

II.—MANUFACTURE.

The information received in reply to the queries issued on this branch of the inquiry is rather limited, and not very important. The reason of this is, that up to the time the circulars were issued, comparatively few had engaged in the preparation of flax, and fewer still knew anything about the matter. The cleaning process, with a few exceptions, is pretty much the same all over the Colony, and may be described thus:—"The entire leaf is crushed between rollers, one or both of which are fluted, and then subjected to the operation of the stripping-drum; when it has been thus operated on, the flax is washed, with the view of removing as much as possible the juices which hold gum and colouring matter in solution. The usual way of accomplishing this is to immerse the flax in water (running if possible), and, after rinsing it well, to send it to the green to bleach. This process, however, does not remove the colouring matter from the leaf, the butt-ends of which are red even after two or three weeks' bleaching. This defect in the washing is obviated by soaking the flax in water for about two hours, according to the season of the year, temperature, and quality of the flax. In dry weather more soaking is required than in rainy. A little experience will guide the manufacturer in this matter; but it may be taken for granted that the soaking will to a considerable extent remove the gum and red colouring matter from the butts of the leaves, and make the flax, after being scutched, very soft to the touch, without in the least injuring the fibre. The fibre so produced will be found very well suited for all the purposes to which the flax is usually applied. The crushing of the leaf breaks the cells which contain the colouring matter in the butt, and allows that matter to spread amongst the fibre. It is, therefore, of importance that the leaf should be placed in water as soon as possible after being crushed. The soaking process, as already stated, removes the colouring matter; but the sooner the flax is put in the water the shorter the time it requires to be there, and the less time it will require for bleaching.

Various modes of soaking are in operation at present.

1. Hanging the flax over ropes, fixed in the stream—up and down.
2. On perpendicular poles—hank above hank. Mr. McArthur, of Southland, thus describes that process:—"Taking for granted there is a running stream near the mill, with bends in its course: There is a 'race' cut across the bend, which is lined both sides and bottom with one-inch or two-inch boards, and in the bottom are stuck as many wooden pins as may be considered necessary. The flax from the rollers is doubled across the pegs, and the current playing upon it washes it better than any other way. It has this advantage also, that one boy can do a great amount of work by this mode of washing, as all he has to do is to throw the fibre round the peg."
3. On horizontal poles, across the mill-race; or
4. Placing the flax on open frames, drawn into the stream.

Perhaps the last is the most convenient mode, as a considerable quantity can be placed on each frame and taken to the dam and hauled back without twisting the flax. It is possible, also, that the flax might be tramped on the frames, so as to squeeze or press the colouring matter out of it. These frames might be so made as to be lifted out of the water and carried to the green without touching the flax; or, if it has to be carried any distance, they might be placed on a dray or truck, and taken to the green. It is advisable that the flax, whether taken off the frames at the water-side or carried to the green as above, should be allowed to drip some time, as it is then more easily spread. It may here be remarked that green flax should always be stored standing on its butt ends. In fact, the nearer its position is to the perpendicular, the longer it will keep; and if its butts are amongst water, it will keep fresh still longer, perhaps eight or ten days. It should not be wetted, as these occasions heating and discolouration of fibre, more especially if laid on its side and piled up. For the same reason it should be shaded from sun and rain. Mr. Chalmers, of Lyttelton, washes by hand as the flax comes from the mill. Each hank is then slightly twisted and laid in a sheaf or bundle, which, on being loosely tied, is laid in a pool of still water,—not stagnant, but fenced off from the running water to prevent too much motion. The wet bundles are afterwards lifted by tackle and dipped in the mill race, to remove any earthy sediment that may have adhered in the still water; then left some time to drip before being spread out on the green. The time the flax should be in the water, in order to remove the red colouring matter and prevent the colour getting dark, is from one to two hours. Mr. Chalmers says that the cost of his process is not appreciably more than the ordinary system of washing.

Bleaching is, perhaps, the most important part of the process of manufacturing flax, and too much attention cannot be bestowed on it. It is decidedly best to bleach on grass, as the flax can be spread thinner and more regularly, is easier turned, catches less wind and more of the dew that falls during the night. The fibre is thus submitted to a process resembling the dew-retting of the Irish flax. In winter and rainy weather wires or poles are necessary, but they should be avoided as much as possible, on account of the waste of time and material in putting the flax on and taking it off the wires. In fact, it is scarcely possible to bleach on poles. Mr. Jenkins, already named, adopts the following plan:—He drives three stakes or posts into the ground one foot apart, the centre one being three feet and the others two feet each high. On these he fixes rails in the form of the roof of a house, and spreads the flax, by which means it catches the sun, rain, and dew, and gets easily dried. Should this mode be adopted, a space of two feet wide should be left between each set of posts. Several flax manufacturers in the North dry their flax on the fern, and this mode answers very well, especially in the winter time. The time for bleaching as well as for turning the flax when on the green, is so entirely dependent on weather, time, place, and circumstances, that it is scarcely possible to fix a period. The colour should decide this, care being taken to have the flax in before the colour begins to get dark.

It should further be kept in view that when flax is dried quickly without exposure to the rays of the sun, as in ovens, or where thickly hung on poles, it always retains a green colour. Even those parts that may dry yellow often become green again when wetted. How long it will retain this green colour is not yet known; but it certainly cannot be taken as a proof that flax is damp, or that it has been stored damp, because it has a green tinge.