)

The main reason for his un success in re-entering academic life was that while he was in Japan for 9 years as Principal of the Kobudaigakko, Dyer had devoted himself entirely to administrative work for the development of the College and had not conducted research. (50) There were also personal factors like his supervisor Professor Rankine had passed away in the end of 1872 before his departure for Japan and Lord Kelvin who became the patron for other Scottish teachers who went to Japan and introduced favourly them to jobs when they returned did not like him. (51)

There were other disappointments. His first book, *The Evolution of Industry* (London, Macmillan, 1895) was translated into Japanese by Zenshiro Tsubotani (as *Kogyo Shinkaron* (Hakubunha, 1896). However, it was banned in Japan. The reason for this was that Dyer praised too much and supported social cohesion of the whole sale society in UK. But his idea were regarded as socialistic and were criticized by certain academics in Britain. When this view reached Japan, at a time when Japanese nationalism and militarism was growing stronger and deeper, Japanese translation of his book was banned. Against this, in due course he was awarded the title of Honorary Professor of Tokyo University and became Correspondent of the Ministry of Industry and Finance of Japan in Glasgow. (52)

It reviewed such a complicated situation of treating Dyer after Japan.

9. Change in National Goal of Japan: from British Democracy to German Monarchy

Before the Meiji Restoration, the clan leaders of both Satsuma and Choshu who were smuggled to the UK in 1865 in defiance of Tokugawa regime and who were deeply impressed with the great success of industrialization in the bigger European countries had dreamed of making the small island country of Japan into a strong nation capable of being called the Britain of the East.

But in Europe, Prussia had been gathering together small regions since 1830's and united them to become the powerful monarchy of Germany strong enough to defeat France in 1870.

When Ito visited Europe as the Vice minister of the Iwakura mission, he must have been surprised to see the rising power of Germany in Europe. (53)

In Japan, certain factors emerged to change the tide of politics. In October 1881, Shigenobu Okuma submitted a proposal to introduce the British style of parliament in Japan but Ito rejected the report as too aggressive. Nevertheless while facing the democratic movement praised by British teachers and missionaries, he promised to initiate a Western style parliament in Japan in the future by 1890. This was called the Political change of Meiji 14th and in consequence of that Okuma and Fukuzawa left politics. (54)

Ito traveled Europe and America twice, from March to August 1882 and in August 1883 again to Europe. In Europe, he met Prof. Lorenz von Stein at Vienna who strongly recommended that Ito follow the German constitution so as to secure the Japanese national body of imperial system. At the beginning of Meiji government, Ito was a representative of the Choshu clan. Through the 1870's and 1880's, Ito became a leader of the Meiji central government and decided to make a constitution that looked like the British one but was gradually in fact in favor of a Germanstyle monarchy. This was done in 1890. (55)

For that purpose, consequently Ito invited a group of scholars from both Germany and Austria to come to Japan to change the educational system as well. They were eager to erase the achievement and glory done by the Scottish teachers and engineers. For example, in 1883 an educational law was introduced in favor of following the German educational system. The curriculum of the university and college, as well as of the schools, was changed accordingly. The Kobudaigakko was absorbed into the Kaiseiko to launch the Tokyo University. Because of political decisions the more advanced institute became the lesser and lower part of the new institution. (56)

10. Contribution of Henry Dyer to Modern Japan

In Japanese modern history, it was said that the most influential foreigner was Thomas Glover, the Scottish merchant from Aberdeen who worked for an agent of Jardine Matheson & Co. The reason for this was that Glover was very eager to support the revolt of the Choshu and Satsuma clans against the Tokugawa regime, while the British government officially pretended to adopt a neutral position between the two antagonistic powers. because of the Tokugawa preference for French assistance, and being a latecomer to Nagasaki, Glover took the quite clear position of helping the revolt behind the scenes buying ammunition and Western ships for Chosyu and Satuma clans, as well as sending the young samurai to the UK

through the Scottish network in East Asia. (57)

Henry Dyer was the Principal of Kobudaigakko (later Tokyo University) for nine years of from 1873 to 1882 and must be a proper person to be called the father of Civil Engineering in Japan. This was firstly admitted when Tokyo University published its centenary book. But in general his name and contribution to Japan has been drowned out presumably because of the historical reasons mentioned above. (58)

