

THE SERICULTURAL EXPERIMENT STATION

**MINISTRY OF
AGRICULTURE AND FORESTRY**

SUGINAMI TOKYO

1966





General view of

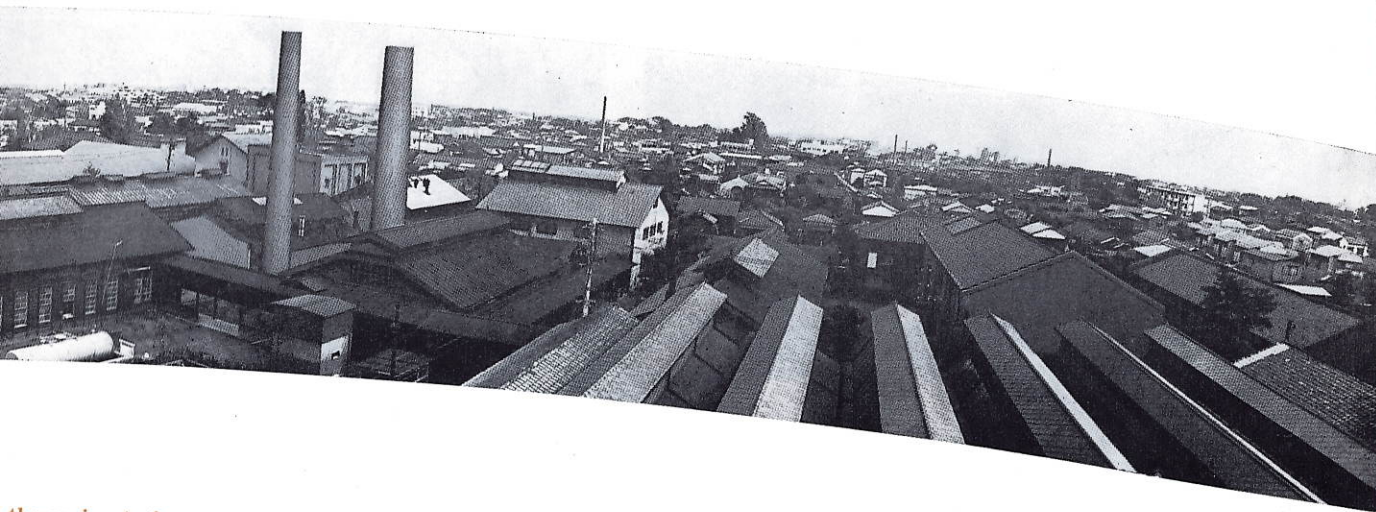
PURPOSE

The Sericultural Experiment Station is a research institute belonging to the Ministry of Agriculture and Forestry, established for the technical advancement of the silk-industry in Japan; silk has been a graceful and beautiful fibre, of luxurious and enchanting elegance throughout the world history.

The activity of the station covers all phases of sericultural technique ranging from fundamental scientific research in mulberry cultivation, silkworm breeding, silkworm rearing, raw silk reeling, nature of silk, silk dyeing and weaving, to practical methods directly used by farmers and filature and textile workers.

