

In Gibbons' machine the round bar, having four-sided ends, can be shifted so as to show four different surfaces to the beaters as one after the other is worn out; it is then thrown away and a new one put in. It was at first thought that eight changes might be got from each bar by shifting it end for end, but this is not the case if good fibre is desired, and as the cost of the bar is trifling, there is no necessity for trying it. This bar can easily be shifted while the machine is in motion. As Gibbons has two machines on one shaft, the stoppage of one necessitates the stoppage of the other. In Fraser's machine no change of face can be obtained, but the worn plate can be slipped out, and another put in in a few seconds without stopping the machine, and the old plate can be ground up again, ready to replace the second, when it is in its turn worn hollow. The cost of these plates is also small, being only 2s. 6d. each.

The importance of dressing the leaf out to the tip is considerable, as it prevents great waste. In Gibbons' machine, and also in Fraser's new one, the feed-rollers are deeply and sharply fluted, and hold the leaf firmly to the tip; the distance, however, to the place where the leaf is stripped is rather longer than in Price's, which, beating on the lower roller, reduces this distance to a minimum. On the other hand the lower roller of Price's machine must be made smooth, as the flax is dressed on it, and so cannot take so good a hold of the thin end of the leaf, but allows it sometimes to be pulled through by the beaters. This can, to a certain extent, be remedied by the person feeding, either twisting the thin portion of the leaf round his fore-finger as it enters the rollers, or by "tailing" the butt end of one leaf to the thin point of the one before it, and so increasing the pressure on it. This "tailing on," however, must not be overdone, as the leaves are apt to entangle with the "out-taker" under the machine. Fraser's old machine had the fault of a smooth lower roller, combined with a considerable distance between the beating-plate and the feed-roller. In practice, when the machines are in good order, and working well, we are of opinion that there is little difference between Fraser's, Price's, and Gibbons' machines in this respect.

Next in importance to the quality of the fibre produced comes the quantity of green flax passed through in a given time. This depends not only upon the diameter and velocity of the feed-rollers, but also upon the size and shape of the leaf taken through, the liability to stoppage by flax getting round the shafts, and the ease of clearing the machine when choked. The diameter of the feed-rollers are nearly alike in all the machines, those of Gibbons' being the largest, and the comparative velocity can of course be altered to the wish of the flax manufacturer. It is easy to drive the machines fast, and the "feeder" can put a large number of leaves through in a minute; but our experience is, that from thirty to thirty-five leaves a minute is quite as much as the "out-taker" can manage without entangling or loosing a large part of them, and it is in this direction that improvement is most required. It will be found that feeding at the rate of two and three-quarter feet per second will pass thirty-three average-sized leaves through per minute, or a quarter of a ton per hour per machine.

The size and shape of the butt of the leaf that the machine will allow through is important, for much time is lost when the machine refuses to take in big butts cut square at the ends, and it takes too long to go over all the flax first and cut off the thick ends and point them, to say nothing of the waste of stuff that has been paid for. In this respect both Gibbons' and Fraser's new machines which have both feed-rollers fluted, have an advantage over Price's, the lower roller of which is compelled to be smooth. The merit of this improvement is claimed by Messrs. Gibbons, and is one of the points for which they intend taking out a patent.

Stoppages are sometimes occasioned by flax getting round the shafts of the drum or feed-rollers, and into the bearings; but with the machines in good order, this now seldom occurs except through carelessness. As, however, it will, in spite of all care, happen occasionally, it is of importance that every facility should exist for clearing with as little delay as possible. Fraser's old machine was very deficient in this respect; but his new one, and Gibbons', and Price's, leave little to be desired. Mr. McIntyre, of Onehunga (as instructed by Mr. Dougal, who claims to be the originator of these machines), has recently begun to manufacture flax machines; but as these are on the same principle as Price's, no further notice need be taken of them, except to say that they have been got up with great care, and with a view to durability—the bearings being all brass—and that Mr. Wallace, of the Flat Bush, is now using them, and declares himself perfectly satisfied with their work. Mr. Mills, of Wellington, Mr. Murray, and others, are also making machines; but neither is it necessary to dwell on these, as the above remarks can be easily applied to any other machine, and its merits ascertained.

In erecting machinery to be driven by steam, care should be taken that the machine-house and chimney or funnel should be so placed that the prevailing winds shall carry the soot, smoke, and sparks, away from that part of the establishment where the scutching and packing operations are carried on. Fire-protectors should also be placed on the top of the funnel. Want of attention to these matters has already been the cause of several fires.

Care should also be taken that the scutcher shall be so placed as that the prevailing currents of air through the mill, where no exhaust-fan is used, shall take the refuse and dust away from those feeding the scutcher. With all possible care, the impalpable dust flying about will reach their lungs, and therefore a respirator, as already suggested, should always be worn.

Where it is necessary to work the scutcher and to pack or bale at night, patent lamps should be used, as all unprotected lights are more or less dangerous.

Until very recently, the prevailing opinion was, that the machinery now generally used would produce such an article as would command a remunerating price in the English market. But the fall in price there and other circumstances have led to a change in that opinion; and the opinion now gaining ground in the South is, that mechanical appliances alone will not produce such an article as will secure this object. However excellent many of the machines now in use may be, the article turned out by them is only fit for a few purposes, such as rope, matting, bagging, &c.; and having to compete in these trades with fibrous materials which have already gained favour, the chances are that the prices to be obtained for the New Zealand article will not leave such a profit as will induce capitalists and others to embark in the trade. New appliances must therefore, it is said, be resorted to, in order to procure that which machinery alone has hitherto failed to supply, viz., an article suited to the manufacture of the finer textile fabrics, and for which a very much higher price will be