

crimping processes, the rollers are wiped by felts or cloths. The flax is then ready to be sent to the hackler.

Two kinds of machinery and apparatus are required for effecting these results, under the second head—the former for steeping and boiling, and the latter for pressing and crimping. Both deserve notice.

The first consists of two rectangular vessels, or vats, the one within the other, an open space between them, for the admission and removal of water and steam. The interior one has a perforated bottom, and into it the flax is placed for being operated upon by the bleaching-water and steam. Above the flax is a compressor, or, as it has technically been termed, a "follower," worked by means of screws, and the necessary machinery in framing over the inner vessel. Between the two vessels pipes for steam run along both sides and bottom of the interior one for heating the water.

From this description of the apparatus the details of the *modus operandi* may be thus stated: The flax is first put into the vessel, and the follower placed above it. Water is then poured into the empty space between the two vessels until it rises up to the follower through the perforated bottom. Steam is next turned on to heat the water, which is gradually done, raising it to 100° Fahr., at which temperature it is kept until the epidermis of the fibre separates, and as much of the colouring matter and albumen are extracted as such will effect. The water is kept at this temperature by a fresh supply mixed with fuller's earth flowing in at one side, while the dirty water is discharged at the other by the overflow-pipes, thus keeping up a washing and bleaching process until the outer skin of the fibre comes off easily by drawing a portion of it through the fingers. When this result has been obtained, the fibres are boiled up in the liquid. The boiling is accomplished by admitting the steam to flow more freely into the lower part of the vessel. During the boiling the follower is kept alternately moving up and down, while a flow of clean water is permitted to run into the vat at the bottom, causing an overflow which carries into the waste pipe all the gummy and other matters pressed out from the fibres, so that they are not allowed to absorb the impurities again, which they would do were they allowed to remain in the vat. Fine flax fibres do not require boiling, and the temperature need not be raised higher than 180° Fahr.—applying the pressure as it rises to 150° Fahr. After the mass is sufficiently boiled and washed, the water is drawn off, the follower screwed down upon the flax, expressing therefrom the principal portion of the water remaining; and in this compressed state it (the flax) is kept for four hours or more to soften, after which it is ready for the pressing and crushing rollers.

The machinery for this second process is more simple, consisting of five pairs of rollers in a frame, with the necessary gearing to give them motion. Two of these—a pair at each end—are plain for pressing, and the other three pairs fluted for crimping. The flax is fed in to the first pair, and passing on through the second, third and fourth pairs, comes out from the fifth ready for the hackler.

Such is a very condensed review of the Messrs. Burton and Pye's proposition. The idea of working up the whole of the flax plant into food and clothing is certainly a laudable one; and we hope the project before us, which has this for its object, will meet with what it merits—a most rigid experimental investigation at the hands of flax growers.—The samples both of food and flax in every stage of their manufacture were promising in a very high degree. The quantity of fine flax, and the almost entire want of waste tow, require special notice. In point of fact, it may justly be said that the whole goes to the hackler as fine flax, the quantity of tow is so extremely small. Another consideration also deserves special notice in connexion with the manufacture, for the manufacturer has entire control over the article, being manufactured at any stage of the process; thus ensuring, with proper attention, uniformity of quality—a result which cannot fail to be duly appreciated both in the flax market and subsequent stages of manufacture, as in the spinning and weaving. It was otherwise under the old process of fermentation and maceration, especially the former; for under it, it was hardly possible to preserve uniformity in the process of retting, fermentation being greater in one place than in another. Now every farmer who has any experience here, must be aware how largely a difference of fermentation adds to the quantity of waste tow, diminishing in a still greater degree the quantity of fine flax. Retting, grassing, and scutching are three distinctive processes, all of which are avoided by the combination of the systems of Davy, Burton, and Pye. In one respect it falls short of Mr. Watt's process, for in the latter the nutritive matter contained in the steep-water was economised for food, whereas in the former it is lost. A question, therefore, may arise as to whether Watt's process