

# “They went to larn ’em” : How four British glassmakers played a key part in the modernisation of Japan’s glass industry in the late 19th century

Sally Haden

(Article for the Journal of The Glass Association, 2014)

## Introduction

In the early 1870s an extraordinary factory was built in Japan. The Shinagawa glassworks, situated on the southern edge of Tokyo, was the stage for the first direct transmission into Japan of western glass technology at a time when the country was undergoing very rapid modernisation. British advisors and instructors helped its establishment and trained many Japanese glassmakers who went on to develop their own companies. From this seed grew Japan’s modern glass industry.



This article offers the story of the factory in outline - why it was developed, how it fared under different pressures and what ultimately became of it. It includes a brief description of Japanese glassmaking in earlier centuries and traces the careers of a few individual apprentices who went on to establish their own companies. Direct links are traced forward from some of those men to Japanese companies which today lead the global glass market.

Initially established in 1873 as a private Japanese factory named ‘Kogyosha’ for window glass manufacture with British assistance, the glassworks was nationalised in 1876 and renamed. As the ‘Shinagawa Glass Works’, its scope was widened to include all forms of western-style glassmaking, including flint glass. Four British glass experts provided instruction to Japanese glassmakers, dispersing when the factory shut down in 1883. Two years later it reopened as ‘Shinagawa Glass Co., Ltd.’, a private Japanese enterprise which survived until 1892 and manufactured tableware and bottles. Since 1908 the site has been owned by a pharmaceutical company.

*Fig.1: The Shinagawa Glass Works beside Japan’s first railway line, circa 1881. ‘Dai-Nippon Zenkoku Meisho Ichiran Shashin-Cho’ (Photograph album ‘Collection of Japanese Views’). Reprinted by courtesy of Ozawa Takeshi.*

## Early Japanese glass

Until the period of Japan’s modernisation glass had very largely been seen as too precious a material for everyday items. A western writer in 1895 described how a Japanese man known to him had ‘preserved amongst his curios a large fragment of flint glass, under the impression that it was some foreign gem, perhaps equal in rarity to [natural] crystal’.<sup>1</sup>

In the Far East generally, utilitarian and household requisites were made of paper, wood and clay. Although a small number of European glass objects had filtered through to China and Japan, admired and collected by elite members of society, nobody thought to make practical things out of glass. For many centuries mirrors, vessels and cups had been made perfectly well, and beautifully, without glass. Only the topmost elite Japanese residences had any glazing in their walls or doors; paper and bamboo screens which could easily be moved or removed were thought perfectly adequate and were often very pleasing.

Japan’s glass before the modern era - as with many pre-industrial countries - was largely for religious or spiritual purposes, or else for elegant but fragile toys afforded only by the rich. Workshops were generally small and

localized, often situated in temple precincts. They made beads and other sacred items, or precious objects such as swords inlaid with glass, often as burial goods. Bead-making was large-scale well into the 19th century. There was no general market for glass and Japan's economy was feudal with very little division of labour or use of motive power.

Indeed some writers say that in the 17th to 18th centuries very little glass was made there at all.<sup>2</sup> Certainly Japan did not engage with the great expansion of western glassmaking during those centuries, becoming almost completely closed from 1633 when the country's rulers instituted 'sakoku'. Under this policy, exchange with the rest of the world was forbidden bar a single trading post, the tiny island of Dejima at Nagasaki. From there tightly controlled trade was permitted with the Dutch only. Meanwhile the West was undergoing dynamic revolution on every level. Steam power, the factory, new monetary systems and forms of government, imperial conquests... Europe was astir.

### **Japan opens up**

As such things were barely whispered of in 'Old Japan', it was a great shock to almost everyone when in 1853 a squadron of menacing American ships, puffing black smoke and sporting big guns, suddenly appeared in Tokyo Bay and Commander Perry demanded on behalf of the American President that the country open its doors to trade. There was nothing for it but to submit. America, rapidly followed by Britain and other western powers, imposed humiliating unequal treaties and exposed the country to all that was modern.

Awoken from its medieval slumbers the country fell into turmoil, unable to decide how to respond. Should Japan westernise or try to repel the intruders? If it were to westernise, how could that be done without Japan losing control of the process? The questions were urgent - all the exciting things which the West had developed were becoming the new 'must haves': steam trains and ships, a postal system, telegraphs, guns, even top hats and ladies' bustles.