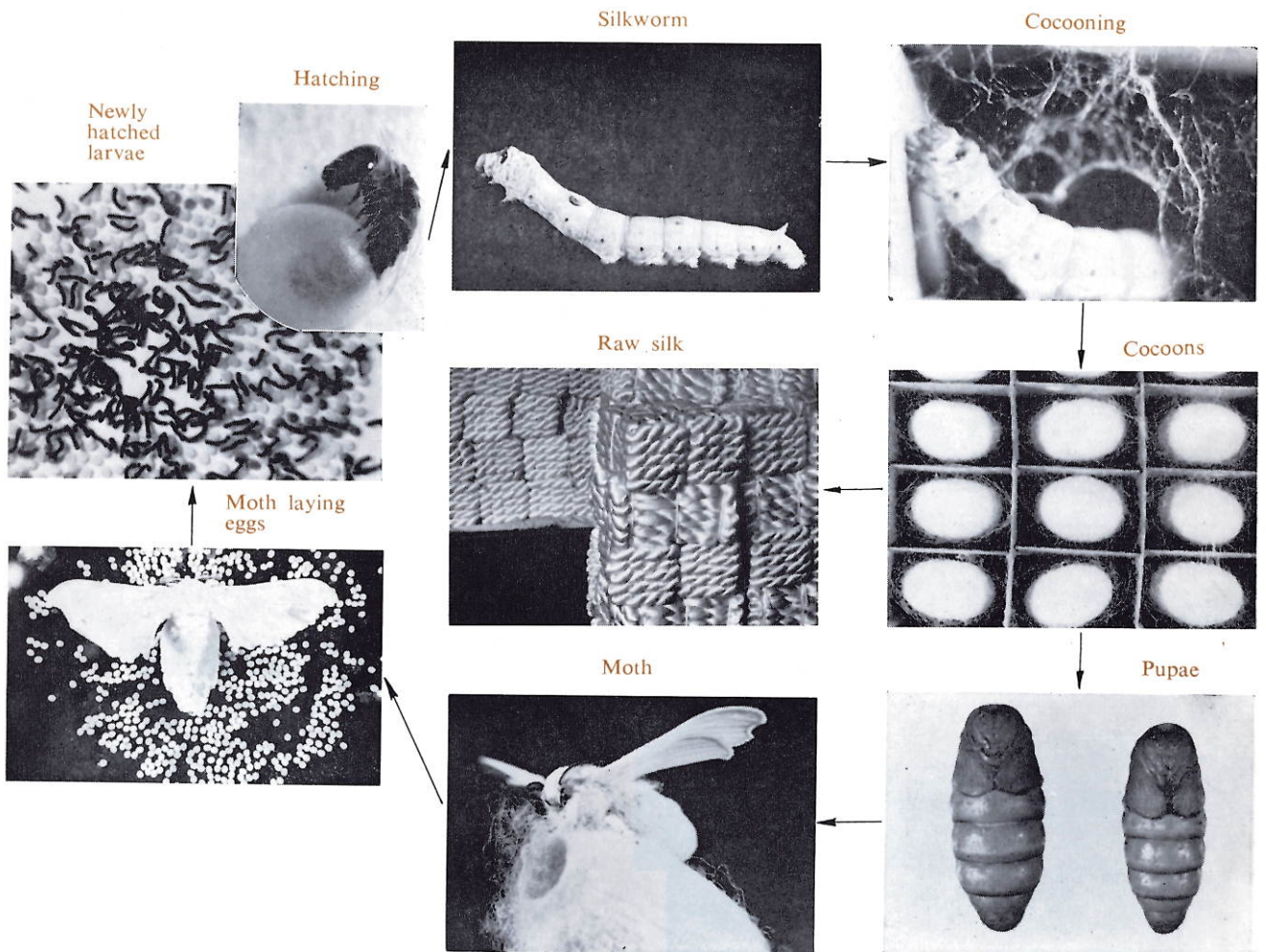
SITUATION

The main station of the Sericultural Experiment Station is located at Wada, Sugunami-ku, Tokyo, western part of the City of Tokyo. It has Hino Mulberry Plantation, at Hino, 15 miles west of Tokyo. The Station has four branch stations, i.e., from north to south, the Tōhoku Branch Station, in Fukushima Pref.; the Chūbu Branch Station, in Nagano Pref.; the Kansai Branch Station, in Kyōto Pref.; the Kyūshū Branch Station, in Kumamoto Pref.; three stations for the Reproductive Silkworm-Eggs, i.e., the Shinjō Station, in Yamagata Pref.; the Kobuchizawa Station, in Yamanashi Pref.; the Miyazaki Station, in Miyazaki Pref.; one Filature Experiment Station at Okaya, in Nagano Pref.

