

wheel 110, stud pinion 27, doffer wheel 144 teeth, and speed of sheets 10 revolutions per minute, is—

$$\frac{10 \times 27 \times 24 \times 27}{10 \times 110 \times 144} = 1.1.$$

The speed of the knife, taking the speed of the driving pulley at 72 revolutions per minute, the wheel on the boss of driving pulley 50 teeth, and the eccentric or crank pinion 35 teeth is

$$\frac{72 \times 50}{35} = 103 \text{ oscillations per minute. The conditions}$$

necessary to obtain a maximum yield from the machines are—(1) Properly rough pieces; (2) the clamping of the root end in proper position in the holder; (3) long machines, with easy gradation of hackles; (4) "shift" not unduly long. If the flax be not properly "dropped" in the roughing, a large amount of loose fibre will go to tow in the hackling machine. Again, if the rougher has not thoroughly opened his piece "up to the hand," the first tool of the machine may break away a considerable amount of valuable fibre in passing through the piece. If the flax be squared in the root end by the rougher, the shorter fibres will extend up the piece to various distances. The first holder should, therefore, be tightened on the piece at a distance of about 12 in. from the root end, in order to retain all the short fibres which are long enough to preserve in the piece. If the holder be placed too high up, much of the medium-length fibre will be lost; if too low down, the length of the top end subjected to the hackle, in its turn, will be so great that it will be broken away for want of sufficient support. The happy medium of maximum yield lies between these extremes. The first tool or hackle of the machine is usually made coarse, say $\frac{1}{2}$ pin per inch double row, or 1 per inch single row, in order to open and prepare the flax for the finer hackles with a minimum of tow. The number of pins per inch should increase gradually in each succeeding hackle. The longer the machine, and consequently the greater number of tools, the more gradual can the increase in fineness be made. It should be borne in mind, in making out the gradation, that a "rise" of four or six pins per inch in the finer hackles is no more severe than, say, 1 pin per inch at the coarser end. Other important particulars of this machine are: Length of tools, 11 $\frac{1}{2}$; number of bars in sheet, 30; pitch of bars, 2 1-16 in.; size of holders, 11 in. by 4 $\frac{3}{8}$ in.; height of lift, 26 in.; extreme length over all, 30 ft. 6 in. The over all length of hackle pins is 1 in. The hackle stocks are 7-16 in. thick, giving 9-16 in. as the effective length of pin. There is but a single row of pins in each hackle.

—German wholesale manufacturers of clothing at a meeting in Berlin, a short time ago, deplored the great decrease in the export of their goods to foreign countries. This they attributed to the high customs duties imposed by foreign governments, especially by that of the United States. In Canada also we are now making our own cloths.

—Messrs. Smith, McQuade, Low and Hartley, spinners, from Lancashire, Eng., are putting up special spinning

machinery in the Dominion Cotton Company's mill, Kingston, Ont. There has been a vast amount of new machinery put in the mill lately. The building is to be electrically lighted. The mill is increasing its staff and is advertising for a number of young women.

—The justification of the policy of manufacturing raw materials in Canada instead of in the United States, as exemplified by the Ontario Government's embargo on saw-logs, has been shown by the long list of saw-mills removing to Ontario from Michigan, recently published in the Toronto Globe. Not the least of these to move their mills is John Charlton, we believe. There can be little doubt that the recent change in the Ontario regulations which prohibits the export of pulp wood cut in Crown lands will be similarly beneficial even if to a much smaller extent. Quebec is also taking measures to guard her natural resources against waste by imposing an increased stumpage on pulp wood amounting to \$1.90, of which \$1.65 will be refunded on wood manufactured into pulp in the province.

SOUTH AFRICA, ITS PEOPLE AND TRADE.

(Continued from last issue).

A great deal might be said on the external relations of the Transvaal. The convention of 1884 fixed the boundaries of the Transvaal exactly, and the republic undertook solemnly to respect the independence of native chiefs outside its territory. Scarcely a year has passed without the violation of the convention in this respect. One of Kruger's first acts was to invade part of the British Protectorate and proclaim it a portion of the Republic, following up the operations of some of his free booters. And he only withdrew because of Mr. Rhodes' protest and the Warren expedition, which cost the British Government over £1,250,000. Then the Boer Government turned its attention to Zululand, which, after an intrigue with Dinizulu against the other chiefs, it invaded and attempted to upset the settlement made by Lord Wolseley. Next they invaded the country of the Matabele whom they had driven out of the Transvaal originally, and who were now under British protection, and they were only turned back by the tact and firmness of Dr. Jameson. Again they tried to lay hands on Tongaland, but the Queen Regent would have nothing to do with any country but England, whose protection she had sought. The invasion and spoliation of Swaziland was another Boer outrage, which Great Britain, from a mistaken notion of keeping peace with the Boers, condoned.

Such are a few of the features of Krugerism in South Africa, and the reader can judge whether they are such as to justify the interference of Great Britain.

It is a subject of wonder to many that the Boers persist in a course which a large number of them must know to be wrong, and stand out against the whole might of the British Empire in so doing. It must be