In 1863, as internal strife flared and blood ran in the streets, a small band of samurai noblemen - known to history as the Choshu Five - decided to go and take a closer look at the 'hairy barbarians' (as the westerners were called) on their own territory, to see what made them so formidable. With the help of British traders Jardine Matheson (JM) in Yokohama, they smuggled themselves out of Japan onboard a British ship, bound for London. After their gruelling journey they were warmly welcomed by Hugh Matheson, head of JM's parent company, Matheson & Co. of London, and introduced to Professor and Mrs Alexander Williamson who took care of their every need. Williamson as head of Chemistry at University College London (UCL) enrolled them to study a variety of scientific and engineering subjects. Over time an important relationship was to develop between Hirobumi Ito (one of the Choshu Five, and later prime minister four times), Williamson and Matheson. This relationship became significant for the history of not only Anglo-Japanese relations and Japan's modernisation but also the Shinagawa glassworks, as described below.<sup>3</sup>

By 1868 Japan's inner turmoil had been resolved and the Meiji era began. A new government was formed, led by members of the Choshu Five who had returned home. It began to plan modernisation on every level and a Ministry of Industry was set up to oversee industrial development. In 1872 Ito returned to Britain as a member of the Iwakura Mission - a very extensive investigation of the West looking at every type of institution and business. He had in his pocket a long 'shopping list' of industrial facilities his country wanted, for he was now Minister of Public Works within the Ministry of Industry. Glassmaking was on that list.

Because Japan wanted to be taken seriously by the West its presentation had suddenly become important. With this in mind many western-style public buildings were being erected in the capital, all needing window glass. Increasingly high imports of glass, chiefly from Belgium, were endangering the developing economy so the Mission visited several British glassworks. Before leaving England in November 1872 Ito dropped in to see his friend Matheson. As Matheson was soon to be appointed Japan's British agent to assist with industrial development, they are very likely to have discussed the sourcing of British men and materials for the country's leap forward, including glassmakers.

### **Setting up the glassworks**

In Tokyo plans for glass were already underway. Some land beside Japan's newly-opened first railway line which ran from Yokohama to Tokyo (Fig. 1) was requisitioned from a hitherto-powerful Buddhist temple in Shinagawa. The factory was to be owned by two Japanese businessmen, Masatsune Niwa and Miyonosuke Murai who had received encouraging glassmaking information from British mining engineer Erasmus Gower.<sup>4</sup> As stewards of top statesman Lord Sanjo they were able to secure financial backing. On their behalf, in early 1873 JM applied to Matheson & Co. in London for estimates and specifications. A private company charter was drawn up, with the

intention to start small and expand later if successful, making sheet glass by the latest (Belgian) cylinder method. That involved blowing a sphere of soda glass, manipulating it so that it lengthened, cooling it, then slitting it open. Reheated, it fell into a large flat sheet (see Fig.10c). No machinery was involved but it was technically challenging, requiring long experience to avoid the imperfections which rendered it useless.

London's response was negative. Matheson's advisors in St Helens thought the project would be far too costly and difficult.<sup>5</sup> Great caution was urged, for the fear was that it might turn out to be a white elephant like other Japanese schemes at the time.<sup>6</sup> Undeterred, the Japanese investors found ancillary help and JM agreed to act as brokers despite Matheson's warning. In January 1874 British firebricks and fireclay were unloaded at Yokohama dock and the factory began to take shape.

Fig.2: James Speed. This portrait was retained by Magoichi Shimada, one of his apprentices. Shimada's son wrote on it 'Meiji 12-16 (1879-83), Shinagawa Glassworks, Mr. James Speed, British, my father's teacher'. With thanks to Osamu Shimada.



The next task was to find British glassmakers willing to advise and instruct in Japan. A total of four were employed at Shinagawa, following each other in an overlapping sequence: Thomas Walton 1874-78, glass manufacturer from Manchester; Elijah Skidmore 1877-81, crucible maker from Stourbridge; James Speed 1879-83, Scottish glass craftsman and manager; and Emanuel Hauptmann 1881-82, Bohemian-born cutter and engraver.<sup>7</sup>

Although archives have not revealed how they were recruited, they do show that the men's engagement terms were very strict. Because the country wanted to be in control of its development, these four amongst thousands of other engineers, administrators and trainers who came from the West (the majority of them British) were employed on contract only. They were known as 'oyatoi' or 'hired foreigners' - very well paid but not allowed to conduct any business of their own and required to remain subordinate to their Japanese managers and employers in everything except technical matters. Unless there was a very good reason for renewal, oyatoi had to go home at the termination of their contract.