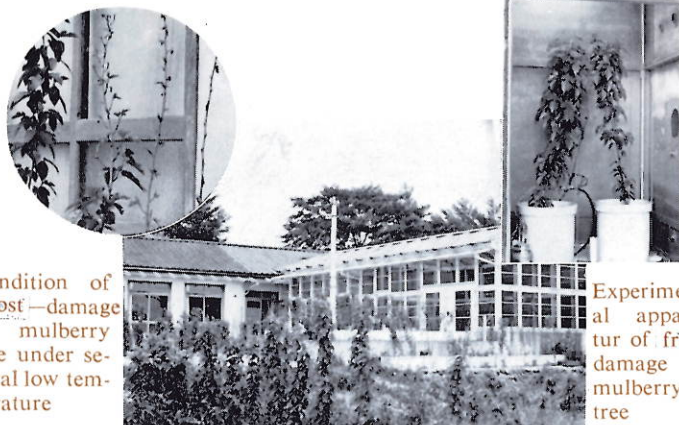


the main station

Life cycle of silkworm



(Studies on the frost damage)



Condition of frost—damage of mulberry tree under several low temperature

Experimental apparatus of frost damage of mulberry tree

Laboratory of frost damage



Cocoons 40 years ago (left) and to-day (right)

HISTORY

The Sericultural Experiment Station was established in May, 1911, near the end of the Meiji Era, in the present locality. The Station was first known as the Station for the Production of the Reproductive Silkworm-Eggs. The purpose was to distribute reproductive eggs of superior quality and to ensure raw silk of more uniform and better quality. At the beginning it had three branch stations (Ayabe, Kyōto Pref.; Maebashi, Gumma Pref.; and Fukushima, Fukushima Pref.), and in 1912, one more Matsumoto Branch Station came to belong to it from the TOKYO SANGYO KŌSHŪSHO.

In June 1914, it was changed to the Sericultural Experiment Station, and two more branch stations was added (Ichinomiya, Aichi Pref.; and Kumamoto, Kumamoto Pref.).

At the early second decade of the twentieth century, the active phase of genetical research and breeding of mulberry and silkworm was begun. Efforts were particularly made to ensure the practical use of hybrid silkworm, which has resulted in the present state of the high rate of silk production and low mortality of silkworms reared by farmers in Japan. Mulberry breeding experiments were started from the study on chromosomes, contributing to the improvement of the quality and the yield of leaves. Egg-diapause of the silkworm was analysed in its relationship to temperature and chemicals. These researches have brought about the advancement in egg-production techniques.

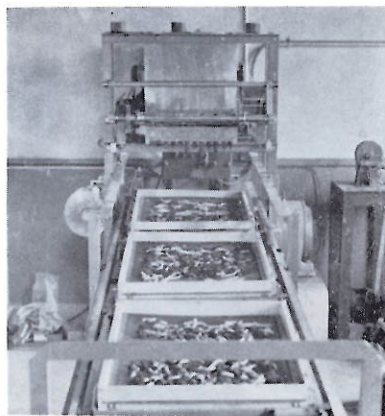
The success in both basic and practical researches including all the phases of sericulture particularly in silkworm breeding in the Station resulted in the expansion of the Station from 1931 to 1934. Two branch stations were built, one in Kobuchizawa, Yamanashi Pref., for silkworm rearing in summer season, the other in Okinawa for winter season. With the enlargement of the work in relation to reproductive eggs due to the enactment of the Reproductive Egg Control Law, five other branch stations were established in 1934 (Miyazaki, Miyazaki Pref.; Akashi, Hyōgo Pref.; Shinjō, Yamagata Pref.; Iizaka, Fukushima Pref.; Taiwan, Formosa).

Because of the interruption of silk export during World War II, the Station conducted

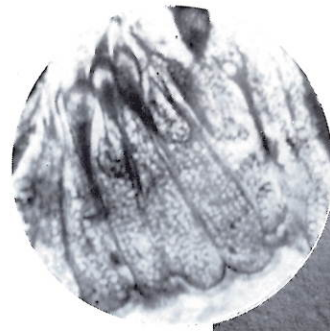
Shoot cutter for mulberry leaf harvest



An apparatus for silkworm raising on artificial diets

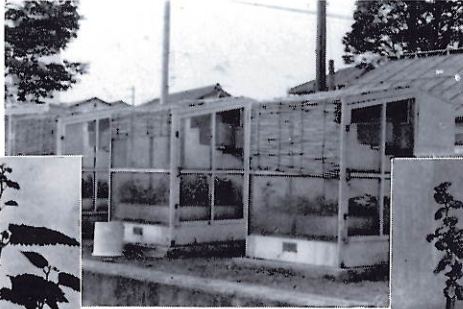


Studies on the control of diseases and insect pests injurious silkworm and mulberry



Microscopic photograph of silkworm cytoplasmic polyhedrosis

Thermo-regulating chamber



Dwarf diseased mulberry (soft wood cutting)



Dwarf diseased mulberry (hard wood cutting)



Ultra microscopic photograph of silkworm infectious flacherie virus

experiments on domestic use of silk to fill the lack of textile materials.

