How linen was produced

Growing and harvesting

Flax is an annual plant which grows to 1.2 metres tall. It has thin stems and slender green leaves. The flowers are pale blue with five petals; some types of flax can have red petals but it is not common.

Flax produces brown seeds which are shaped like an apple pip and are widely eaten as a healthy food.

Flax is grown for both its seeds and its fibres. Various parts of the plant are used to make linen, dye, paper, medicines, fishing nets, hair gels, and soap. Flax is also grown in gardens because of its beautiful blue flowers.

Flax fibre is pulled out from the skin on the stems of the plant. The fibre is soft and flexible. Flax is stronger than cotton but not as stretchy.

Flax stem with fibres starting to separate

The best fibres are used to make linen cloth for things like clothing, sheets and tablecloths while the rougher fibre would be used to make rope and fishing nets.

To harvest flax the plant is pulled up with the roots or cut very close to the ground so as much of the fibre as possible can be used. After the flax has been harvested the seeds are removed and then it is retted.

Retting

The flax was left to "ret" or rot in water for ten to twelve days to soften the stems of the plant. It was then left to dry off for a few days. Water retting is when bundles of stalks are kept under water. This was often done in ponds, bogs, and slow streams and rivers. The stalk bundles are weighted down, usually with stones or wood. The water soaks into the stalk which swells the flax and lets in bacteria.

The bacteria help to break down the flax so it can be pulled apart more easily. This also made the water smell disgusting; whoever was doing the retting had to get into the water which made it a very unpleasant job.

Retting time must be carefully judged; under-retting makes it difficult get the good fibres from the flax, and over-retting weakens the fibre.

Scutching

Scutching is a step in the 'dressing' of flax so it is ready for spinning. The scutching process tries to remove the straw and woody stem from the flax fibres.

The flax fibres that are spun are actually inside the woody stalk, so in order to get the fibres the stalk must be taken away. Scutching can be done either by hand or by machine in a scutching mill.

Hand scutching is done with a wooden scutching knife and a small iron scraper. The end products of scutching are the long flax fibres, short coarser fibres called tow and waste woody matter are called shive.

In the 1760s, "scutch mills" began to be powered by water. This part of the process could be very dusty and could cause many lung problems.

Dressing the flax

Dressing is the term used when someone is trying to remove fibres from the straw and cleaning it enough to be spun.

It happens right after the flax has been retted, and

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involves breaking, scutching and heckling the flax. Scutching is the second step in dressing, and takes place between August and December.

Heckling

Heckling splits and straightens the flax fibres, as well as removing the parts not used for spinning or weaving. Heckling is done with heckling combs by pulling the flax through the combs.

This parts the locked fibres and makes them straight, clean, and ready to spin. After heckling, the flax is ready to spin. After spinning, the flax is then suitable for weaving into linen.

Spinning

Linen yarn

This involves spinning two fibres round each other to make yarn using a spinning wheel. It makes the flax fibre stronger.

Spinning, reeling and winding would have been considered women's work and frequently they would have had ribbons on their spinning wheel which would have shown whether they were married or single.

Reeling

Reeling is when the yarn was split into lengths called a "cut". A cut was 300 yards long (274.32 metres). Twelve cuts made a "hank." It was then boiled in a pot over the fire and dried.

Weaving

Weaving involves two sets of threads held at right angles to each other: the warp and the weft. The warp is held tight and side by side in order. Usually on a loom, though there are other ways of weaving.

Shuttle being passed through the shed on a loom.

The loom is warped (or dressed) with the warp threads. The warp threads are moved up or down creating a space called the shed.

The weft thread is wound onto spools called bobbins. The bobbins are placed in a shuttle which carries the thread through the shed.

There are many possible different types of weave:

- plain weave
- twill weave
- satin weave
- today's factories use computers to create an interlacing weave

Plain weave

Twill weave

Satin weave

The texture of the fabric depends on the type of weave, the yarn, and what the linen is to be used for.

Bleaching

When the linen was woven, it was a brown colour so the next stage in its production was to bleach it. A mixture of seaweed, wood ashes and bran was used, and then it was soaked in buttermilk. Finally, it was left out to bleach in the sun on bleach greens.