Walton's first task when he arrived in September 1874 was to construct the furnace and make it work, which proved very difficult. There were many delays to the start of production. When complete this rectangular furnace contained six 240kg capacity open pots, to be fired by direct combustion using coal, a new fuel in Japanese glass furnaces. Glassmakers were recruited from across Japan and trials began about August 1875, unfortunately failing again and again. The men were experienced glassblowers, but unused to manipulating such heavy amounts of glass. As had been already pointed out by 'St Helens', it took years of practice to blow a cylinder into acceptable glass without the imperfections which would make it shatter after cooling. And time cost money. The Kogyosha glassworks quickly fell deep into debt.

### Nationalisation

The glassworks was not the only model industrial project that was struggling. Deciding that certain key industries had to be fostered, the Meiji government set about nationalising several enterprises. The Ministry of Public Works, with Ito at its head, re-financed them and installed Japanese managers to keep them accountable.

Under the government from 1876, Kogyosha was renamed 'Shinagawa Glass Works' and given a new brief. It was required to start making flint glass and instruct Japanese apprentices in a range of western techniques that, it was hoped, they would subsequently disseminate across the country. The factory was given a monopoly on the manufacture of red glass for ships' sidelights, now to be manufactured for the first time in the country under industrial conditions.

Walton constructed a flint furnace in a second, larger glasshouse where a variety of items were made under his supervision. He went home in 1878 to be replaced by James Speed. Sheet glass trials recommenced, the flint furnace was repaired or replaced and a third man came from Britain to help with crucibles, Elijah Skidmore. Various metallic oxides together with moulds for pressing and bottle-making were imported from England, and at

Japan's Second Industrial Fair in 1881, the glassworks displayed 268 items including pharmaceutical and chemical glass, tablewares, lamp chimneys and shades, bottles, vases, sidelights and stationaries.



*Fig.3: Items exhibited at Japan's Second Industrial Fair in 1881.*

*Left: writing brush holder in lead glass, 17 x 9.1 cm.*

*Right: flower vase, 21.8 x 6.4 cm.*

*Such multi-coloured twisting trails were new to Japan.*

*Reprinted with thanks to Takeshi Fujimori, 'Glass of Japan'.*

Bohemian craftsman Emanuel Hauptmann gave instruction from May 1881 to October 1882. He used engraving machines, stone and wooden wheels, emery powder and polishing sand to teach western methods for the first time in Japan. There is no evidence that the factory had steam-powered cutting machinery; it was probably too expensive to import.

Other firsts for the factory, lasting legacies in Japan's glassmaking history, include the demonstration of modern glass factory conditions and mass production methods, larger melting furnaces and Japan's first annealing furnace for strong glass. Pressing was introduced, western moulds were imported and there were trials in the large scale manufacture of common household items and the use of new colours and designs.

The only product, however, which could bring in enough profit to make the factory viable was sheet glass.<sup>8</sup> Its continual failure took Shinagawa further and further into the red. Ships' lights sold well because they were in demand in the country at the time, but Japan's market was not mature enough for the domestic ware. The factory was closed in 1883 and British influence ceased at Shinagawa.

### **The spread of knowledge: Hauptmann's apprentices**

One field of Japanese glassmaking which quickly took advantage of the Shinagawa knowledge was the decoration of fine lead glass. In the 1830s some glassmakers in Edo (nowadays Tokyo) had begun to copy a few pieces of British or Irish cut glass that had been obtained by feudal lords through Nagasaki. This 'kiriko' glassware had developed in two styles: Edo-kiriko in clear uncoloured lead glass, and Satsuma-kiriko (made in Satsuma domain), clear lead glass usually cased in red or blue. Kiriko originally meant facet but came to mean cut or engraved glass. Modern Japanese scientific research<sup>9</sup> conducted on kiriko made before about 1882 shows that this deep cutting was done by hand with flat iron bars, an extremely painstaking task. Although this seems absolutely incredible to westerners, there are many accounts of other forms of pre-industrial Japanese work which also show extraordinarily laborious craftsmanship. Is it possible that before the use of motive power, in the feudal society of early 19th Japan, kiriko-makers did at least start out into lead glass cutting with hand tools - even though the country had been using wheels to decorate fine stone for centuries and so already had wheel technology? However kiriko began, wheel-cutting became usual in Japan after about 1882.

