them. Several weeks elapse before decomposition takes place, when the fibres can be easily separated from the rest of the vegetable matter."

In addition to the process of passing through rollers and washing, it is subjected to a further process of boiling with carbonate of soda and quicklime, in order to get rid of the remaining vegetable matter, and to bleach the fibre. To work four to six tons of fibre daily, the grower requires four large boilers of 800 gallons each. With these he will need to consume about 360 pounds of soda, and a proportionate quantity of quicklime; or the soda, that is, the carbonate, may be first deprived of its carbonic acid. This may be done by preparing in a small separate boiler the quantity of liquid necessary for the day's consumption, which will occupy about one hour, by taking six parts quicklime, ten parts soda, and seventy parts water.

The Hon. J. McLeod Murphy, speaking of the Ixtile fibre (*Bromelia sylvestris*), says—"Since my return from Mexico I have had little or no opportunity of testing the plant practically, but some samples such as I send you were given to an old and experienced maker of fishing-tackle, and he does not hesitate to pronounce the Ixtile fibre as superior in every respect for the manufacture of trout and other fishing-lines, not only on account of the readiness with which it can be spun, its extraordinary strength, but its perfect freedom from kinks when wet. The only secret, if there is one, consists in the preliminary precaution of boiling the fibre."

After perusing the foregoing, it would appear that the only conclusion we can arrive at is, that we have entirely omitted the most important part of the process shown to be required by other fibres, in the methods which we have adopted in carrying on our flax mills, viz., that of maceration or its equivalent; and it only remains for us to compare the different processes now in use, and to adopt without further loss of time, that which appears to us the most efficient and economical.

We have unfortunately discovered that rope made from the raw-dressed and partially cleaned fibre, will not stand wear and tear or weather for any length of time; that when the rope breaks it snaps short off like a carrot (as I once heard the comparison made), which shows that the fault lies with the fibre, and not with the ropemaker; and I also have heard of a case where the fibre being manufactured into halters, they lost all their strength, and became in reality rotten and nearly worthless, merely by hanging in a shop where they were exposed for sale.

On the other hand, we have Dr. Hector's authority for stating that flax which had been bruised and digested in hot water for two hours, and then boiled two hours longer with twelve per cent. of soda soap in the water; that when the sample so treated had been kept twelve months, it was equally as strong as at first, and that flax so prepared four or five years since still remains unaltered from the state it was in when first dressed. Add to this, that at a recent trial made at home, to test the relative strength of the raw-dressed sample of fibre, as compared with the boiled sample, it was decided in favour of the boiled fibre by a difference of about 170 to 90—showing a superiority of nearly 100 per cent.

The first process that we will inquire into shall be maceration, retting or steeping; and we find, to carry out this process successfully, ponds of a certain size would be required, and of a sufficient number so as to insure a certain supply of the material being always in readiness to keep the works going. It must be borne in mind that all waters are not suited for this purpose—hard water charged with selenite is bad. As a rule, water that is preferred by brewers or washerwomen may be considered good; and though the water in these ponds is entirely stagnant, it is desirable that the entire body of water should be renewed by a feeble stream entering at one end of the pond and escaping at the other. Quick running water will not do at all. Steeping is always more quickly performed, and to greater perfection, where the water is alkaline, such as the drainings of the dung-heap or poultry yard, a solution of guano, putrifying fish, or decomposing animal matter, &c., &c. But such water is always coloured, and would cause a depreciation of the fibre on account of the tinge it would thereby receive. The equable temperature of the water is also of great importance. The length of time this process appears to occupy is a serious drawback. Dr. Hector states that after bruising the leaves well, and then submitting them to the retting process, no change in their texture could be discerned, even after three weeks' immersion. It seems to me that the time this operation requires must militate greatly against its economical or general introduction here; but as there may possibly be some persons who have the requisite conveniences, together with suitable water and the means of maintaining it at an even and desirable temperature at their command, I will proceed further to describe the process. One of the chief difficulties of retting flax is to decide the exact time when it should be taken out of the water. This is a very nice point, as by leaving it in the water a few hours too long it may be over-retted.

Mr. Henderson, in his "Practical and Experienced Directions," says (although he refers to Irish flax, still the same hints are equally applicable to the steeping of *Phormium tenax*):—"Flax is subject to injury from neglect in every process; but in the steeping especially. The water brought to the pond in which the steeping is performed should be pure from all mineral substances, clean and clear. Of such importance is this that farmers sometimes send their flax as far as forty miles, by land, to be steeped; and in Holland, by water, much longer distances. The water of large rivers is generally to be preferred; but spring water which has run some hundred yards becomes soft, and will have deposited any mineral impurities it contained. Immediately from the spring, it seldom does well. If the water be good and soft, it is injurious to allow it to stagnate in the ponds before steeping. I put in two layers, each somewhat sloped, with the root end of each downward; one layer is said to be safer, and perhaps it is so, though I have tried both and found no difference. It should be placed rather loose than crowded in the pond, and laid carefully straight and regular. A stream should if possible pass over the pond; it carries off impurities, and does not at all impede due fermentation."

Flax is more frequently injured by too little than too much water.

Bad management in steeping reduces the value of the crop to the amount of one-sixth and often one-fourth. What remains is weak and rotten; it falls to tow under the hackles. If the hemp has not been steeped enough, the residue which is left is harsh and untractable. The latter defect may be corrected, but the former is irremediable.

The leaves which require the most active steeping ought to be placed in the middle of the pile or