In the early 1700s, this could take up to five months. In the 1760s Vitriol, or diluted sulphuric acid, was invented. This was a chemical which meant the old type of mixture wasn't needed.

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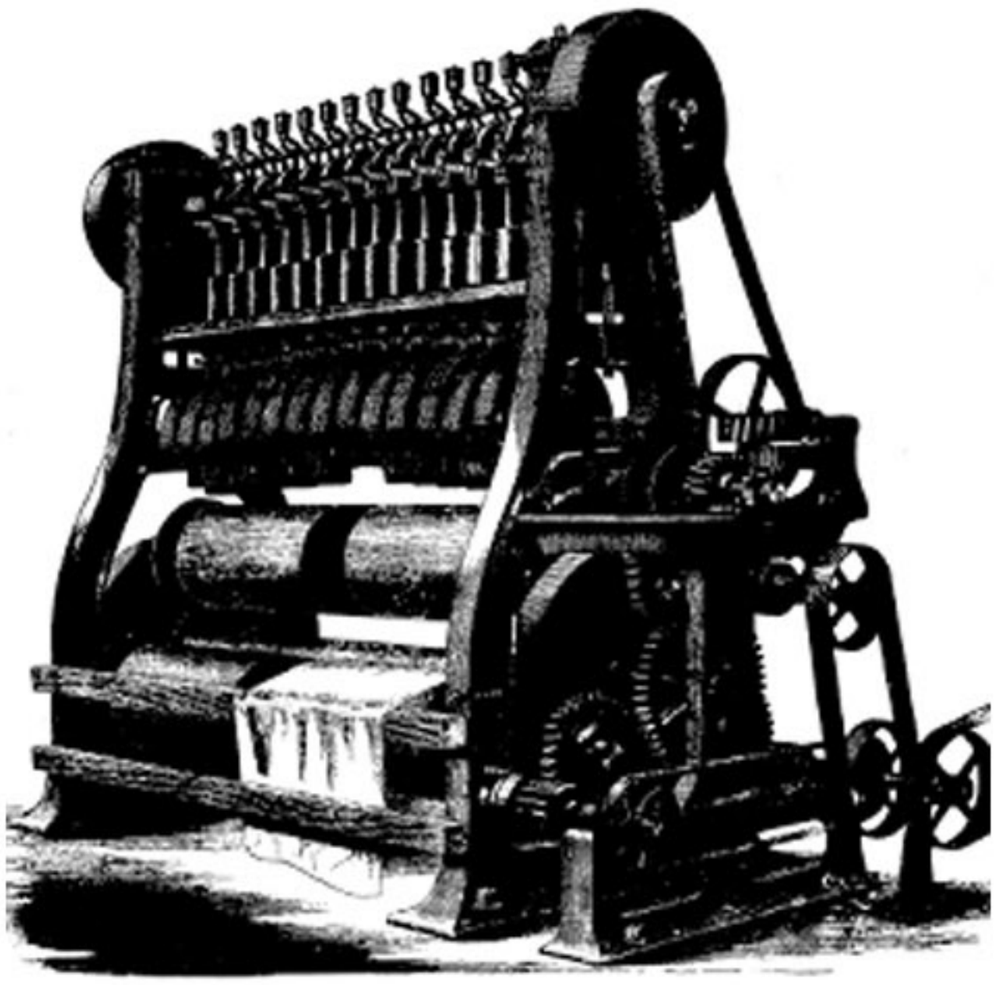
This was manufactured on “Vitriol Island” in Lisburn, which is where the Lisburn Civic Centre now is.

It meant the bleaching time only took a few weeks instead of five months. Also the mills could make linen all year round instead of just in the summer.

When the linen was lying on the bleach greens, it was in danger of being stolen or spoiled so it had to be looked after. Linen was so valuable that thieves could be punished by death!

Beetling

The last stage of the production was “beetling” which meant that the cloth was beaten with mallets to achieve a dense lustrous finish. The first beetling machine in Ulster was set up in Drumbridge in 1725 and was water-powered.



Beetling machine