Some of the Shinagawa trainees were already experienced in kiriko.<sup>10</sup> Even if they had seen machine cutting before, under Speed and Hauptmann they obtained direct transmission of western glass cutting and engraving methods and styles, in a factory setting where large-scale production was important. This turned them away from extremely intensive craftsmanship towards more industrial processes. The following examples were made by trainees Chuzaemon Oshige and Hidejiro Miyagaki after receiving instruction at Shinagawa.<sup>11</sup>



Fig. 4: Cased glass oil lamp, wheel engraved fern pattern, before 1891, with detail inset. Chuzaemon Oshige. 47 x 17.4 cm. Private collection. Reprinted with thanks to Takeshi Fujimori, 'Glass of Japan'.

Fig. 5: Satsuma-style kiriko bowl, lead glass, cased. Wheel cut and engraved. 1881, by Hidejiro Miyagaki. 6.7 x 20.3 cm. With thanks to Kobe City Museum.



### The spread of knowledge: Osaka

Direct British influence on Japanese glassmaking did not cease with the 1883 closure of Shinagawa. Although Hauptman and Walton had gone straight home at the end of their terms, Skidmore and Speed stayed on in Japan for a while. They moved to Osaka where a Japanese entrepreneur named Keishin Ito had started up a small glassworks. He invited Skidmore in 1881 and Speed in 1883 to provide instruction and help him establish his factory along western lines. 'Nihon Garasu Kaisha' made ships' signals, retorts and acid-proof bottles; also firebricks, thanks to Skidmore's discovery of good fireclay at Shigaraki in mid-Japan.<sup>12</sup> It is not known exactly when Speed and Skidmore left Japan, but it was before 1886.

Fig. 6: Portrait of Magoichi Shimada, apprentice of Speed. With thanks to Osamu Shimada.

Ito's factory attracted so many trainees from Shinagawa that its popular name was 'Little Shinagawa'. One of them was Magoichi Shimada who had preserved the portrait of his teacher Speed (Fig.2). Shimada must have learned well for in 1888 he purchased Ito's venture, in later years becoming very successful with tableware and container manufacture. The Shimada Glass company was family-owned for three generations, adapting, innovating and automating to lead the way in Japanese household glassware. In 1909 Shimada's patented tank-furnace design was reputed to be as good as 'the German one'. In the 1920s and 30s he imported the latest American fully-automated press machine for tumblers, he mass-produced lead crystal glassware for the first time in Japan, and employed up to five hundred workers.



In 1954 Shimada Glass changed its name to Toyo Glass, in turn becoming Toyo-Sasaki Glass in 2002 after merging with another long-established glass firm. The company's website today says 'the combination of their long-standing traditions, technologies and extensive sales networks have made TSG the biggest glassware manufacturer in Japan.' On the same page James Speed is acknowledged as Magoichi Shimada's teacher.<sup>13</sup>

Fig.7: Shimada storage jar in uranium glass. 17 x 11.5 cm. With thanks to Ritsuo Yoshioka of Japan Uranium Glass Collectors Club.



Fig.8: Two cut glass vases, 30% lead content, made by Shimada Glass. In addition to utilitarian glass, the company was occasionally commissioned to make fine glass for presentation gifts. These two vases, preserved in the Shimada family home, are exact duplicates of items made between 1932-1938. They are occasionally displayed in public exhibitions. With thanks to Osamu Shimada.

8a: Clear lead glass vase, for presentation to the Japanese Imperial Court  
 Product Name: Crystal 'Neji Kiriko' vase  
 Height: 40 cm, Diameter: 13 cm, Weight: 7.5 kgm  
 The S-shaped cutting is deep and highly polished, using a technique ahead of its time.

8.b: Lead glass vase, for presentation to the Emperor of Manchukuo (the last Emperor of China) when he visited Japan in 1935  
 Product Name: Crystal Red 'Kise' vase  
 Height: 38 cm, Diameter: 13 cm, Weight: 5.7 kgm  
 This clear crystal cut-glass vase, cased with red, was made using the best technology of the time. The skillful cutting technique leaves the outer casing of red delicately placed over the clear glass.