Dyer had lost his oldest son shortly after his birth, but while he was in Japan three other sons and one daughter were born. They were educated at Glasgow University after his return home to Glasgow. One of the three sons, the first became a clergyman of the Church of England, the second studied law and then became a high official of the government of India, while the third was a naval architect who became director of the Royal Hong Kong shipyard. His daughter became an expert in French and Italian languages. In other words, they became professionals as their father wished. (59)

Although Dyer was slighted by the academic world, he was popular in Scotland among businessmen. In 1885 he was appointed to be a board member of the chemical laboratory of Anderson College. He was also invited to be a Governor of the Glasgow and West of Scotland Technological College when it was founded through an amalgamation of Anderson College, the Allan School and other institutions under the Scottish educational law of 1887. Besides that, he was active in working as a consulting engineer in company disputes of the Clyde area and wrote a great number of articles and columns for newspapers both in Scotland and England. He collaborated with A.R. Brown maritime business man, the Japanese Consul in Glasgow, in looking after the many Japanese youths sent there by the government, the Imperial Navy and the big firms. (60)

In 1901, when Glasgow held the Glasgow International Exhibition under Lord Kelvin, Dyer became the editor of its official catalogue of the various Scottish industries. The following year (1902) the Anglo-Japanese Treaty was signed, which symbolized Japan's acceptance as an equal partner of the UK in Asia. Then, in 1904, Dyer's book —*DAI NIPPON-Britain of the East : A Study of National Evolution*— was published and very warmly received only in Western World. It received further attention from Western people when the small island nation of the Far East defeated the Russian Baltic fleet in the Japan Sea (61).

In 1918, Dyer became the chairman of the Glasgow School Board Trustees and greatly contributed to educational reform in Scotland, using his experience in Japan. He wrote many opinions and recommendations to the newspapers, and passed away on 25th September 1918. (62)

Reference

- (1) *Obituary* [1918], *Glasgow Herald*, 26th September
- (2) Moss, M.H & Hume J.R, [1977], *Workshop of the British Empire, Engineering and Shipbuilding in the West of Scotland*, Heinemann, pp.3-5, 11.
- (3) Masami KITA [1984], *Kokusai-Nippon-wo-Hiraita-Hitobito* (Japanese who contributed to make International Meiji Japan), Dobunkan, pp.36, 37, 56-58.
- (4) Campbell R.H. [1961], *Carron Company*, Oliver & Boyd, Edinburgh, pp.87-90.
- (5) Marwick W.H. [1964], *Scotland in Modern Times*, An Outline of Economic and Social Development since the Union of 1707, Frank Cass, p.64. ; KATO, S [1992], *Eikoku-Mekanikku-institsu-Shiryo-Kenkyu* (Studies of Mechanic Institutes of Britain in 19th Century) KobeShokadai, p.29.
- (6) Oakley C.H. [1976], *The Second City*, Blackie, Glasgow and London, pp.22, 110, 184.
- (7) Sexton A, H. [1894], *The First Technological College*, a sketch of the History of “Andersonian” and the Institution descended from it, 1796-1894, Chapman & Hall, London, p.8.
- (8) Masami KITA [2001], *Sukottorando-to-Kindai-Nippon* (Scotland and Modern Japan, a contribution of Glasgow University), Maruzen-Planetto, pp.93-96.
- (9) Umetani Noboru ed [1987], *Za Oyatoi* (A Comprehensive Research on the Foreign Employee in Meiji Japan), Shibunkan-shuppan, Kyoto. p.301.
- (10) Hume J.R & Moss M.S. [1979], *Beardmore*, the History of a Scottish Industrial Giant, Heinemann, London, pp.2, 11, 12, 22-25, 78
- (11) Kita Masami [2003], *Sukottorando-Runesance-Daiteikokuno-Hanei* (Scottish Renaissance and the Prosperity of Great British Empire), Fujiwara-shoten, pp.105-108, 260, 280-281.
- (12) Daiichi-hoki [1981], He made a rule of Japanese overseas on 25th December, Meiji 3, in *Nippon-Kagaku-Ghijyutsushi-Taikēi* (A Compendium of Japanese Science and Technology Development), p.36.
- (13) Masanori Kanekiyo [2003], *Yamao-Yozo. Den* (Biography of Yozo Yamao, Father of Industrial Meiji of Japan), Sogo-insatsu, p.57.
- (14) Muir, J. [1950], *John Anderson*, Pioneer of Technical Education and the College he founded, J. Smith & Son, Glasgow, p.175.
- (15) Jones, H.J. [1980], *Live Machines : Hired Foreigners and Meiji Japan*, UBC Press, Vancouver, introduction, p.xvii. : M. KITA, *op. cit* (Kokusai), p.68.
- (16) Barr, A. [1922], a Centenary Address, *Glasgow Philosophical Society*. Vol. LI, 1920-1922, p.181.
- (17) Kelvin *Centenary and Addresses* [1924], Commemorative, Perry Land & Humphreys, London. pp.69-70, 96.
- (18) *A Minute of Glasgow University Court* [1871], 14th September in Glasgow University Archives.
- (19) Thompson, S.P. [1910], *Life of Lord Kelvin*, 1824-1907, Vol II, Macmillan & Co, London, p.118.
- (20) Dyer, H. [1904], *Dai-Nippon*, the Britain of the East, a Study in National Evolution, Blackie & Son, London. pp.2-4.
- (21) Kita Masami [1984], *Kokusai-Nippon* (op. cit.,) pp.93-102.
- (22) Suzuki, J. ed [2002], *Kobusho-to. sono-Jidai* (Ministry of Public Work and its days), Yamakawa Publisher, pp.58-60.
- (23) Endacott, G.B. [1958], *A History of Hong Kong*, O.U.P, London, pp.35-42.
- (24) *Nature* [1877], 17th May. : Valedictory Address to the Students of the Imperial College of Engineering, in TOKEL, *Imperial College of Engineering*, May 1882, pp.1-6.
- (25) Kita Masami [1984], *Kokusai-Nippon* (op. cit.,) 94. All Choshu Five smugglers to UK were appointed to be heads of mining, railway, industries and finance of Meiji government.
- (26) Dyer, H [1904], *Dai-Nippon* (op. cit.,) p.162 :
- (27) Miyoshi, N [1986], *Nippon-Kyoiku-no-Kaikoku* (Opening of Japanese Education in Meiji), Fukumura

