



Cocoon Cooking

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COCOON COOKING.

- **The sericin or the silk gum present on the cocoon filament keeps them together compactly in the shell. This is softened with hot water or steam, so that the filament can be wound on the reel without breaks or entanglement. This process is called cocoon cooking.**
- **There are different methods of cooking to suit the different reeling systems.**

i. Cooking for float reeling – Open & Three Pan.

ii. Cooking for sunken reeling – Pressurized.

Or

i. Open pan

ii. Three Pan

iii. Pressurised method of cooking



Open Pan Cooking

Water is poured into the vessel and brought to boiling by application of direct heat below the basins.

When the water begins to boil a handful of cocoons is put into the boiling water and kept immersed in water for a few minutes.

When the cocoons appear dull in colour and somewhat translucent, they feel soapy to touch and the filaments easily come off when pulled. Cocoons in this condition are reckoned to be cooked.

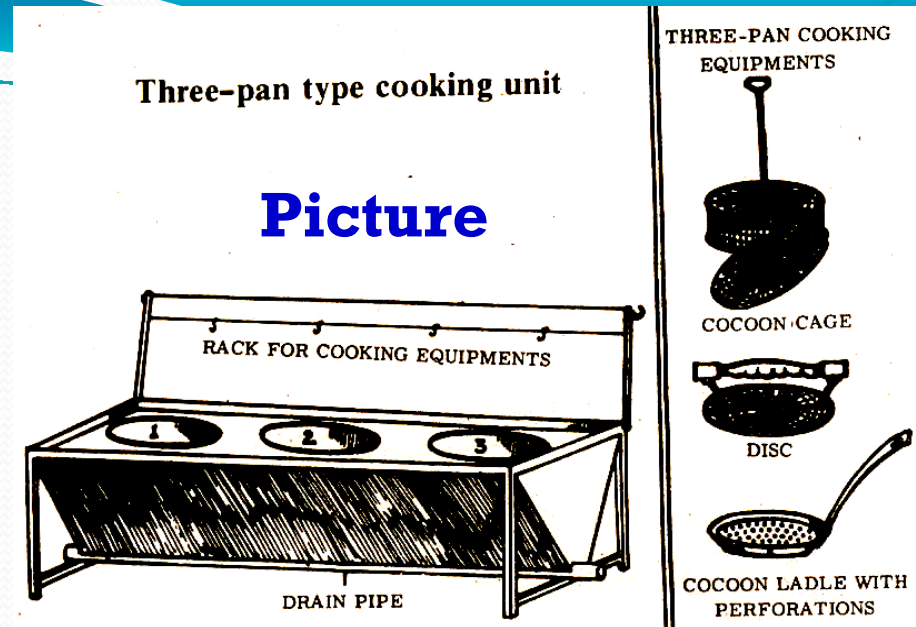
- **This method of cooking though simple is technically defective. The outer layers of the cocoon in contact with hot water get cooked earlier than the middle or inner layers and if the cooking is continued till these layers also get properly cooked, the outer layer gets overcooked.**
- **As cooking and brushing are done in the same small basin containing a small quantity of water, the dirt and deleterious substances released from the cocoons make the water dirty with suspended impurities very soon, and the cooking operative has to keep draining the water regularly and adding freshwater to the basin. This naturally increases the water, fuel and labour.**
- **Due to the smallness of the size of cooking basin only small quantities of cocoons can be cooked at a time with the result that the capacity of the basin to supply cooked cocoons for reeling becomes limited.**

Three Pan Cooking

This method consists three porcelain basins fitted in a row on a platform.

The three large basins are filled with water and the temperature brought up to 90-95 °C in the first and last pans while the temperature in the mid pan is kept at 60-65°C.

The water in the receiving trough and in the cocoon carrier basins is kept at 40°C-45°C.

