



Educational, Scientific and Cultural Organization and Related Sites
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Tomioka Silk Mill and Related Sites 富岡製糸場と絹産業遺産群



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Silk Heritage of Gunma Kinumeguri : Navigating Gunma' s silk heritage sites

This app is designed to help you have fun while visiting Gunma's silk heritage sites, some of which include World Heritage sites and Japan Heritage sites.



Image courtesy: p4 bottom left, p9 East cocoon warehouse , Tomioka City / p10 middle, Gunma prefectural Library p13 above left, Fujioka City Board of Education / p15 above right, Shimonita Town.

Uniting the world through silk

Tomioka Silk Mill and Related Sites 🏛

Uniting the world through silk

"Tomioka Silk Mill and Related Sites" is an ensemble of heritage related to the modern silk industry, which contributed technological innovation that achieved mass production of high-quality raw silk and technological interchange between Japan and the world. Silk was considered a rare fiber that was produced in limited amounts and only available to the privileged classes. The mass-production technology developed by Japan brought silk to the ordinary people of the world, further enriching lifestyles and culture. Tomioka Silk Mill and 3 sites related to sericulture (Tajima Yahei Sericulture Farm, Takayama-sha Sericulture School, and Arafune Cold Storage) are important testimonies to that story.



Located in the center of Japan's sericultural region "Tomioka Silk Mill and Related Sites" is located in Gunma Prefecture, which is in the center of the main island of Japan, Honshu. In times past, the sericultural region was spread throughout central Honshu, and sericulture, silk reeling, and textile manufacturing flourished in Gunma Prefecture from the Edo Period. Tomioka Silk Mill was constructed in a location where a large supply of cocoons could be procured.

Gunma Pre

Nagano Pref.

Tokyo



Silk was first produced in China before the Christian era and in time reached Japan and Europe. Machine reeling started in the 19th century in Europe where the Industrial Revolution had a head start, but a shortage in raw materials arose due to the diffusion of silkworm diseases. Around that time, Japan had opened its doors to the world and was importing machine-reeling technology. Tomioka Silk Mill was built in 1872 as a model factory, and the technology used spread throughout Japan. Moreover, technological innovation in sericulture occurred domestically, resulting in the successful mass production of the raw materials, cocoons. Continual innovation in silk reeling also took place, and in the early 20th century Japan became the world's top exporter of raw silk, making the luxury fiber of silk more accessible. Furthermore, after WWII, Japan succeeded in the automation of raw silk production, and automatic reeling machines were exported all over the world. The sericulture and silk-reeling technologies developed in Japan still support the global silk industry today.

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Chronology of Silk

Period	Globally	In Japan	Tomioka Silk Mill and Related Sites
3000 BC	Silk production begins in China		
rd century BC	Raw silk and silk fabrics are introduced to the Roman Empire	1	Call and the second
Around AD		Sericulture/silk-reeling technology are introduced from China	Martin
6th century	Sericulture/silk-reeling technology are introduced to the Byzantine Empire		Charles Ton
8th century		Late: Cocoons/raw silk/silk production extends from Kyushu to Southern Tohoku	A CONTRACT
13th century 14th century	Sericulture/silk-reeling technology are introduced to Northern Italy	High-grade silk goods are primarily	
15th century	Sericulture/silk-reeling technology are introduced to France	imported from China.	
16th century		Raw silk imports increase due to trade with European trading vessels	
17th century	Sericultural/silk-reeling regions are formed mainly in Italy/France	1685: Raw silk imports from China are restricted	
18th century		1713: Sericultural regions are formed in Central Honshu due to the shogunate government's promotion of domestic raw silk, and raw silk production flourishes	
19th century	Early: Silk reeling factories using steam boilers are built in France		and a second
	1840s: Pebrine disease spreads in Europe, and silkworm eggs and raw silk are sought after in Asia		
	1000: A	1859: Ports are opened to foreign trade and raw silk exports begin (mainly to Europe).	1863: The farmhouse at Tajima Farm is built
	built in Shanghai, China		
		1872: The government establishes Tomioka Silk Mill as a modern model factory; machine reeling spreads in Japanes	1872: Tomioka Silk Mill is built
		1884: America becomes the no. 1 destination for raw silk exports	1884: Takayama-sha company is established
			1891: The farmhouse at Takayama-sha is built
20th century	1000 : Janan becomes the world's ten a	Early: Commercialization of sericulture in summer and fall 1906: The F1 hybrid silkworm is developed	1905: Arafune Cold Storage No.1 is built
	1909 - Japan becomes the world's top ex	1914: Distribution of F1 hybrids to farms begins	From 1912: Tomioka Silk Mill, Tajima Farm, Takayama-sha, and Arafune Cold Storage work together to outsource raising of foreign-bred silkworms and hybrids; later, they also undertake F1 hybrid silkworm egg production
	1920s: Demand for raw silk for stockings increases sharply in America	1920s: The automatic cocoon dryer, Minorikawa-style multi-ends reeling machine are put into practical use	1924: Tomioka Silk Mill adopts the Minorikawa-style multi-ends reeling machine 1927: Takayama-sha is closed
		1930s: Raw silk from Japan comprises 80% of the global market	1935: Operation of Arafune Cold Storage ceases
		1952: Automatic reeling machines are successfully put into practical use	1952: Tomioka Silk Mill adopts the K8 automatic reeling machine
			1960: Tajima Farm/Takayama Farm engage in sericulture until around this time
	Late: Raw silk production flourishes in China and Brazil due to technology transfer from Japan	Late: Automatic reeling machines are exported to other countries	1987: Operations at Tomioka Silk Mill cease