- shuppan, pp.76-80.
- (28) Ohashi, A & Hirano, H [1988], *Meijiishin-to-aruyato-i-gaikokujin* (Meiji Reformation and a Foreign Employee, the Life of G.H.F. Verbeck), Shinjinbutsuourai-sha, pp.10-15.
- (29) Takayanaghi, M [1978], *A Translation of Verbeck Correspondence*, Shinkyō-shuppan, pp.3-15.
- (30) Iuchi, K [2004], *Meiji-Bunkyo-no-Akebono* (The Dawn of Meiji Letters and Education), Yusho-do, pp. 59-85, 127-147.
- (31) Dyer, H. [1877], *General Report of Imperial College Engineering*, 1873-1877, TOKEL, pp.3-6.
- (32) Dyer, H [1887], *Education of Engineers*, Glasgow p.47.
- (33) Dyer, H [1890], *On a University Faculty of Engineering----- with Discussion*, Transaction of the Institution of Engineers & Shipbuilders, Scotland, 1889-1890, Vol. 33, p.21.
- (34) Imazu, K. [1989], *Kindai-Nippon-no-Gijyutsu-Jyoken* (Technological Condition of Modern Japan), Yanagihara-Syoten, pp.170-182.
- (35) Hayami, A. [2004], *Kinsei-Nippon-no-KeizaiSyakai* (Economic Society of Modern Japan), Reitaku U. Publisher, pp.3, 287-306.
- (36) Clements, A.G. & Robertson, R.H. [1961], *Scotland' Scientific Heritage*, pp.3, 4.
- (37) Naito, H. [2001], *Tomasu-Graba-Shimatsu* (The Life of Thomas B. Glover, a Western merchant in Meiji early days, Athene Publisher, pp.177-186.
- (38) Kita, M. [2003], *Scottish Peoples Network and the Meiji Restoration*, in *Kan*, Fujiwara-Shoten, p.296.
- (39) Kita, M. [1984], *Kokusai-Nippon* (op. cit.), pp.134-140.
- (40) Nippon-Kokusai-Kyokai, [1941], *Jyoyakukaisei-Kankei-DaiNippon-Gaiko-Monjo* (Correspondences of Japanese Foreign Policies in terms of the Treaty Change), Vol. 1, p.66.
- (41) Matriculation card [1872], Edinburgh University, Special Collection at the Archive,: Balfour G, [1902], *The Life of Robert Louis Stevenson*, Methuen & Co. London, Vol. I. pp.172-173, Vol. II, p.47.
- (42) Kita, M [1884], *Kokusai-Nippon* (op. cit.), p.184.: *The Glasgow University Calendar*, 1882-1883, J. Maclehose. 1883. Glasgow university Archives, p.207.
- (43) Wilson, D. [1910], *William Thomson, Lord Kelvin, his way of teaching Natural Philosophy*, John Smith & Sons, Glasgow, 1910. pp.26-27.
- (44) Yamamoto, S. [1983], *Spensa-to-Nippon-Kindaika* (Hebert Spencer and Modern Japan), Ochanomizu-Shobo, pp.143-148.: Gordon, M [1980], *Presbyteries and Profits, Calvinism and the development of capitalism in Scotland, 1560-1707*, Clarendon Press, pp.5-7.
- (45) Kita, M [2003], *Sukottorandojin-no-Kindai-Ajiakoueki-Katsudo* (Scottish Peoples and Modern Asia Trade Network), *Rekish-Hyoron*, No. 644, pp.42-44.
- (46) Dyer, H [1909], *Japan in World Politics*, a Study in International Dynamics, Blackie & Son, London. pp.3-8.
- (47) Kita, M [2003], *The Influence of Europe on Japan and Korea in late 19th Century*, *Proceeding of 18th IAHA Conference*, pp.180-181.
- (48) Dyer, H [1908], *Some lessons from Japan, Co-operative Wholesale Societies Limited*, Annual for 1908, pp.45-47.
- (49) Kita, M [1984], *Kokusai-Nippon* (op. cit.), pp.130, 131, 136-140.
- (50) The 9 years while Dyer was in Japan, was unexpected development of science to Dyer who could not catch up with the progress of latest technology and science.
- (51) Kita, M [1984], *Kokusai-Nippon* (op. cit.) pp.140-141.
- (52) Kita, M [1984] Ibid. 131. Dyer was awarded a post of correspondent overseas through the Ministry of Foreign Affairs, as well as of honorary professor of Tokyo University in 1902: Tokyo University [1927], *Tokyo University teachers list and their career*, Tokyo University archives.
- (53) Morikawa, J [1997], *DoitsuBunka-no-Ishoku-kiban* (Foundation of German Culture Planted in Japan),

