

---

# MASTER WEAVER

---

Z - H A N D I C R A F T S \* F U L F O R D \* Q U E B E C \* C A N A D A

---

March 1955

No.20

## L I N E N

Linon is undoubtedly the oldest of all the textile fibers which survived until the present times. We do not claim that it was the first fibre ever used for spinning and weaving, but if there were such earlier fibers they were abandoned a long time ago.

The fiber is obtained from several varieties of the plant Flax (*Linum Usitatissimum*). The plant reaches a height from 20 to 40 inches. The best fibers are obtained from the smaller varieties, but the quality of the fibers depends also on cultivation, climat, soil, and so on. The most important factor however is the processing of linen.

History. According to one theory (Theodore) linen came to all the civilised countries from central Asia, where it was cultivated several thousands years before Christ. It spread to China, India, later Egypt, and then Europe. But the oldest samples of linen found in Egypt are about 7000 years old, when the linen from the period of Swiss Lake Dwellers must be much older. It is much more probable then that the properties of flax were discovered independently in different parts of the globe. In the historical times the flax was grown practically everywhere in Europe. As far as the quantity is concerned Russia had nearly a monopoly of production until the first great war (90%). But the quality of French, Dutch, and later Irish linen has been much higher.

Contrary to the popular belief that the Irish were always leading in the spinning and weaving of linen, the quality of Irish linen was rather inferior until the beginning of the 18-th century, when a French weaver (Crommelin) introduced to Ireland new methods of weaving.

Since flax can be grown not only for the fiber but for the seed (production of linseed oil) as well, the amount of flax cultivated by a certain country does not give any idea as the amount of the fibre produced. For instance Argentina and USA grow large quantities of flax, but mostly for seed. The cultivation of the plant is different in both cases and it is impossible to get good quality fibre and seed from the same crop.

Physical properties. Linon fibers are from 1 to 2½" long. However, since they do not appear singly but in groups (filaments),

the quality of the yarn depends on the size of these groups.

Linen resistance to breaking (tensile strenght) higher than cotton but lower than silk. It is not elastic, and has very small resistance to friction. It is a good heat conductor, therefore linen fabrics are "cool". It has high absorbing power. From this point of view it is better than cotton.

The colour of natural (unbleached) linen varies from pale yellow to very dark grey. It is considered that the darker the colour, the poorer the quality.

The count of linen is based on No.1 which has 300 yards to the pound. Higher numbers, as in the case of cotton, indicate how many times the yarn is finer than No.1. To convert the number of linen from the metric into the English system, we multiply the metric number by 1.65.

Linen can be spun up to No.100 by machine; higher numbers are spun by hand.

Chemical Properties The chemical composition of linen is:  
Fiber - 72%; Pectic substances - 19%; different celluloses - 5%,  
Fat - 3%, Ash - 1%.

Linen is resistant to acids about as much as cotton, but it is less resistant to alkalis. It is however hardly affected by bacteriological processes, action of light, humidity, heat and cold.

Dyeing of linen presents special problems. Many dyes do not penetrate the yarn, and stain it only on the outside. Other run or fade. It is advisable to check the quality of dyeing by first untwisting the yarn to see whether the dye penetrated to the core, then exposing it to the sunshine for several days, and finally washing it in hot water with soap.

Processing. This has the following stages: 1) rippling, in which the seeds and leaves are removed from the stalks; 2) retting - or separating of the individual fibers which are stuck together; 3) breaking, 4) scutching, and 5) heckling - three stages of cleaning the fibers. In the last stage the fibers are combed as well.

The most important of these stages is retting. It is a process of fermentation, which softens the impurities around the fibers, and thus liberates the fibers. It may be done by natural or artificial means. In the first case the flax is kept in a stream or river for as many as 15 days (stream retting), or in stagnant water for about one week (pool retting), or it may be exposed to the moisture and sunshine in an open field (dew retting) for as many as 40 days. In the second case the retting is done in a tank (tank retting), where the speed of the process may be controlled, and it takes about 3 days.

In heckling the fibers are divided into short ones called "tow" and long ones, called "line". The spinning of linen yarn is either "dry" or "wet". The latter method is used for finer yarns.

\*\*\*\*\*