### The Shinagawa glassworks returned to private Japanese ownership

The Meiji government found a buyer for its Shinagawa glass factory in May 1885. Katsuzo Nishimura was an experienced entrepreneur who set about glassmaking with enthusiasm. After research in Europe, especially looking at Siemens furnaces, he hired German engineers and by 1889 had installed a new annealing furnace and a Siemens-style tank-furnace. In 1888 Nishimura defined his produce as 'glassware, such as bottles for medicine and alcoholic drinks, tableware, etc.', for the domestic and Far East market. By the following year he was employing 150 people,



double the number working at the factory in 1880 under nationalisation, and the highest number in the glassworks' history.<sup>14</sup>

Fig.9: Advertisement in the *Asahi Shimbun* newspaper, 11 July 1889, Shinagawa Glass Co. Ltd.

The Japanese text reads: "Shinagawa Glass Co. Ltd. is now expanding its business, manufacturing new blown and pressed tableware, shown here. As these are better quality and lower prices than imported products, we are hoping to reduce imports. Please buy our glass at your nearest shop and confirm its good value."

It was under Nishimura that the factory made its only profits from glass, with beer bottles. For about four years from 1888 Nishimura supplied Japan Brewery Company with bottles for their Kirin beer, accumulating enough capital to make an attempt at window glass. But a nationwide depression thwarted him and the company was liquidated in 1892. Today Nishimura's remains lie in a tomb overlooking the glassworks site, in a graveyard which is a remnant of the original Buddhist temple. There he keeps company with many important figures from the history of Japan's modernisation, such as Masaru Inoue, one of the Choshu Five who ventured to London in 1863. Inoue, now known as the 'Father of Japanese Railways', oversaw the construction of the two railways which today overshadow the graveyard, the Yamanote line on the north, carrying Japan's super-fast Shinkansen Bullet Train, and the important Tokaido line on the south, the country's first train track.

Nishimura's business was purchased by another of Speed's apprentices, Takijiro Iwaki. After joining the Shinagawa glassworks in 1877, Iwaki had left in 1881 to set up his own factory in Tokyo. This was Iwaki Glass, thought to have been Japan's first completely private, independent glass enterprise. With a tank-furnace, pressing, cutting, acid-etching, optical glass and various domestic items, it was diverse and innovative. After about four years of research in America he acquired the old glassworks at Shinagawa, re-lit the furnaces and had some minor success with sheet glass, though not enough to become established in that field.

Magoichi Shimada's experience with sheet glass was similar. Between 1902-04 he brought some to market but the quality was insufficient.

### Sheet glass at last

After long and expensive struggles the holy grail of successful sheet glass was found at last in the 1910s, soon making Japan a leader in world flat glass manufacture. It was achieved by two principal men, Toshiya Iwasaki and Yosaburo Sugita, whose work helped to found the modern giants Asahi Glass and Nippon Sheet Glass respectively.

Iwasaki, a previous associate of Shimada in Osaka, originally entered the trade by studying applied chemistry in London around the turn of the century - perhaps at UCL where the Choshu Five students had been educated under Williamson. Following Shimada's trials, Iwasaki joined him but the venture did not fare well. They separated and while Shimada returned to his roots in domestic glass, Iwasaki set up independently, close to Osaka, using the Belgian method of hand-blown cylinders. Osaka was to become the centre of Japan's glass industry. His success in 1909 with Japan's first quality sheet glass was confirmed from 1914 onwards when his company, Asahi Glass, began to export it to several other countries, including England.

Sugita was a trader from Osaka who noticed in 1914 that while sheet glass in Japan was still being made manually - a very arduous process - the Americans had invented a much more efficient mechanical method. He encouraged its adoption in Japan and in November 1918 the America Japan Sheet Glass Co., Ltd. was founded in his home town. Production began in 1920, with immediate success. This company became Nippon Sheet Glass and later bought Pilkington plc in 2006, making it one of the largest glass companies in the world.

