TEXTILE INDUSTRY AT THE VIENNA EXHIBITION.—No. IV.

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The textile machinery for the preparation of the flax is not better represented than that of cotton, described in our former article. Although there are to be seen at the Vienna Exhibition a number of flax-breaking and scutching machines, they embody nothing new or original, and we may simply say that the whole of the flax, hemp, and jute spinning is represented by the exhibits of Messrs. S. Lawson and Sons, of Leeds; Messrs. Combe and Barbour, Falls Foundry, Ireland; Mr. T. Barraclough, of Manchester; and Mr. T. Fleming and Son, of Halifax. However, we should mention that M. Germain, of Brügge, exhibits in the Belgian department of the Agricultural Hall a series of the Belgian manner of working the flax, to which full descriptions and plans have been added, and the whole exhibit is one of no little interest or merit. Referring to the flax-breaking machines exhibited by Belgium, we find two, one of which is designed and patented by M. Lagae Crombet, of Courtrai, whilst the other is exhibited by M. Julien Isidore Lefebvre, of Brussels, who is well known for his numerous constructions in this branch of industry. M. Lagae Crombet's machine is designed on the principle of a rotating main cylinder (tambour) combined with several rotating and oscillating rollers, which may be adjusted according to the softer or harder quality of the flax. The system may be arranged with two or three rollers, and the machine may be worked by hand or steam, in which latter case it delivers per day from 30 to 35 per cent. of about 2500 kilogrammes of raw material. The same exhibitor shows also a scutching machine of simple construction, and which is provided with an adjustable and flexible blade for the feeding of the flax, the machine being controlled by means of a footboard. M. Julien Isidore Lefebvre seeks to prevent, with the powerful action of his machine, all roasting of the raw material, and to remove all glutinous substances in the stem by the application of a jet of water.

Two peculiarily constructed flax-breaking machines are to be seen in the Agricultural Hall for Austria and Hungary; the one is exhibited by Herr F. Neumann, of Leobersdorf, and the other by the Slavonische Maschinenfabrik, T. Wagner, of Essek. The former of these machines is of heavy and large construction, requiring three or four horse power to drive it; it is marked "Patent, Luft and Neumann," but has with respect to the arrangement of the cutters much similiarity with the machine built by Kaselowski, which is well known in Hungary. The machine by Luft and Neumann which is constructed for hemp, but may also be used for the breaking of flax, contains five pairs of rollers with knives arranged in a curve, each roller being provided with fourteen knives. The upper series of rollers is made to oscillate, and can make between 400 and 500 strokes per minute, whilst the lower series of rollers advances but slowly. This machine is said to possess many advantages, and is stated to break, with the attendance of nine men, from 15 to 20 cwt. of stems per hour, which would certainly be an enormous production. We on our part cannot attribute all this to the machine, and hold the opinion that the cutters will sustain great wear and tear. The execution and workmanship of the machine exhibited leaves much to be desired.

The Slavonic machine is very primitive in its construction; it contains nine pairs of rollers with a quick fore-and-back motion. The machine breaks hemp and flax in a satisfactory manner, and at short intervals, so that the broken stems come out as if curled by a crisping iron; roasted as well as raw flax and hemp may be worked up by the machine. Three horse power is required to drive it, and the production is stated to be for hemp 12,000 lb. per day, and for flax 18,000 lb. In the German department of the Agricultural Hall we find three systems of flax-breaking machines represented. We may mention first the machine worked by hand and constructed by Kaselowski, especially for the use of small farmers; this machine has a roller with cutters and an oscillating knife, which, besides being moved up and down by means of a crank, has a partly circular motion, acting thus in a scraping manner upon the stems of the flax. The feeding roller is provided with a fore-and-back motion, whence the material, well prepared, gets under the cutters. The scutching machine by Kaselowski does not contain radial blades, but is provided, like a water wheel, with blades mounted upon the cylinder. The stand and the working hole are provided with a movable and feathering recoiling board, an arrangement which prevents any too heavy blow of the blades upon the flax. These machines are built by Mr. W. Hallerberg, engineer, of Minden, and they can be obtained for the moderate price of 45*l*.

