

Kurume History Walks

No.39 Tanaka Hisashige, an inventor-engineer 田中久重

Tanaka Hisashige

Tanaka Hisashige (1799-1881), a great inventor-engineer and founder of Toshiba, spent his life in turbulent times of Japan when the Tokugawa Shogunate came to an end, and when a new government was established under Emperor Meiji. He achieved singular success with his invention, and was called “the best clock and mechanical engineer in the country”. He played an important role in Japan’s modernization. Then, he was popularly known as “*Karakuri* (automata) Giemon*”.

*In old times, until the Meiji period (1868-1912), a single individual used to have some or several names depending on a personal and social situation. As for Hisashige, he was named Ganjiro/Iwajiro? (岩次郎) at birth, and Giemon (儀右衛門) at the age of about seven, then called Omi-Daijo (近江大掾: a title for the greatest craftsmen) which he was awarded at the age of fifty-one, and finally changed to Hisashige (久重) around since he moved to Tokyo in 1873.



Tanaka Hisashige

■ Great Inventor from Kurume ■

On October 16th, 1799, Hisashige was born the oldest son of a tortoiseshell craftsman, at Toricho, which was the main street running east-west through the Kurume castle town.

Since his childhood, he was engrossed in inventing mechanical devices. His automated puppets (lit. *karakuri ningyo*) acquired a reputation in large festivals at the Gokoku-jinja Shrine, near to his house.

The festival used to be held twice a year in spring and autumn. A lot of stands and freak shows attracted many people. Among them, the most popular was the automata puppets completion of eight groups from the castle town. Hisashige took part in and presented various automata, especially powered by water pressure and falling water.

He probably used as a reference “*Karakuri-Zui* (Compilation of Illustrated Mechanical Arts)” written by Hosokawa Hanzo from the Tosa Domain, and published in 1796.



His birthplace and its monument



In Gokoku-jinja Shrine, a stone bridge has existed since when Hisashige was a child.

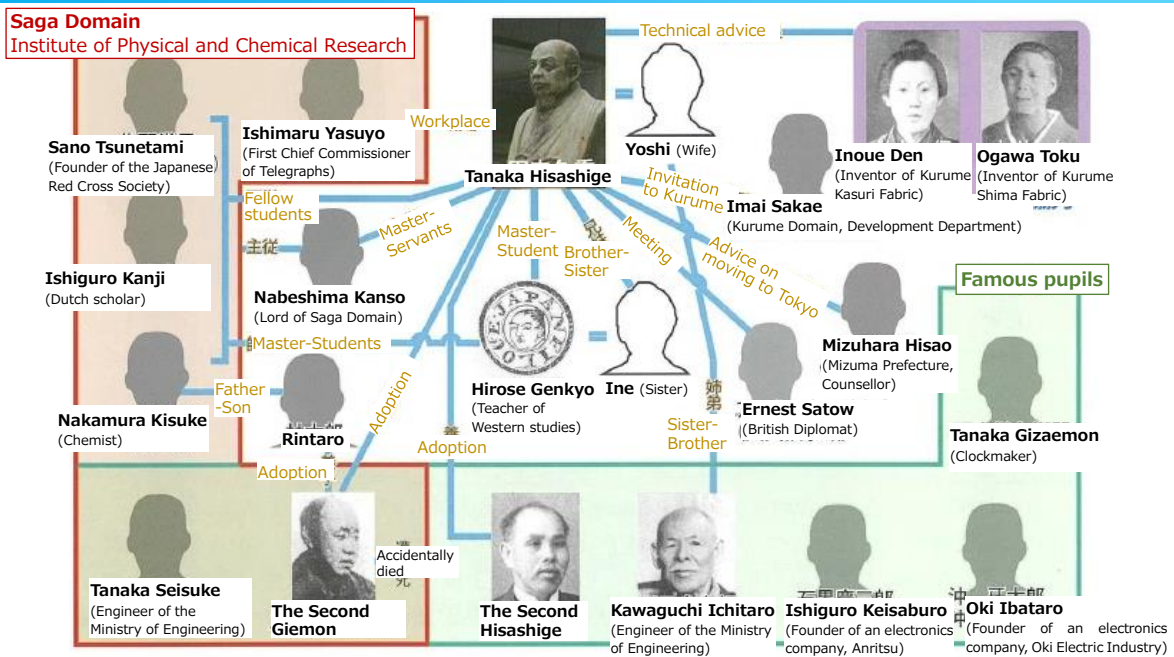
■ Starting a Real Career in Mechanics ■

In the 1820s he reportedly engineered “Bow shooting boy (*yumihiki doji*)” and “Calligraphy writing doll (*mojikaki ningyo*)” which were small and mechanized puppets capable of performing an act such as discharging an arrow at a target and writing calligraphy with a little brush and ink.

As a professional *karakuri* craftsman, his performances in Kansai were successful. In 1834, he moved to Fushimi-cho, Osaka. He invented various devices such as a portable candle stand (*kaichu shokudai*, which was foldable), and an inexhaustible lamp (*mujinto*, which automatically refueled by using compressed air to replenish oils).