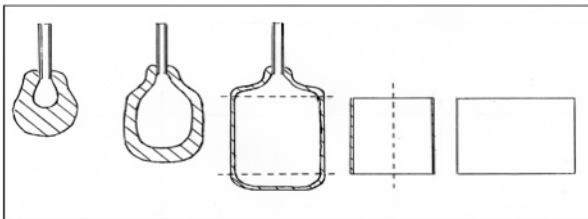


*Fig.10a: Cylinder making, Asahi Glass Co., about 1909.*

*Fig.10b: The first successful cylinder of glass made in Japan. Height abt. 2 meters.*

*Fig.10c: Diagram showing the stages of cylinder glassmaking, reproduced from Asahi Glass Company website.*

*With thanks to Asahi Glass Company.*



### **The site of several more firsts**

It is very easy to list the number of ‘firsts’ in Meiji Japan’s wider industrial field because of the country’s fast growth, but it is surprising how many ‘firsts’ were achieved on the Shinagawa factory site. After the pioneering of flint and sheet glass, it was here in 1902 that Toshiba developed Japan’s first incandescent light bulb in flint glass; their company history claims that this development was key to their subsequent success.<sup>15</sup>

Following the purchase of the glassworks by Sankyo Pharmaceutical Co. in 1908, the first of Japan’s plastics was made here in 1911, a synthetic resin named ‘Bakelite’. Further, the Rikuo motorcycle was manufactured here by Sankyo in 1930s-1950s. This Harley Davidson copy under licence led the way for the country’s motorcycle industry. Other firsts were developed thanks to the importance of one particular building and the natural association of chemistry with glassmaking.

### **The laboratory**

Essential to a glassworks is somewhere to experiment with glass recipes and ingredients, so it was almost at the beginning of the factory’s story that a chemical laboratory was established at Shinagawa. It was set up by the Ministry of Public Works in 1876, to be directed by British chemist Edward Divers, newly-appointed lecturer at Imperial College of Engineering in Tokyo and chemical consultant for the government. Hugh Matheson as British agent for the Ministry of Public Works, Williamson as Professor of Chemistry at UCL, and Ito as Minister of Public Works, were all involved, directly or indirectly, in sending Divers to Japan and starting the laboratory. Divers put it to dual use, as a training site for his College students (in a chemistry ‘sandwich’ course) and for the preparation of raw materials for glass.<sup>16</sup> As one of a small number of British men who stayed on in Japan for many years, to be highly honoured by the Japanese government, Divers, together with the laboratory, played an important role in the development of Japan.

It must have been the laboratory which attracted Sankyo Pharmaceuticals to the glassworks in 1908, for it was in this Shinagawa factory in the opening years of the 20th century that Sankyo pioneered the important medicine Taka-Diastase in Japan and discovered Vitamin B1. It was this laboratory building which Sankyo preserved in the



1960s when the factory was entirely rebuilt. The company paid for it to be re-erected by the Meiji-mura museum - an open air facility dedicated to Japan's Meiji industrial heritage - where it stands today.<sup>17</sup>

## Conclusion

While it is easy from modern times to look back and see how the glassworks at Shinagawa kick-started Japan's industrial glassmaking, it is hard to imagine how difficult that kick-start must have seemed at the time. It must be remembered, for instance, that the four British experts would not have been able to speak Japanese at first. Also, for men who were entrepreneurs or managers at home it would have been irksome to depend at every turn on decisions made by bureaucratic state management after the 1876 nationalisation. They were well paid, with salaries up to ten times what they could earn at home, but lived a strange life in Japan, thousands of miles from their families and largely restricted to foreign enclaves.

Had they been able to work with greater freedom and been given more money and time, Walton's, Skidmore's, Speed's and Hauptmann's achievements might have been greater. But money and time were in short supply, and as the Iwakura Mission commented in its 1873 report, Japanese businessmen in those days tended to think too much about profit, going headlong into projects with insufficient costing analysis.<sup>18</sup> Did Niwa and Murai *believe* they could make sheet glass before they *knew* they could? Did Ito, as Minister of Public Works, have unjustified faith in the factory's capacity?