The sericulture and silk-reeling technologies developed in Japan still support the global silk industry today.

Raw silk is produced from cocoons made by silkworms (silkworm moth larvae) that feed on mulberry leaves. A series of activities that includes growing mulberry, raising silkworms and harvesting cocoons is called sericulture. Silk reeling produces raw silk from these cocoons. A single thread of raw silk is created from several to dozens of cocoon filaments. This raw silk is further processed, dyed and woven to create silk goods.

Sericulture

Rearing silkworms on mulberry leaves until they produce cocoons.



Silkworm Eaas



mulberry leaves



Cocoons spun by silkworms





Technical term

F1 hybrid: A cross-breed silkworm born from a parent that produces a cocoon of superior quality and a parent that produces a cocoon superior in volume will make a cocoon of both good quality and volume. It was the Japanese scientist, Kametaro Toyama who proved that F1 hybrid silkworms inherit the superior characteristics of their parents. The practical application of this principle dramatically increased raw silk production volume in Japan.



About World Heritage

World heritage sites are natural and/or cultural properties that have been registered on the World Heritage List compiled by the United Nations Educational, Scientific and Cultural Organization (UNESCO). They are properties belonging to humanity that possess outstanding universal value exceeding national and ethnic boundaries that should be shared. Cultural heritage is prescribed in evaluation criteria (i)– (vi). A world heritage site must fulfill at least one of those criteria.



Tomioka Silk Mill



Tajima Yahei Sericulture Farm

Technological interchange and technological innovation brought about developments in the global silk industry resulting in popularization of silk.

Proposed value as a World Heritage

"Tomioka Silk Mill and Related Sites" is an excellent example of the mutual exchange of industrial technology between Japan and other countries that resulted in the growth of the silk industry through the realization of mass production of high-quality raw silk. Japan developed machine-reeling technology adopted from Western Europe and promoted technological innovation in sericulture, and those technologies spread to other countries around the world. Tomioka Silk Mill, Tajima Yahei Sericulture Farm, Takayama-sha Sericulture School, and Arafune Cold Storage became center stage for technological innovation in the various processes involved in raw silk production, and these innovations significantly impacted all of Japan through education, publication, and trade.

Based on this, "Tomioka Silk Mill and Related Sites" is believed to be a property with outstanding universal value required in a world heritage that fulfills evaluation criteria (ii) to exhibit an important interchange of human values on developments in architecture, technology, etc., and evaluation criteria (iv) to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history.

The development and dissemination of high-quality cocoons through mutual cooperation.

The 4 sites comprised of "Tomioka Silk Mill and Related Sites" are each places of both technological innovation and technological interchange through cooperation. In particular, when Tomioka Silk Mill strove to improve cocoons to ensure mass quantities of high-quality cocoons, the Tajima Farm, Takayama-sha, and Arafune Cold Storage worked together for the development and dissemination of superior species, including test rearing, silkworm egg production, breeding instruction, and silkworm egg storage.



Takayama-sha Sericulture School

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Arafune Cold Storage

World

Machine reeling technology

Export of raw silk utomatic machine reeling technolog Modern sericultural technology

