

and to-day are leading the trade. They are still adding machinery, and at the present rate of progress another year will see them at the head of the trade if they are not there already.

It is not my place to say whether the Canadian paper manufacturers were wise or unwise. That is their own business. It is not my place to say whether the E. B. Eddy Co. were wise or unwise. They have a right to do as they please. But certainly the entry of the latter company into paper manufacturing has marked a new era of enterprise in that industry and a new regime of prices, and for that reason their sulphite mill is designated "An Historical Mill."

PULP AND PULP MAKING.

A VERY interesting sketch of the rise and progress of this industry was delivered last week before the Chamber of Commerce at Montreal by Mr. J. H. Lefebvre, C.E., a gentleman well qualified to speak on the matter. After giving a brief historical sketch of the paper manufacturing industry on this continent and the revolutions it had undergone, Mr. Lefebvre said that wood pulp making was being developed largely in Scandinavia, and that European manufacturers of paper now look to that source for their supply of raw material. Dwelling upon the increase in the consumption of paper, he remarked that after the American war paper manufacturers found it almost impossible to meet the ever increasing demand for their goods. Rags, cotton waste and straw were neither cheap or plentiful enough, and paper makers first tried to utilize vegetable grasses and fibres, especially esparto, treated by the soda process. This method, perfected by a German chemist named Mutschelich, was finally adapted to wood, and the result was a revolution in the manufacture and cost of paper. It was still too costly, however, to meet practical requirements, and the investigations were continued until the discovery of ground or mechanical pulp was made, which Mr. Lefebvre considered one of the greatest discoveries of the age. Now, nearly all printing paper and a large percentage of writing paper was made of wood pulp. Chemical pulp enters to the extent of 30 to 40 per cent., and ground or mechanical pulp to 60 or 70 per cent. in the composition of paper. News print paper was now 12 to 15 per lb. cheaper than it was in 1860 as a result of these discoveries, the ruling price to-day being 30. as against 15 to 16c. in the year mentioned, and as a consequence the cheap journal and the cheap book of the present day was made possible.

For a successful pulp industry three things were essential: extensive water power, cheap labor and suitable wood. White and black spruce, Canada balsam, poplar, aspen and pine were all suitable, but balsam and spruce, owing to the special quality of their fibre were the most valuable; also on account of their color, and from the fact that they were soft and easily ground. Poplar and aspen were inferior owing to the prevalence of knots and black veins which spoiled the color of the paper, while pine was used only in the manufacture of chemical pulp. The pulp made from the latter was very fine, but the process of bleaching it to the desired color was rather expensive, which added to its cost, as did also the fact that it was rather too high priced a wood to be used profitably on the manufacture of paper. This was a great drawback, as the low prices ruling the market made wood of small value an absolute necessity. For this reason spruce and balsam were indispensable to a successful pulp business, coupled with ample water power.

To produce 25 or 30 tons of ground pulp per day of 24 hours required a mill of 2,500 to 3,000 horse-power. As the generation of such motive power by steam was a costly matter, it was an acknowledged axiom that pulp could only be profitably manufactured where there was plenty of water power. In an industry which employed a very large number of hands in comparison to the value of the output, cheap labor was also a staple want. Canada in all these essentials possessed peculiar advantages. Her immense forests of the woods specially required for profitable pulp furnished a practically inexhaustible supply of raw material. Their superior quality was attested by the fact that the United States bought supplies of wood to the value of \$454,253 last year, which was a good proof of the excellent quality of Canadian wood for pulp manufacturing purposes. This American importation of our wood was yearly increasing, being \$57,197 in 1890 as against \$454,253 in 1894, or over seven times greater than it was five years ago. In fact, the pulp mills of the New England States depended almost solely on Canada for their supply of raw material. In fact, Canada was way ahead of her neighbor and equally, if not better situated than Norway or Sweden, who were at present profitably operating 69 pulp mills.

If the price realized was any criterion, Canada had the advantage, for last year Canadian pulp was sold in England at an average of \$24.80 per ton, as against \$20.77 for the Scandinavian product. It was not necessary to dwell upon the unusual advantages possessed by the Province of Quebec, but if the United States market was closed to her, she had free access to the markets of England, France and Belgium. Great Britain last year imported 215,920 tons of wood pulp, and France 106,049 tons, or a total of 321,969 tons, while Belgium and other European countries imported at least 200,000 tons additional, so that European wants last year were over half a million tons and statistics showed that they were increasing annually. Besides the importations of wood pulp above mentioned England imported 20,750 tons of linen and cotton rags, 185,450 tons of esparto and 30,358 tons of other materials, or in all 236,558 tons, and yet this was not an adequate supply, for the British blue books, showed imports of 146,644 tons of paper and pasteboard. The quantity of pulp necessary for the manufacture of this latter item would have required 18 mills running with a motive power of from 2,500 to 3,000 horse power each, and to produce the quantity of pulp represented by the 236,558 tons of raw material imported to complete the supply of the British paper mills would require 30 other mills of the same capacity. There are at present only two establishments in Canada which manufactured for exportation to Great Britain, one in Nova Scotia and one in Quebec. It was obvious from the above facts that there was room for a score of others to meet the English demand alone not counting the enquiry that might spring up from the other markets of Europe mentioned above.

The ruling price in England was \$24 to \$27 per ton, but it was possible in those parts of Quebec adjacent to the seaports to manufacture mechanical or ground pulp and deliver it in England for \$15 to \$16 per ton, leaving a margin of \$8 to \$10 to pay interest on capital, etc. A 2,500 horse power will easily turn out 25 tons of pulp per 24 hours, and therefore give a benefit of \$200 to \$250 per day. Speaking of the industry in the States, Mr. Lefebvre said that although they took large quantities of spruce or raw material from us, they sold us in the last three years \$2,092,950 worth of paper and