When the silk export was opened again after the War, the use of silk was found to be changed due to the partial replacement of silk by synthetic fibres. Main items of silk quality required by present consumers are smaller size deviation, better neatness, and less exfoliation. To ensure the ever increasing consumption of silk in the competitive textile market, the Station is endeavouring to improve the quality of silk, as well as to decrease the cost of production of silk. We believe in the survival of silk in its characteristic field as a luxury fabric of historical fame.

According to the change of situation of the silk industry, the Station was reorganized as shown in the following diagram in 1958 to carry out the research more efficiently. The Division of Sericulture and the Division of Silk Fibre were established, the former is going to investigate the rationalization of the sericulture and the latter to investigate the utilization of the silk fibre. On the other hand three branch stations were specialized in the research on the production of the Reproductive Silkworm-Eggs, and in other four branch stations the laboratories of Soil and Fertilizer and Pathology were added to mulberry, sericulture and silkworm breeding laboratories. The Technical Liaison Service was established in order to take the responsibility as liaison, planning and adjustment nucleus of every research activity.

Use of radio isotopes in sericultural research

³²P-tagged soil is putting into mulberry field



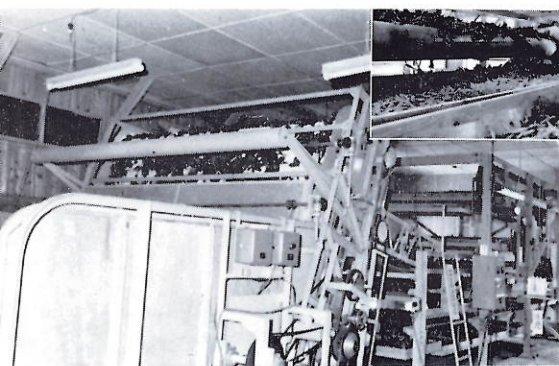
Mulberry sapplings are irradiated with γ -ray in γ -irradiation room