F. Wameck, of Oels, exhibits two systems of flax-breaking machines; one of which contains, in an horizontal plane, six pairs of rollers, the upper ones of which are fixed, whilst the lower ones are put in an alternate motion by an ingenious combination of cranks. The rollers have a diameter of about 6 in., and the upper rollers are loaded. The second of Wameck's flax-breaking machines contains two pairs of rollers, the forward and backward motion of which is produced by a wheel sector, and its alternately gearing into the one or the other disc of the two axles. On account of the sector being in two parts, the larger one for causing the forward, whilst the smaller one produces the backward motion, a continued advancing of the flax between the rollers is effected. In the American department we find a flax-breaking and scutching machine by Dr. Collyer; the breaking machine is on the cylinder system, and is provided with oscillating top cylinders, whilst the scutching apparatus is worked by two foot levers, and is provided with radial blades.

The machines exhibited by Messrs. James Combe and Co., are examples of the excellent construction and workmanship of the machines built by this firm, and we notice many improvements for fastening the flax, for preliminary spinning, for spinning, for the motion of the combs, &c., of which we shall have to speak further on. Next to these machines we find those by Messrs. Lawson and Co., who exhibit a series for the preparation of jute, with considerable improvements, which we shall afterwards notice in detail. We may say that the spinning of flax, of hemp, and of jute, is represented at the Vienna Exhibition only by the two firms mentioned above, with the exception of a spinning machine on Reynold's system, exhibited by Mr. T. Barraclough, of Manchester. This latter machine is really very simple in its construction, and is of general use and application, as coarse yarn, cords, and ropes, &c., may be spun with it. The machine is constructed like a spinning wheel, but its parts are made stronger and are adapted for power working. A bobbin-roller is firmly fastened to a spindle which forms a tube on its further end, into which the mass of fibres is brought, passing through several openings of the tube and back again, and coming thus into the arm of the wing, which is also hollow and provided with slots. From the wing the thread is brought to the pirn, where it is wound up. A forward and backward running screw, and a tube provided with small pins and connected with the bobbin, produces the alternate motion of the pirn, whence the winding off of the thread is effected in the proper manner. The taking off of the material is done by hand, so that, as we stated already above, the machine is nothing else but a large spinning wheel, the motion of which is effected by mechanical power, whilst the manual labour is limited to the formation of the fibres. This machine is exhibited in two sizes; the one for strong yarns of jute, Manilla hemp, hemp, flax for ropes, &c., and producing in ten hours between 40 and 75 kilogrammes of yarn, for which production about one-third of a horse power is required. The other size is for finer yarns of the same materials for cords, thin ropes, &c., and supplies in ten hours about 40 kilogrammes of yarn with one-quarter of a horse power. The space required by this machine is 3 ft. 8 in. by 2 ft., whilst the larger machine measures 5 ft. 8 in. by 3 ft.

Mr. Barraclough exhibits further two balling machines for string, and one of which is arranged for two and the other for one ball.

We find, besides, in the agricultural departments, and especially at the exhibits of flax, plans and models of roasting stoves and apparatus, as, for instance the Spanish, Portuguese, and Italian exhibits, &c. At the Dutch exhibits of flax, we find the simple instruments used by the rural population for the preparation of their flax, instruments which used to be necessities at every farmhouse, for example, the wooden hammer for the breaking of the flax, the highly painted heckle, &c.

Before concluding this notice of appliances for preparing fibrous matter for threads, strings, and ropes, we should not omit to mention that in northern latitudes, where the cold climate does not allow of cultivating the plant of the hemp and the flax, another material for the purpose of tying and fastening has been introduced. This is the thin shaving of wood which the machine planes off the surface of the timber in various lengths, up to 60 ft. to 90 ft. We find an excellent machine for this purpose at the Exhibition exhibited by Messrs. W. Gibson and Sons, of Fonsered, near Gothenburg, which belongs strictly to the wood-working machinery, and which will be dealt with under that section. The shavings remain over their whole length undivided and unbroken, and are thus durable, and may be used as means of fastenings, or they may be twisted round themselves, when great strength is given to them. This is an interesting example of how near the textile industry is connected with wood-working, a branch of industry which has also to do with vegetable fibres. We may also mention the modes of preparing flax, straw, cane, and wood, for the manufacture of hats, baskets, &c., as in many cases these materials are applied for and through weaving, and belong then decidedly to textile industry. Mr. A. Moritz, of Schwerin, has exhibited for this purpose small planing machines for cane and wood, also straw-splitting and flattening machines of simple but exceedingly suitable construction.