

Sericulture

One of the most important aspect of silk industry is sericulture by which we mean the rearing of silk worms & cultivation of the favourite food plant.

A flourishing silk industry requires ~~reprodⁿ~~ of cocoons of the rearing of worms on a very extensive scale.

Silk is a luxury as well as an essential article for man's dressing & forms one of the most imp. industry of the world.

Pure silk is one of the finest & most beautiful natural fibres of the world & is said to be ~~the~~ lignin of fibre. Due to its great value & usefulness there have ~~been~~ many attempt in various ^{part} of world for the large scale prodⁿ of silk.

One of the method was the rearing of silk worm on large scale with great natural & controlled condⁿ.

Silk is obtained from a caterpillar called silk worm which when full grown spins it out from the glands in its body & binds the cocoon for its own protecⁿ in its pupal stage. These moth belongs to the systematic order lepidoptera class - insects.

Tasar & Eri

families — Saturniidae, Bombycidae.
Types of silk : —

- (1) Shiny Cream white, Bombyx mori
Fabric - common silk (Mulberry leaf).
- (2) Tasar (a coppery colour) Anthera mylitta
silk (Asam, sal, Arjun & Ber)
- (3) Chinese Tasar Anthera pernyi
(A brown silk) (Oak leaves)
- (4) Japanese Tasar Anthera yamamai
(Light green silk) (Oak leaves)
- (5) Munga (golden coloured) Anthera assama
(Som & champa).
- (6) Eri silk Attacus ricini
(Rough & strong silk) (Caster leaf).
(Creamy white)

There are other kinds of silk worm but of no commercial importance, for no attention is need to them

Out of six mulberry feeding worm is the most important & is much in demand & account of superior property.

History of Sericulture : —

for more than 2000 year only the chinese people knew ~~the~~ what silk is & when it comes hatched with the eggs death to try to take ^{the eggs} silk worm out of their country & it is said that silk was for a time were valued as its weight in gold. But ~~that~~ in the year

AD 555 Two monks sends to china discover the nature & source of silk and brought back ^{to the} constantinople some ~~the~~ eggs of the silk worm concealed in stuff that they ^{carried} in this humble were introduced into Europe.

The industry is confined to china, Japan, India & Mediterranean. In India the silk producing state is karnar, Bihar Bengal etc.

Phylum — Arthropoda.

Class — Insecta

Order — Lepidoptera

Family — Bombycidae

Type — Bombyx.

Latin name — Bombyx mori

original inhabitant — china.

It never occurs in the wild state

It is completely domesticated & is of univoltine variety — only

one generation in a year. It is exclusively cultivated all over the world in south India polyvoltine (2-4 generation in a year).

The moth is ashy white with a fat body & a wing expanse of about 2 inches.

Man has taken care of it so long that it has become thoroughly domesticated.

It takes no food & seldom attempts to flight. After mating the female deposits 300-400 eggs which are round & yellow soon become grey & paler as hatching time approaches.

Eggs may take 7-10 days depending on temp. and larval stage requires about 4-5 weeks in which three moults occur.

The new worms are about $\frac{1}{8}$ " long & the full grown caterpillar is about 3" long. It is greyish or creamy in colour & is heartless. It has hump behind the head & spine like horn at

When full grown the larva becomes restless & if given a suitable food such as dry briny plant they soon become to spin

their cocoon. The filament forming the continuous ^{long} length. The cocoons are oval & vary in colour according to strain or race from white - beautiful golden yellow. Larva pupate in cocoon & in about 2-week the moth escape while opening at the end of cocoon. From which moth escape are known as pierced cocoon. They are of low value as they can't be reeled but they can be carded as well as thread.

The moths emerge & again lay eggs. One ^{pair} of eggs produce 30,000 - 33,000 ^{worms} & is yields 20 - 200 ^(100 - 120) pond. These cocoon will produce 10-12 pond raw silk.