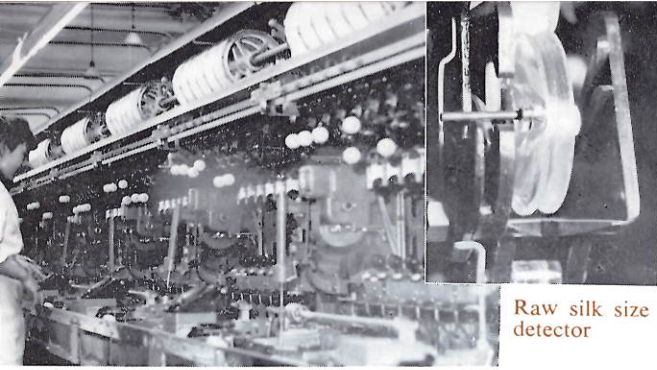


Green House in the Isotope Laboratory

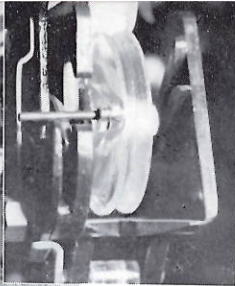


Automatic rearing machine for silkworm



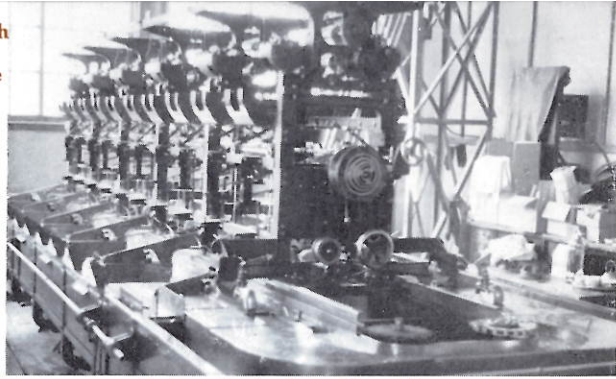


Automatic reeling machine for cocoon classification



Raw silk size detector

Research of filature



Automatic dupion silk reeling machine

ORGANIZATION AND MAIN RESEARCH THEMES

- Technical Liaison Service (3 sections)
- General Affairs Division (3 sections and 3 branches)
- Mulberry Division (9 laboratories)—Morphology, physiology, breeding, genetics, propagation physiology, improvement of cultivation, frost control, and ecology.
- Silkworm Biology Division (7 laboratories)—Physiology and morphology, Cytology and Histo-chemistry, embryology and treatment of eggs, Biochemical genetics, ecogenetics, behaviour analysis, nutrition, and excretion of silk-matter.
- Silkworm Breeding Division (5 laboratories)—Breeding of silkworms of higher productivity and better quality of silk; Genetical basis of silkworm breeding, analysis of heterosis, preservation of stocks of silkworm strains and examination of their characteristics, and original silkworm eggs.
- Sericulture Division (5 laboratories) (Maebashi City, Gumma Prefecture)—Improvement of rearing methods, micro-climate and hygienics in silkworm rearing, and sericulture management.
- Pathology and Entomology Division (6 laboratories)—Control of pebrine, bacterial diseases, fungus diseases of the silkworm and wild insects, virus diseases of the silkworm, pathology of mulberry, sericultural insect pests, and use of agricultural chemicals in sericulture.
- Filature Division (7 laboratories)—Drying cocoons, classification of cocoons, cooking of cocoons, reeling technique, physical and chemical properties of raw silk, automation of reeling procedure, improvement of filature machines, and quality control in raw silk production.
- Silk Fibre Division (6 laboratories)—Weaving and knitting, scouring, dyeing, chemical finishing, physics, and silk goods.
- Chemistry Division (7 laboratories)—Plant physiology and fertilizers, soil science, chemistry of mulberry and silkworm, chemistry of fibre and filature, use of byproducts in sericulture, application of isotopes in sericultural research, and chemical analysis of sericultural substances.
- Tōhoku Branch Station (5 laboratories) (Fuku-shima City, Fukushima Prefecture)
- Chūbu Branch Station (5 laboratories) (Matsu-moto City, Nagano Prefecture)
- Kansai Branch Station (5 laboratories) (Ayabe City, Kyōto Prefecture)
- Kyūshū Branch Station (5 laboratories) (Ueki-machi, Kumamoto Prefecture)
- Shinjō Station for the Reproductive Silkworm-Eggs (3 laboratories) (Shinjō City, Yama-gata Prefecture)
- Kobuchizawa Station for the Reproductive Silk-worm-Eggs (3 laboratories) (Kobuchizawa-machi, Yamanashi Prefecture)
- Miyazaki Station for the Reproductive Silk-worm-Eggs (3 laboratories) (Miyazaki City, Miyazaki Prefecture)
- Okaya Filature Experiment Station (4 laboratories) (Okaya City, Nagano Prefecture)—Treatment of cocoons; Cooking of cocoons; Raw silk reeling and finishing.

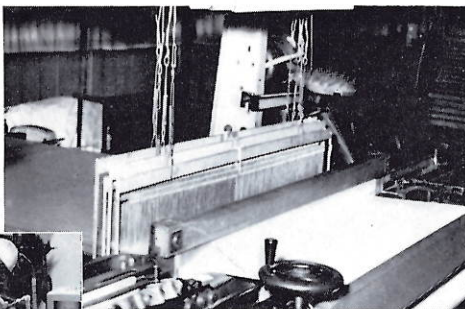
Director—

Mulberry cultivation and sericulture; Silkworm breeding; Soil and fertilizers, and pathology.

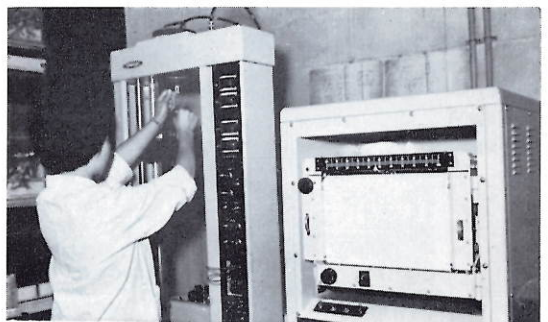
Silkworm eggs, silkworm characteristics, and reproductive silkworm eggs.

