which it is coated. This gum has been considered the cause of its brittleness, and has hitherto been only removed by steeping in running water, and by stamping and beating, a very slow, imperfect, and expensive process. The second part of the machine then discharges the macerated leaves into a small stream of water, where the mucilage is washed off by women and children, who merely draw the fibre of each leaf through the hand, and wring it out, it is then hung up to dry under cover. It requires 8 tons of green leaves to produce 1 ton of fibre; but the inventor of the machine has had dried leaves from New Zealand ten feet in length, containing an exceedingly coarse but very strong fibre suitable for ropes and cordage. There are several varieties of the plant, the fibre in each varying in quality, applicable to the manufacture of fabrics for which silk, cotton, flax, wool, and hemp are used; the fine tow, we are assured, forms a beautiful yarn, and the flax takes colour as well as any textile fibre. Water-power abounds in the colony, and if applied to this machine on a large scale, a supply may be obtained sufficient for every purpose.

The flax has been grown in nurseries in Devonshire, and, we believe, in Wales; if so, we see no reason why its culture may not be extended in these islands. The Devon leaves, we are assured, average about 6 feet in length, and although worked by the machine in the dry and not in the green state, each leaf produced 3 ozs. of green fibre. Paper manufactured from this fibre possesses the singular quality of being impervious to water; a sheet of paper folded in the shape of a basin, and filled with water, has been kept suspended for 14 consecutive days, without any appearance of dampness on the exterior; for cartridge-paper, therefore, it would prove invaluable, as well as for preserving polished steel and iron goods. It takes tar as well as European hemp; the relative strength of rope made from the New Zealand fibre and Russian hemp has been tested at the Royal Dockyard, Woolwich, when it was found that a 4½-inch made of the former was 60 per cent. stronger than 4½-inch made of the latter. Running gear and ship tackling of cordage made of this invaluable substance has been used in ships trading between London and New Zealand, and highly approved of; and flat-ropes have been made from it for use in the deep coal-pits of Lancashire, where they are preferred to those of Russian hemp, when supplies can be obtained.

We have thus produced in one of our new colonies, in an unlimited quantity, an article calculated to supersede the hemp of Manilla, America, and above all, of Russia. This invaluable production of the earth covers many thousand acres of the soil to which it is indigenous; and it is remarkable, that the higher the altitude at which it grows, the shorter the leaf and the finer the fabric it produces. The want of proper machinery for its production has hitherto prevented the shipment of it in quantity to Europe; the proposed plan will probably remedy that evil, and in time ensure an ample supply. We have thought it right to direct the attention of commercial men to this very interesting and important national object: the drain for European labour in Australia renders it desirable that the natives should be employed extensively in this manufacture, the simplicity of the new machinery suits it for being worked by them, and we hope to see the Zealand flax properly and extensively prepared by the improved process, attain the position in the European markets which its valuable qualities appear so fully to merit.—*Mining Journal*

Incrustation in Boilers.

Mr. Washington Jones exhibited to the meeting of the Franklin Institute, July 20, some specimens of scale, or incrustation, taken from the boiler of a coasting steamer. One piece about twelve inches long, by eight wide, and about three-eights thick, was formed on the outer portion of the furnace crown, and distinctly showed the form of that part of the boiler, with each rivet head and the joinings of the sheets. The scale had been deposited in layers that were of various tints, derived from the colouring matter extracted from the substances (such as saw-dust of mahogany, &c.), that had, from time to time, been put into the boiler to prevent the deposit of scale. Another piece of irregular shape, had been taken from the steam chimney. It is well known that scale is a non-conductor of heat. It forms most rapidly, as a necessary consequence, upon those parts of the boiler where the heat and the evaporation is the greatest, and thus increases the liability these parts have to become overheated or burned.

Mr. Jones also presented a stay bolt taken from the smoke-pipe, where its head had been for over two years exposed to jets of exhaust steam. The part of the head against which the steam impinged, had been cut or worn away by its action; the texture of the iron was close, and the wasted part was as smooth as if cut with a keen tool.

Mr. Jones remarked that the proper construction and maintenance of steam boilers in a safe condition, should be of special importance not only to engineers, but to the whole community. No part of the apparatus requires closer attention. As a class, our steamboat engineers are fully competent to discharge the duties belonging to their post; but, occasionally, the desire to make a quick run, induces them to carry a little higher steam, and to "blow out" less frequently, a practice to be deprecated, as it is almost sure to bring upon them the labour of "scaling", as well as risking the efficiency of the boilers.—*Journal Franklin Institute.*

Lighting by Electricity.

Letter of MM. Deleuil & Son, to M. Elie de Beaumont.

We communicated to the Academy, some time ago, a note in reference to the electro-lighting of the Napoleon Docks. M. Regnault, the director of the telegraph of the Rouen Railroad, who took charge of this lighting, has communicated to us the statement of the expense, of which we herewith send you the details. We thought everything connected with this lighting would be favorably received by the Academy. The apparatus which worked for four consecutive months with great regularity, were composed each of a battery of fifty Bunsen elements of large size.

The expense per day apparatus, was as follows:

Wages of the workmen,	4·50	francs.
Mercury,	5·	"
Zinc,	4·50	"
Charcoal points,	1·40	"
Nitric Acid,	1·80	"
Sulphuric Acid,	1·84	"
	19·04	" ($3·80)

The expense of lighting 400 workmen was, then, 38·08 francs