Cocoon Form — ; —

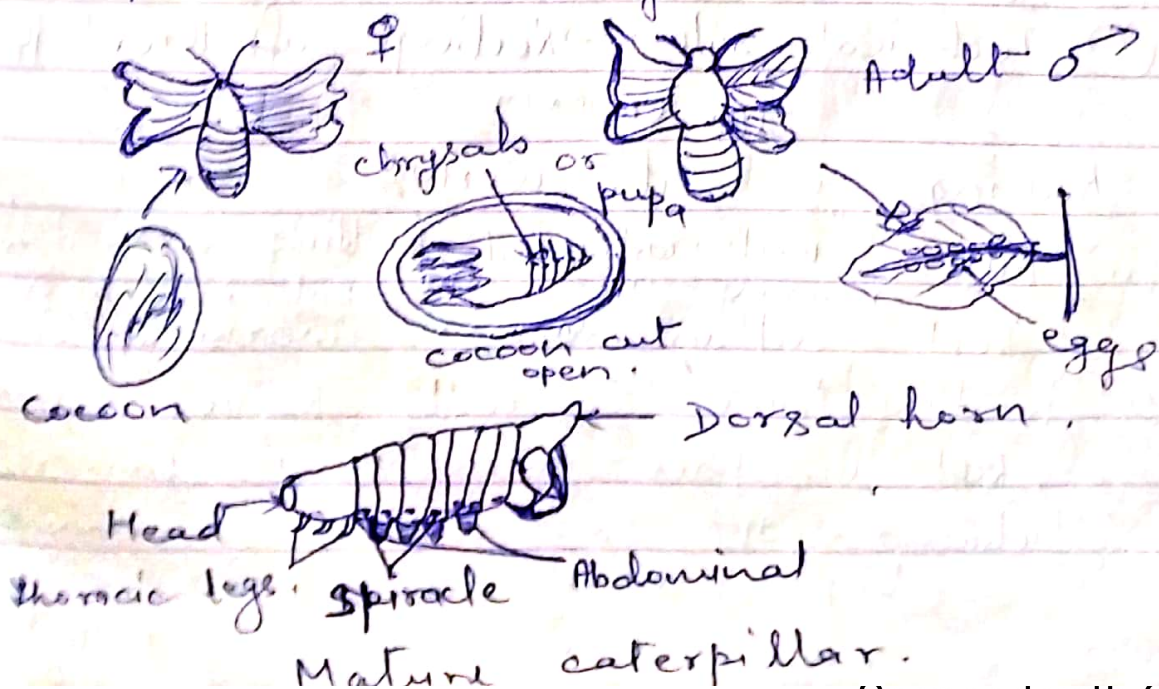
The mature caterpillar when finds suitable place then secretes a sticky fluid which when comes in contact with air turns into a fine long filament. This sticky fluid is produced by a pair of long tubular silk gland lying in either side of alimentary canal of caterpillar.

Each gland secretes fibroin in the form of a fibre which

is in the fluid condition in the beginning. These glands are connected in a cylindrical organ spinneret. By the action of spinneret the two fibres of fibroin is ^{transformed} into a single fibre. A pair of accessory gland is associated with the silk gland which secrete silk + sericin.

These 2 secretions come out by the contraction of the body of the caterpillar.

The silk thread secreted in this way are wrapped around the body of worm and thus a cocoon is formed. The caterpillar binds the fibre in a particular manner like - 8 which represents the motion of its head during spinning of thread. The process continues till the caterpillar completely encloses.



The filament forming the cocoon
800 - 1200 yards.

Cocoons are oval & vary in colour
according to colour & strain or race
from white to beautiful golden
yellow.

~~The cocoon~~

The rearing of this worm is
labourious process as loss of
mulberry leaf at hand.

It is very profitable
business but it is quite
troublesome as it consists of
various effects of diff. nature

The rearing of larvae
needs a healthy & abundant
growth of food plants. The
sericulture as 3. diff. aspects

- ① Animal origin : — rearing of larvae.
- ② Plant origin — cultivation of food plants.
- ③ Technical side — Reeling of thread from
the cocoon.

Rearing of Silk worms : —

① House : — Any well ventilated building is used for
rearing the worm. But mud houses are
best cool in summer warm in winter.

② Feeding trace : — freshly hatched worms are
kept in place made up of bamboo.

③ Machan : — It has needed to accommodate
large no. of trace.

④ Nets : — large amount of excreta & dirty product and
fallen leaves may fall on tray

Spinning trays

Mature worms are transferred to special types of ~~trays~~ to cocoon form =

Here the spin the cocoon without any disturbance CuSO_4 , S & other antiseptic chemical should be used as germ killer.

Young caterpillars are transferred to feeding trays and given required food.

These have mandibulate

they metamorphose in 4th instar larvae & this stage salivary gland develop known as silk gland.

this mature

caterpillar stop feeding transfer to ^{suitable} ~~sticky~~ place
start to secrete sticky secretⁿ from silk
gland. It is converted into a fine ^{solid} silk thread.

It wraps around the body of
larva forming cocoon. After 15 days it
change into pupa. The young moth
emerges from the pupa. These emargo
or moth secretes alkaline fluid to soften
one end of cocoon & then escape by
forcing its way soften this part.

Soon after the emergence
the moth mates & lay eggs. Healthy
cocoon are kept for next crop.

Precautions : — the ^{worms} ~~watts~~ should never be
overcrowded in trays. Dried & dirty
wet leaves should never be feed to
worms. Wind should never allows
directly to worms.

Equal distribution of leaf
among the worms. Floor of the house
should be dustless.

Smoking should be strictly
prohibited. It should not be handle
with dirty hand. & shoes & chappals are
not allowed in that room.

Reeling of Raw silk : — Before reeling the
thread the cocoons are killed
by dropping the whole lot into hot water, ^{by}
steaming them. by dry heat or by fumigation.
Cocoons are then sorted by colours and texture. h
The loose outer thread

The cocoon soaked in warm water
to soften the thread. to separate the fibres.
skillfully unbounded by expert
operator.

to form reels of raw silk. It
purified by acids, steeped fermentⁿ, waste
rewashed to remove the gum. to bring out
much pride texture & found as untwisted
It is ready for spinning to reels eventually
appear in the market.