Research of silk fibre

Tensilon (Universal Tensile Testing Instruments)



Experimental apparatus of weaving



Twist tester



Publications



Museum

NUMBER OF PERSONNEL

	Researchers	Clerks	Assistant researchers	Assistant clerks	Assistants	Total
Director	1					1
Head of Division or Service	9	1				10
Main Station	170	7	83	19	184	463
Head of Branch Station	4					4
Branch Stations	71	4	42	8	77	202
Head of Station for the Reproductive Silkworm-Eggs	3					3
Stations for the Reproductive Silkworm-Eggs	24	3	24	6	27	84
Head of Filature Experiment Station	1					1
Filature Experiment Station	12	1	2	2	56	73
Total						841

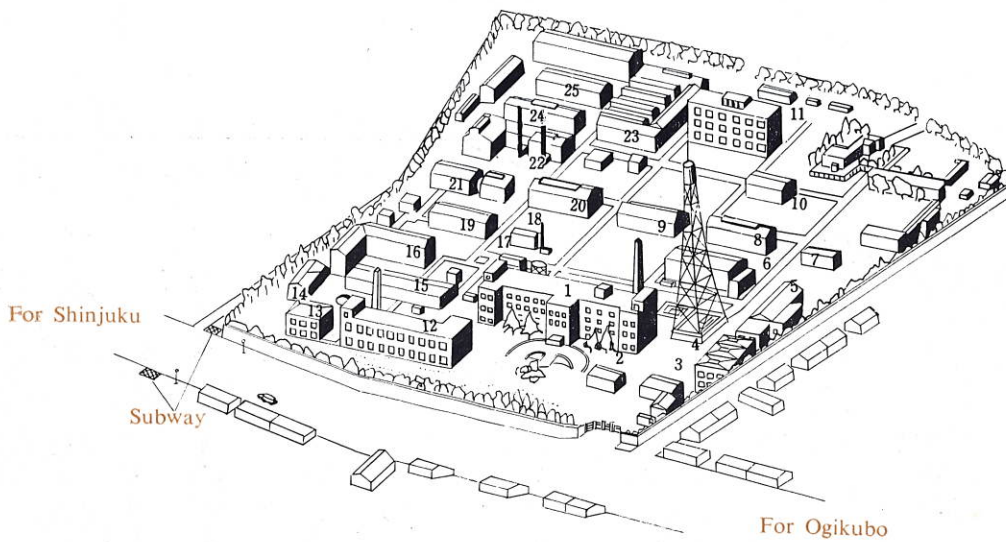
PUBLICATIONS

The Bulletin of the Sericultural Experiment Station (aperiodical). Herein 354 (Vol. 20(2)) articles have been published.

The Technical Bulletin of the Sericultural Experiment Station (aperiodical). Herein 159 (No. 87) articles, mostly dealing with practical problems have been published.

Sanshū-Kenkyū (Acta Sericologica) (quarterly). Herein 613 (No. 58) short of preliminary reports have been published.

Miscellaneous Publications.



GUIDE TO BUILDING OF THE MAIN STATION

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| <ol style="list-style-type: none"> 1. Main building (Technical liaison Service, General Affairs Division, Division of pathology and entomology, Division of filature, Division of Silk fibre, Division of chemistry, Electron microscope and supercentrifuge). 2. Museum. 3. Library. 4. Overhead water tank. 5. Air-conditioned rearing house. 6. Silkworm rearing house for pathological researches. 7. Laboratory of Phytopathology and Entomology. 8. Silkworm rearing house. 9. Mulberry leaves storage. 10. Low-temperature laboratory. 11. Building housing laboratories for mulberry, silkworm biology and entomology, re- | <ol style="list-style-type: none"> searches. 12. Building of chemistry. 13. Laboratory of dyeing. 14. Meeting hall. 15. } Weaving laboratory. 16. } 17. Laboratory of soil science. 18. Isotope laboratory. 19. Laboratory of scouring. 20. Laboratory of cocoons. 21. Cocoon drying equipment. 22. Boiler room. 23. Laboratory of reeling experiment and cocoon classification. 24. Laboratory of cocoon cooking and dupion-silk. 25. Laboratory of filature machines. |
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