Then, he moved to Kyoto. In 1847, he became a disciple of the Tsuchimikado family for learning astronomy. At that period, he was awarded the title “Omi-Daijo” for the greatest craftsmen from an Imperial Family. He also entered a private school for Western studies, which Hirose Genkyo ran, and he learned various techniques. In 1851, he manufactured “Myriad Year Clock (*mannen dokei*)” which was called the best masterpiece of all Japanese clocks. In the following year, he succeeded in building two steamship models; one with paddle wheels and the other with propellers. The former is said to be the prototype of Japan’s first made steam warship “*Ryofu Maru*” which was constructed by the Saga Domain.

◆ Hisashige’s Relationship Diagram



Automata Tea Server

Myriad Year Clock (replica)

Fire Pump

Inexhaustible Lamp

■ Changing places ■

He was invited to the Saga Domain on the recommendation of Sano Tsunetami and joined its institute of physical and chemical research. In 1862, he became a leading member for the construction of the above-mentioned steam warship Ryofu Maru. Also, he contributed to the improvement of a reverberatory furnace for iron refining.

Then, the Kurume Domain heard his reputation and called him back. The first factory was built at Yarimizu-Ryuden, where he produced bronze cannons modeled after the latest Western cannon. In the spring of 1866, trial launches were conducted as the lord and the leaders of the domain were watching. A cannonball successfully went far beyond a target on the side of Mt. Tobidake, 2.8 kilometers from the factory.

In 1867, his factory (called *Seitetsujo*) was transferred to near his parents' house. Rifles, which the domain used, were produced after the model of a Western one. In 1869, the factory was again relocated to the Nankun area for its expansion. A steam engine was used as a power source, and over a hundred workers were employed.

However, in July 1871, that business was ceased with the abolition of the domain system. In January 1873, he moved to Tokyo with his family and pupils and established a manufactory of unusual instruments (*Chinki Seizoujo*) in the present-day Minato Ward, Tokyo.



◆ Stone monument of the factory at Yarimizu-Ryuden (left) Mt. Tobidake seen from Ryuden hill (right)



◆ Stone monument of the factory at Nankun (left) Narrow street remains since that time (right)

■ Grown-up Business ■

In 1875, he replaced his factory on a street with newly constructed brick buildings at Ginza. It became Japan's first full-scale electric factory. By request from the Ministry of Engineering for launching domestic production of the telegraph, in 1878, he succeeded in manufacturing two telephones referring to Graham Bell's invention. Also, he developed a clock reporting instrument to send the time signal at noon from the Central Telegraph Office.

On November 7th, 1881, he died at the age of eighty-two. His grave is in the Aoyama cemetery. In the following year, Tanaka Daikichi (adopted son, the second Hisashige) established a large factory at Shibaura. Later, its management rights were bought by Mitsui Bank and came to be called Shibaura Seisakujo (factory). In 1939, it merged with Tokyo Denki cooperation, and it became the present-day Toshiba Corporation, a Japanese multinational conglomerate manufacturer.

◆ Hisashige's Lifetime *East Asian age reckoning (When people are born, they are considered to be one year old.)

Japanese Era /Common Era /Age /Event

Kurume	Kan'ei	11th	(1799)	1	Born at Toricho, Kurume
	Bunka	4th	(1807)	9	Manufactured an 'unopened' writing box
	Bunsei	2nd	(1819)	21	Demonstrated his automata at Gokoku-jinja Shrine etc.
	Bunsei	7th	(1824)	26	Held <i>karakuri</i> performances in Osaka etc.
Osaka Kyoto	Tenpo	5th	(1834)	36	Moved to Osaka; invented the portable candle stand
	Tenpo	8th	(1837)	39	Moved to Kyoto; invented the inexhaustible lamp
	Kaei	2nd	(1849)	51	Got a title of "Omi-Daijo"
	Kaei	3rd	(1850)	52	Manufactured an astronomical clock
Saga Kurume	Kaei	4th	(1851)	53	Completed the Myriad Year Clock
	Kaei	6th	(1853)	55	Joined to the institute of physical and chemical research in Saga
	Ansei	2nd	(1855)	57	Manufactured models of locomotive and steamboat
	Bunkyu	2nd	(1862)	64	Completed the steam boiler of Saga Domain's warship "Denryu Maru"
	Genji	1st	(1864)	66	Moved to Kurume; worked for the domains of Kurume and Saga
Tokyo	Keio	1st	(1865)	67	Succeeded in producing Japan's first steamboat "Ryofu Maru"
	Keio	2nd	(1866)	68	Cast a cannon in Kurume; smuggled himself into Shanghai
	Meiji	6th	(1873)	75	Moved to Tokyo
	Meiji	7th	(1874)	76	Started to make a telegraph
	Meiji	8th	(1875)	77	Opened store/factory at Ginza, Tokyo
	Meiji	11th	(1878)	80	Made trial telephone; completed clock reporting instrument
	Meiji	14th	(1881)	83	Died at home

Cultural Properties Protection Department of Kurume

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