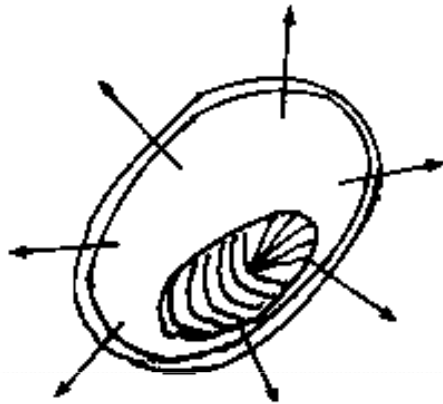


Old Model

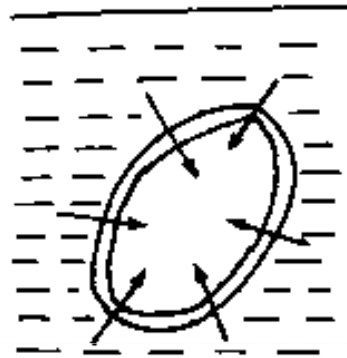


New Model

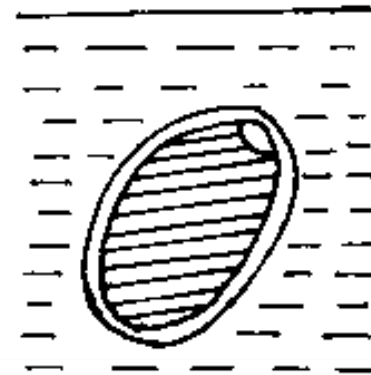
Three Pan type cocoon cooking continued



**In the first basin
at 90-95°C
Air get heated,
expands comes
out of the cocoon**



**In the second basin
at 60-65°C
Air get cooled,
Condenses, so water
gets in to cocoon cavity.**



**In the third basin
at 90-95°C
All the layers get
uniform cooking**

Advantages and Disadvantages

Advantages

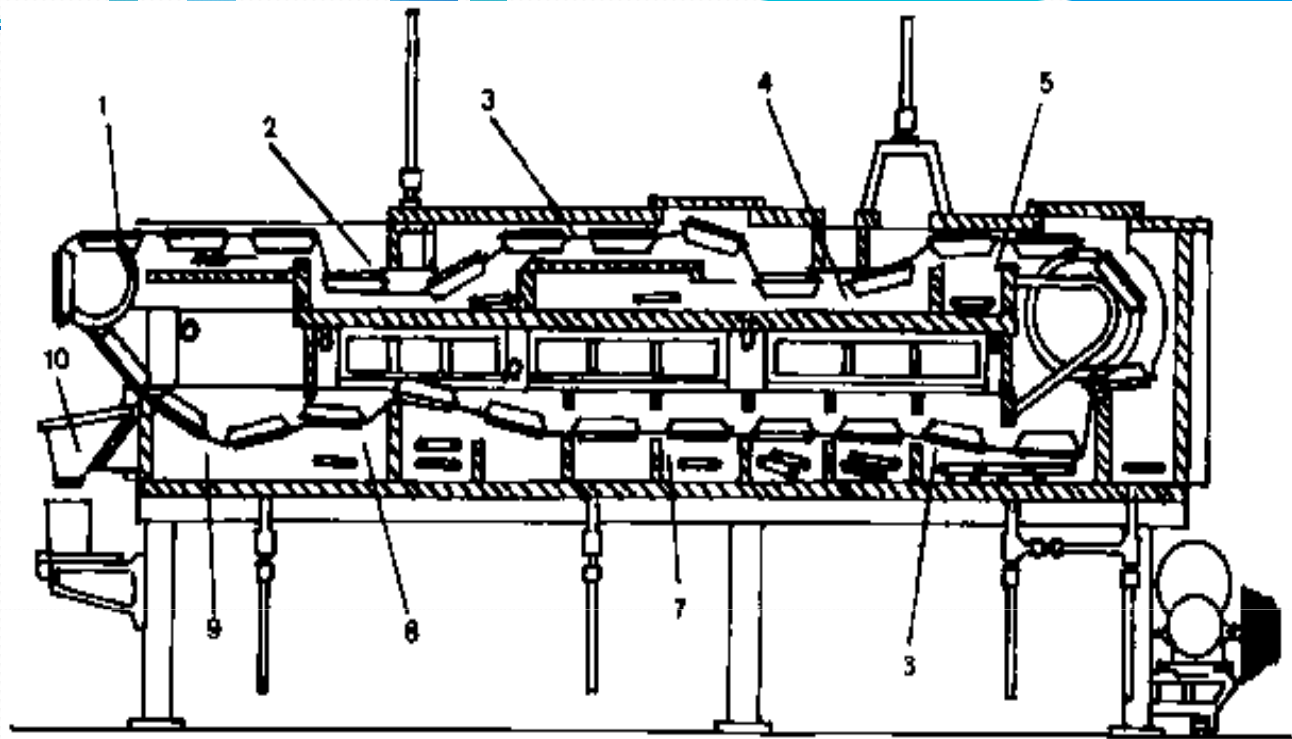
- (i) Large quantities are cooked *i.e.*, 60 to 70 kg of cocoons/day.**
- (ii) As permeation loosens cocoon & improve the quality and reelability.**
- (iv) As brushing of cocoons is done separately the cooking water does not soon become turbid.**
- (v) As the cooking unit is situated away from the reeling basin and attended to by a separate skilled operator, more efficient cooking.**

Disadvantages

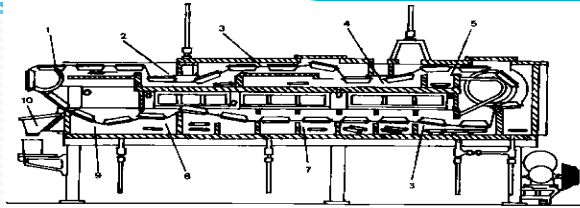
- (i) Reeling has to be done at a higher temperature.**
- (ii) Larger quantities of steam are required for heating the reeling water.**
- (iii) As brushing would have to be done by a separate set of operatives using separate equipment.**
- (iv) Further as cooking and reeling are separated, cost on equipment and supervisory staff and the additional space required would increase.**

Pressurized Cocoon Cooking Machine





- 1. Cocoon hopper part**
- 2. Soaking part**
- 3. High temperature permeating part**
- 4. low temperature permeating part**
- 5. Cooking part**
- 6-7. Adjusting part**
- 8-9. Low temperature finishing part**
- 10. Cocoon outlet.**



- 1. First Chamber:** Dipping/Wetting in water at 40-42° C for 30 - 50 sec.
- 2. Second Chamber:** Steaming / Steam blasting at 90 - 95° C for 60 sec.
- 3. Third Chamber:** Permeating/Infiltration water @ 40°-60° C for 30 sec.
- 4. Fourth Chamber:** Steam Cooking for 118-120 sec @ 95-98° C, & 0.33 kg /cm³.
- 5. Fifth Chamber:** cocoon boiling and adjusting, cocoon cavity is replaced by water & gradual cooling of the water from 98° - 60° C.
- 6. Sixth Chamber:** This is the finishing, containing water at 50°-60° C.



Acknowledgements
to

I. INTERNET

II. SERICULTURE MANUAL 3. SILK REELING, FAO, ROME 1987.