However, the Meiji government was pledged to rapid modernisation, and the mistakes that were made must be offset against the fact that the country achieved in only fifty years an industrial revolution which it took the West at least two centuries to accomplish. In relation to the glass factory, Walton's struggle with the first glasshouse, the continual failure of sheet glass trials, the immaturity of Japan's market for tableware and the great debts which the factory incurred almost throughout its glass history, are all significant but small considering the distance such technology had to travel, in the hands of only a few British glassmakers over just nine years.<sup>19</sup>

The glassworks at Shinagawa achieved many great things. Western industrial methods were disseminated; eventually sheet glass was fully achieved, albeit not at Shinagawa, and new commodities were introduced - which stimulated other industries, such as the building trade that needed window glass. Exporting began, and glassmakers such as Shimada learned how to set up their own factories, pioneering the management of successful enterprises and developing their own methods. Although fine artistic glassmaking was abandoned in the rush to industrialisation, it was revived in the 1980s<sup>20</sup>. Mechanisation flowed gradually into the industry, enabling faster, easier manipulation of glass into sheets, bottles, household container and decorative ware, and craftsmen became adept, competent factory workers. And all this happened in a short forty years since the day in 1875 when the furnace was lit for the first time at the Shinagawa glassworks.



The cold water poured on the 1873 project by the St Helens advisors and Matheson's office was quite justified: in many ways the glassworks did indeed become something of a 'white elephant'. Nevertheless even as a 'white elephant' the factory had potential. As a seasoned entrepreneur Nishimura was able to spot a bargain, for like many other nationalised model factories disposed of at the time, it was being sold off ridiculously cheaply. For very little money he was able to buy an enterprise which had already gone through its worst start-up problems and was now ripe for commercial development. In this and many other greater and larger ways, glass manufacturers in Japan built on each others' successes and failures to reach the pinnacle that is today's industry, stretching out as it does across the world.

*Fig. 11: The monument to the Shinagawa glassworks. With thanks to Michael Stevens.*

Today a simple memorial stands as a testament to the Shinagawa glassworks. Nestled unobtrusively beside Sankyo's modern premises on the original site, it is easily overlooked. Just a few yards away runs Japan's Bullet Train on the world's busiest high-speed railway line, while beside it moves the traffic of a main road and a river. There the engraved stones speak quietly for any passerby, of the great time when Japan began to make modern glass with the help of four British glassmakers.

**Sally Haden** is a private researcher and the great grand daughter of James Speed. Almost the only information about him which had been handed down in the family was the enigmatic statement ‘*he went to Japan to learn ’em*’, with the aside that he was a glassmaker. Inspired by this information, Sally writes and lectures about the lives and work of all four of the glassmakers who assisted at Shinagawa. She can be contacted at [haden.sally@gmail.com](mailto:haden.sally@gmail.com) or [www.hadenheritage.co.uk](http://www.hadenheritage.co.uk).

---

## Acknowledgements

I would like to thank **Roger Dodsworth** for introducing me to **Akiko Inoue Osumi**, glass historian of Japan. Without her foundational work on this subject and our collaboration, none of my research would have happened. More recently **Ritsuo Yoshioka** of Japan Uranium Glass Collectors Club (<http://uranglass.gooside.com/english.htm>) has been most supportive. I thank him for his fine explanations and translations of numerous obscure details which would otherwise have been unavailable to me. I am also grateful to **Dr William H Brock**, chemistry historian and descendant of Thomas Walton, for help in understanding the role of the laboratory, and to his cousin **Carolyn Furukawa** and her husband **Takashi** for their invaluable translation of the Meiji-mura museum booklet about the glassworks. Thanks are also due to **Kimiyo Whitlam** and **Yuka Caves** for translations and to **Osamu Shimada** for kindly supplying the photographs of his family’s wonderful glass and the portraits of James Speed and Magoichi Shimada, his great grandfather. Finally I would like to acknowledge Takeshi Fujimori’s photographs taken from ‘*Glass of Japan*’ (Figs.3-4). Attempts have been made to contact the publishers for permission, without success. Tsuchiya, Y. and Fujimori, T., 1987. ‘*Glass of Japan*’, Shiksha Publishing Co. Ltd., Kyoto.

---

## Endnotes

<sup>1</sup> Bowes, James L., 1895. *Notes on Shippo, a sequel to Japanese enamels*, Kegan Paul, Trench, Trubner & Co. Ltd., p.71

<sup>2</sup> Macfarlane, A. & Martin, G., 1973. *The Glass Bathyscaphe*, Profile Books, London, 2002, p.114, and Blair, D., *A History of Glass in Japan*, Kodansha International Ltd., Tokyo.

