

attention to the possibility of utilizing and the economic value of the waste straw of Western Canada. The article continues:

Cotton rags are selling as high as 15 cents a pound, and high quality material from which paper can be made comparable with cotton rag content paper should readily command as much as \$300 per ton. The United States daily consumes over 1,000 tons of high grade papers. Canada manufactures about 250,000 tons of high grade, bleached pulp, a large proportion of which is exported from the United States. It takes somewhat over one and a half cords of pulp wood to make one ton of pulp, and the demands on our forest consume over 20,000 acres of pulp wood limits per year, in which connection it is interesting to note that it takes from fifty to one hundred years to grow a spruce tree suitable for pulp production. Timber limits are rapidly increasing in value, and with the rapid depletion of the forests, lumbering operations must every year go further from transportation lines.

This situation is of direct interest to the Western farmer, because he is annually wasting about one million tons of raw material from which it has been proved that a paper pulp can be made convertible into a high grade paper comparing well with the linen rag product, for which price and demand are to-day higher than ever before. The material referred to is flax straw, at the present time burned and wasted wherever flax is grown for linseed, the straw crop therefore representing a dead loss to the farmer. In the 1919 issue of the Monthly Bulletin of Agricultural Statistics, published by the Dominion Government at Ottawa, we read; Another question of direct economic interest is the possibility of utilizing the linseed straw in Western Canada, which so far has been found useless, and is mostly burned. Any use that could be established for this by-product, which would increase even to a small extent the total money yield of the crop to the farmer would be a very important factor in extending the cultivation of flax throughout larger areas in Canada. It can now be definitely stated that such a use for flax straw has been demonstrated in the manufacture of pulp (bleached and unbleached half stuff) for conversion into high grade papers. All that is required is co-operation on the part of the farmers in the collection and delivery of straw, and interest of the necessary capital to organize a new industry which will revolutionize the flax-growing problem and at the same time stimulate the important paper industry of Canada with a supply of high quality pulp.

This is no question of experiment. That stage has been passed, and production on a semi-commercial scale has actually been accomplished. Over a ton of unbleached flax straw pulp has been manufactured, and then made into paper in two paper mills. This was submitted to various large paper manufacturers for their opinion, and from them it received the highest commendation. It is thought that the following points cannot fail to be of interest to the Western flax grower and also to the paper manufacturer.

The conditions essential to the successful manufacture of flax pulp are:—(1) Sufficient quantity of flax straw. (2) Suitable mill locations. (3) Suitable markets. Dealing with each of these headings, it is obvious that the

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first is of primary importance, the available supply of the basic raw material straw, the possibilities of collecting that supply, and the price at which it can be so collected, are factors on which depend the practical commercial possibilities of this development.

Taking first the available supply, we find that there has been in the past an enormous increase in flax acreage in the West. In 1870, the total Canadian crop was 118,044 bushels. In 1903, this had increased to 884,000 bushels, and this increase continued up to the enormous crop of 25,978,000 bushels in 1912. The fall in prices in the next few years was reflected in diminished production, but recovery has been rapid, and in 1918 a crop of 5,776,000 bushels was harvested in the Prairie Provinces, the estimated crop for 1919 was 7,117,000 bushels, of which Saskatchewan is credited with nearly 4,600,000 bushels. The following table gives acreage and yields for the Prairie Provinces during the past ten years, taken from volumes of Census and Statistics published by Department of Agriculture of the Dominion Government, Ottawa.

That shows the period from 1910 to 1919, but I shall not waste the time of the House in reading the table:

Crops such as those of 1918 and 1919, would each yield over 1,000,000 tons of straw, capable of producing over 100,000 tons of pulp. Canada to-day manufactures annually 250,000 tons of high grade pulp, practically all for export to the U.S.A.

Practically all of this flax is grown for linseed. It is well known that flax cultivation for this purpose is an entirely different farming proposition from growing flax for fibre. For fibre flax a special seed must be selected, and the crop is closely sown to encourage long slender growth of straw with small tops. Special cultivation harvesting methods and subsequent treatment of the straw must be resorted to.

The question of growing flax from fibre to replace the great shortage from which Europe is now suffering, though also a problem of first importance to the Canadian West, is an entirely different problem from that now under consideration, viz:—Utilization of the present supply of straw for paper pulp. With linseed flax, Canadian common seed is used sparsely sown to encourage plant to develop large tops; the flax is cut at a later stage of its growth, and threshed for its seed. The resulting straw is too short, broken and brittle for use in the textile trades and has hitherto been piled alongside the thresher and burnt.

The writer goes on to speak of the establishment of these mills. He says that it is necessary that these mills could be established at suitable districts convenient to the farmer, and in this article, which I will not waste the time of the House in reading, the writer shows that it is quite possible to have the "breakers," in which the straw is reduced to pulp and sent to the pulp mills, made movable so that they may be moved from place to place, and so that the farmer may have an opportunity of delivering the straw from convenient centres.

Arthur D. Little and Company, of Boston, who did a good deal of research work in