SILK FIBERS – PART II

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Silkworm to Filament

Different steps involved from silkworm to silk filament formation are as follows:

- Breeding silkworms
- Feeding the larva
- Spinning the cocoon
- Sorting and softening the Cocoons
- Reeling the filament
- Packaging the skeins

Breeding of silkworms - Only the healthiest moths are used for breeding. Their eggs are graded and tested, unhealthy eggs are burnt. The eggs are placed in cold storage until they are ready to be hatched. Under normal conditions, the eggs would hatch once a year in the spring when mulberry trees begin to leaf. But with different techniques in sericulture, breeding can occur as many as three times per year.

Fig 1.1 Breeding of Silk Worm

Feeding the larva -The silkworms feed only on the leaves of the mulberry tree. The mulberry leaves are finely chopped and fed to the voracious silkworms every few hours for 20 to 35 days. During this period the worms increase in size to about 3.5 inches (8.9 cm). They also shed their skin and change color from grey to a translucent pinkish color.

Spinning the cocoons – When the silkworm prepares to spin its cocoon, the caterpillar attaches itself to a twig or support. As the worm twists its head, it spins a double strand of fiber in a figure-eight pattern and constructs a symmetrical wall around itself. The filament is secreted from each of two glands called the spinneret located under the jaws of the silkworm. The insoluble protein-like fiber is called fibroin.

Fig 1.2 Spinning of cocoon

The fibroin is held together by sericin, a soluble gum secreted by the worm, which hardens as soon as it is exposed to air. The caterpillar spins a cocoon encasing itself completely. It transforms into the chrysalis, which is the pupa stage.

Sorting and Softening the cocoons - The cocoons are sorted as per color and size to get the product of uniform quality. The cocoons are soaked in hot water to loosen the Sericin and make them soft.

Reeling the filament - Reeling may be done manually or automatically. The cocoon is brushed to locate the end of the fiber. It is threaded and the fiber is reeled onto a wheel. Each filament is being reeled; a new fiber is twisted onto it, forming one long, continuous thread. Sericin helps to the adhesion of the fibers to each other.

Fig 1.3 Reeling the silk filament

Packaging the skeins - The end product, the raw silk filaments, are reeled into skeins. These skeins are packaged into bundles weighing.

Click on the link to visit a silkworm factory

To be continued…

Wishing you a great week ahead!

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