<sup>3</sup> That important relationship continues today. In 2013, the 150th anniversary of the Choshu Five’s arrival in Britain was celebrated in joint events by Jardine Matheson, UCL and representatives of the Japanese government in London, together with members of Three Wheels Temple, Acton. The latter have created a monument to Professor Alexander Williamson, his wife Catharine and some Japanese students at Brookwood Cemetery, Surrey. At the UCL event, Sir David Warren, Chairman of the Japan Society, said that the original connections ‘helped to create the prosperous and forward-thinking nation that Japan became’. <http://www.ucl.ac.uk/news/news-articles/0713/03072013-UCL-and-Japan-150-celebration>

<sup>4</sup> Detailed accounts of the establishment of the glassworks can be found in the work of Akiko Inoue (Osumi), in particular: Inoue, A., ‘British Influence on the Shinagawa Glassworks - Japan’s First Industrial Glass Factory’, in *Annales of the 16th congress*, AIHV, London 2003.

Inoue, A., ‘Kogyosha and Shinagawa Glassworks (1) - The Establishment of the First Western-style Glassworks in Japan’, in *Glass, Journal of the Association for Glass Art Studies*, Japan, No. 53, March 2009 (in Japanese), pp. 10-31.

<sup>5</sup> JM/B6/10, letter No.10, Jardine Matheson archive, University of Cambridge.

<sup>6</sup> Checkland, Olive, 1989. Macmillan, London. *Britain’s Encounter with Meiji Japan 1868-1912*, p.43

<sup>7</sup> Thomas Walton’s life is described by the author: Haden, S.E., ‘Who Made That Glass? Identifying Victorian glass makers and manufacturers: Thomas Walton (1833-1897)’, a two-part article in issues Nos.102-103 of *The Glass Cone*. Further articles are planned for Speed, Skidmore and Hauptmann.

<sup>8</sup> See Martha Chaiklin’s study of the glassworks for many further details. Chaiklin, M., 2005. ‘A Miracle of Industry: the Struggle to Produce Sheet Glass in Modernizing Japan’, in Morris Low [ed.], *Building a Modern Japan: Science, Technology and Medicine in the Meiji Era and Beyond*, Basingstoke, pp. 161-81.

<sup>9</sup> Tanahashi, J., 1987. *Glass Cutting from the Last Third of the Edo Period to the First Third of the Meiji Period*. (In Japanese) The Bulletin of Shoin Women’s University, Shoin Women’s Junior College 29, 1-76.

<sup>10</sup> Yamaguchi, Katsuaki, 2009. *Edo Kiriko: Sono nagare o sasaeta hito to waza*, Ribun Shuppan

- <sup>11</sup> It is not certain that Miyagaki worked at the factory during the nationalised phase but he was hired by Kogyosha as a talented Satsuma-kiriko craftsman. Inoue, Akiko. 1979. *About Shinagawa Garasu*. Journal of Association for Glass Art Studies, Japan, Vols. 6 and 7.
- <sup>12</sup> Nihon Kinsei Yogyo-shi
- <sup>13</sup> <http://www.toyo.sasaki.co.jp/e/company/history.html>, accessed 6 June 2014
- <sup>14</sup> <http://www.city.shinagawa.tokyo.jp/hp/page000006700/hpg000006610.htm> accessed 24 May 2014
- <sup>15</sup> email Ritsuo Yoshioka, 8 April 2014
- <sup>16</sup> Yoshiyuki Kikuchi, 2006. *The English Model of Chemical Education in Meiji Japan: Transfer and Acculturation*. Unpublished PhD thesis, Open University
- <sup>17</sup> Meiji-mura Museum, 1970, *Memorial Exhibition of Shinagawa Glass Works*, ‘工部省 品川硝子製造所 記念展示’.
- <sup>18</sup> The Iwakura Embassy, 2002. Vol.III, 1871-1873: Continental Europe, 1. Japan Documents. p.194ff.
- <sup>19</sup> A fuller assessment of the opening years of the Shinagawa glassworks can be found in Haden, S.E., “They went to learn ’em”: British glassmakers help to establish Japan's first western-style glassworks, 1874-1883. *Glass Technology: European Journal of Glass Science and Technology A*, February 2013, 54 (1), 25-30. Also Inoue, 2003 and 2009.
- <sup>20</sup> For example today there are around 150 workshops in Tokyo and Osaka making modern forms of kiriko (Yamaguchi, 2009).