

the production of the fibre. Dealers and manufacturers, he said, knew exactly what Manilla was, and what they could do with it; and though such fibre as the Native-dressed sample would certainly make better rope, the recognition of that fact would probably be slow. Until Manilla was substantially displaced, its price would rule the prices of other fibres.

The various figures I have mentioned are given substantially as replies made to Mr. Fox's inquiries; but I am of opinion that fibre such as that prepared by the Natives might be used for other than purposes of rope-making, and so realize much more than ropemakers might be inclined to pay for it. Mr. Brown, to whom reference is made subsequently, expressed the opinion that fibre such as the sample shown him would readily realize £70 per ton.

#### *Fibre Machines.*

Inquiries respecting machines that might prove capable—either as now made or when modified—of dealing with the *Phormium tenax*, soon showed that all machines made for dressing Ramie might be passed over; that they are essentially flax-breakers, and therefore useless in New Zealand.

Three or four machines were found which, though designed for preparing the fibre of plants indigenous to Central and South America, have certainly some qualities which appear to make them likely to be successful in New Zealand; and of them descriptions are appended:—

*Sanford's Machine.*—Mr. G. Sanford, a member of the firm of Sanford and Malloy, 98, William Street, New York, has patented various flax breakers and dressers, as well as machines for dealing with plants of the Agave, Plantain, &c. class. His latest invention, which he regards as his best for the latter class, has not yet been much tried. This machine may be said to be comprised within a stout upright frame of wood, 8 feet high, 30 inches wide, and 18 inches deep. Two pulleys, of iron, 12 inches diameter, and 12 inches wide, are fixed near the ends of the frame; and they carry a vulcanized India-rubber band, also 12 inches wide, upon which are mounted brass scrapers, 12 inches apart, alternately smooth-edged and slightly serrated, the band having close against its inner surface stout planks. Against the front of the machine there is fitted another plank or door which is peculiarly hinged, and is also held in place by an iron bar, which on the unhinged end is held in place by a catch fitting into a ratchet. Under the centre of the bar, there is a stout pad of leather. Three or four horse power, applied to the machine by means of a pulley near its base, will, it is believed, drive the machine at a speed of 150 revolutions a minute. As at present constructed, the material to be dealt with will have to be fed through a slot at the top of the front plank or door, the door being opened the material slipped in, and then held in place by a simple hand-catch. The fibre will thus hang on the inside of the door, and in close contact with the scrapers. Mr. Sanford believes that the direct down-scrape will more effectually remove the surfaces of the leaf, than anything like a breaking or rotary scraping motion. The upper portion of the leaf or leaves to be submitted to a separate dressing. The arrangements connected with the fore-plank or door will, it is believed, combine with and help the action of the India-rubber band which carries the scrapers, prevent difficulty from and secure clean scraping, despite of inequalities in the thickness of material put into the machine; the attachments being such, that the door has a play upon the leather pad, against the iron bar, which allows the door to give slightly on either side. The door itself is adjustable by screws, so that the space between the inner face and the edges of the scrapers can be regulated. The machine has not yet been tested, as regards its productive powers. Mr. Sanford says that he should think it would clean 300 lbs. of fibre per day, the leaves of the plantain being the raw material. Mr. Sanford, in reply to an objection that the feed-arrangements were cumbrous, described a modification which he contemplates making if necessary, or if required. He would fit near the feed-slot a pulley or wheel with its edge grooved, and a driving band working in the groove. The wheel would be geared so as to travel slowly. A few leaves being put on the strap, would be caught by the wheel, allowed to hang ready for scraping, would travel slowly across the fore-plank, and would be delivered by the strap, so far as to be ready for removal by an attendant boy. Some of the present fittings of the fore-plank would be removed, and India-rubber springs substituted. The cost of the machine, as at present constructed is, \$300 currency; with the "self-acting" feed it would be "\$400 currency, at the outside"—delivery in New York being understood in each case.

A second machine, by Mr. Sanford, has become to some extent an article of commerce. A disc 6 feet in diameter, and of 2-inch plank, has, fixed upon each side, radiating scrapers of brass, 12 inches apart at the outer end, alternately smooth-edged and serrated. The wheel is fenced, so to speak, by two planks 6 feet by 18 inches. Each plank has a slit in its upper edge, into which the material is placed, and there held by a hand-brake. The boards are pressed home by a lever, operated on by the knee of the attendant, or attendants—for both sides of the disc are effective—and thus the force of the action of the scrapers is regulated. This double-action machine costs \$300; a single-action machine, \$250; and the power required is about the same as for the upright machine before described. Sixteen machines of the disc pattern have been made and sold, but they have mostly been sent to South America; and Mr. Sanford confesses that he has not received information such as to enable him to estimate their power of production. As to the quality of their work, he says he has no doubt. The machine has mainly been used for Sisal. This (Mr. Sanford says) is the fibre of a species of Century plant, there being a marked resemblance between the leaves, but the latter having an elasticity which the former has not. The Sisal leaf is "three-cornered," 5 inches or 6 inches wide near the tip, and somewhat like the blade of an oar near the butt, where it is 2½ inches in diameter. It requires to be flattened, by being passed between rollers, before it is submitted to the action of scrapers.

"Patrullo's Machine for Separating the Fibre of Tropical Plants," is made by Messrs. R. H. Allen and Co., of Water Street, New York, at their factory, corner of Jay Street and Plymouth Street, Brooklyn. A brief printed description, in English and in Spanish, is forwarded herewith. A frame of wood, 6 feet long, 3 feet 6 inches high, and 20 inches wide, carries on Bullett metal journals a cast-iron wheel, 4 feet in diameter, with an 8-inch wide rim, on which are fixed eight smooth-edged brass scrapers, 1½ inch deep. Within the frame there is a quadrant of maple, which has a treadle