Yushodo, pp.83-85, 226-230.

- (54) Morikawa, J [2003], *Inoue-Takeshi-no-Doituka-Kousou* (Preference of German Constitution by Takeshi INOUE), Yushodo, pp.85, 86, 126-130.
- (55) Katsurajima, N. ed., [2005], *Kindai-Nippon-no-Seiritsu* (Formation of Modern Japan), Nakanishiya, pp.183-206.
- (56) Honma, H. [1970], *Nippon-Kooka-no-Kindaika-to-Roesura* (Modernization of Meiji Japan and thought of H. Roesler), Miraisha, pp.99-101, 118-120, 199.
- (57) Munro J.F. [2003], *Maritime Enterprise and Empire*, Sir William Mackinnon and his Business Network, 1823-1893, Boydell, pp.10-11, 88-93.
- (58) As a token of Henry Dyer first principal of Tokyo university, one century after on 18-19th March 1997, 2nd symposium of Henry Dyer after the first one at Strathclyde in 1995, was held at Tokyo University.
- (59) Kita, M [1984], *Kokusai-Nippon* (op. cit.), p.128.
- (60) Bush L [1969], *The Life and times of the illustrations Captain Brown* ; a chronicle of the sea and of Japan's emergence as a world power, C.E. Tuttle, pp.3-12.
- (61) Dyer, H [1906], Education and National Efficiency in Japan, Letter to the Editor, *Nature*, Vol. 71. 1904-1905. pp.150-151.
- (62) Roxburgh, J.M [1971], *The School Board of Glasgow 1873-1919*, London Univ. Press, p.225.

本稿は、2014年3月27日英国エディンバラ大学アジア研究センターでの講演に加筆、補正したものである。質疑をいただいた M. ザックマン所長をはじめ同センター研究会参加者に感謝する。