

"McBride's machine is in operation at Delaware, Ohio; as a scutcher it is very efficient and ingenious. The flax is applied in the bite or twist of a double, endless rope, which receives the strike at one side, carries it through the scutcher, where it is well dressed throughout; during its passage, the rope shifts its hold of the flax by the torsion action, so that all is scutched and delivered to the workman at the other side of the machine, who lays away the bundles of clean flax. This machine will dress from four hundred to six hundred pounds a day.

## STATEMENT.

"I herewith beg to submit my treatment of converting flax into a cottonized substance:

"I commence by taking the flax straw gathered *when fully ripe*, either *tangled or straight*, after the seed has been taken off. The straw, after being air-dried, is passed through a flax breaker, of Sanford & Mallory's make. By the operation of this machine the boon, or bark, is, to a considerable extent, separated from the fibre, and the stem loses about fifty per cent. of its original weight and reduced to one-half of its original bulk. After breaking it is put through a picker and duster, by which a large portion of the adherent portions of wood are removed. The fibre is now ready for boiling. The boiling consists of the following process:

"To every ton of the fibre add as much water as will well cover it, and afterwards introducing into it about five per cent. of a solution of caustic soda of the specific gravity 1.50°. (The caustic soda is made by adding caustic lime to a solution of soda ash in the proportion of two parts of lime, six parts of water, and two of soda, and twelve parts of water. This is the *concentrated liquid*.) The fibre is allowed to boil three hours, and then is passed into a solution of carbonate of soda of five per cent.; then into a solution of sulphuric acid of one and a half per cent.; then into a solution of soda ash, same strength as before. It is then partially split and ready for bleaching.

"The bleaching liquid is hypochloride of magnesia, made by taking one part by weight of chloride of lime to twelve parts of water; and in a separate vessel, two parts of sulphate of magnesia to twelve parts water. Mix the two solutions together, the clear liquid is then diluted to 3° Twaddle, specific gravity 1°.015. When sufficiently bleached, is then removed to a solution of carbonate of soda, same strength as before, and left there half an hour; then passed into a solution of sulphuric acid, same strength as before, and allowed to remain there as long as any disengagement of gas is visible; then wash the fibre in a weak solution of oil soap. It is then dried by passing through a wringer and passed over heated copper cylinders to the picker and duster. It is then carded on a Dundee card, and is finished by passing through a 48-inch wool card. The time occupied in the operation of boiling and steeping process to the state ready for carding, is six hours.

"The expense of converting one ton of flax straw into flax cotton is as follows:

One ton of flax straw .....	\$10 00
Breaking one ton of straw .....	2 50
Picking and dusting 1,000 pounds .....	1 00
Boiling in caustic soda 570 pounds .....	2 50
Labor in steeping and chemicals .....	16 00
Washing and drying .....	2 00
Picking and dusting 354 pounds .....	50
Dundee carding .....	50
Carding on wool cards 291 pounds, producing 257 pounds .....	5 00

Total cost .....

40 00

Or less than sixteen cents a pound, exclusive of rent, interest and insurance, which the bleached flax waste will cover. It has been sold to paper makers at four and a half cents per pound. The shives and other waste are used for fuel under boilers.

*Cost of machines and vats.*

Breaker .....	\$355 00
Picker .....	175 00
Duster, or willow .....	150 00
Picker for white stuff .....	250 00
Dundee card .....	750 00